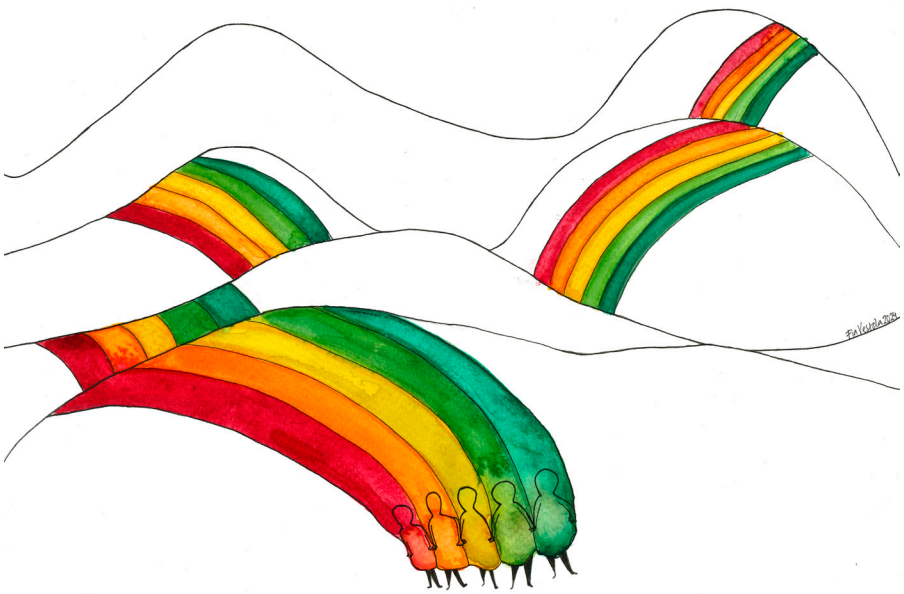
DOCTORAL THESIS

Procurement of continuous work

Enacting strategies through inter-organizational collaboration in infrastructure operation and maintenance



Emilia Nilsson Vestola

Construction Management and Building Technology

LULEÅ UNIVERSITY OF TECHNOLOGY

PROCUREMENT OF CONTINUOUS WORK

Enacting strategies through inter-organizational collaboration in infrastructure operation and maintenance

EMILIA NILSSON VESTOLA

DOCTORAL THESIS
IN CONSTRUCTION MANAGEMENT AND BUILDING TECHNOLOGY

Division of Industrialized and Sustainable Construction
Department of Civil, Environmental and Natural Resources Engineering
Luleå University of Technology
2024

ISSN 1402-1544
ISBN 978-91-8048-680-4 (print)
ISBN 978-91-8048-681-1 (pdf)

Cover art: Illustration by Fia Vestola

Printed by Åtta45 Tryckeri AB

Luleå 2024
www.ltu.se

Abstract

The European Union has directed its member states to use procurement to address societal challenges such as climate change. European public clients are therefore increasingly calling for innovative solutions when procuring works, goods, or services. However, set in a context of political influence and regulated by laws, utilizing procurement for development is not without challenges.

In the construction sector, public clients represent a large share of the market, fueling interest in procurement practices that support development. These clients often develop procurement strategies to promote innovation in their inter-organizational projects. Prior research has recognized collaborative procurement strategies as key to fostering innovation in construction projects. These procurement strategies stipulate the formal tools and activities for collaboration that are expected to be implemented and enacted by the inter-organizational project actors.

The process of 'projectification' refers to the increased use of projects in functional organizations, turning line work into projects in both public and private sectors. In a construction context, the projectification has mainly affected the organizing of operation and maintenance. Operation and maintenance work was traditionally performed in a continuous manner with in-house resources but are now procured and organized in inter-organizational projects. Consequently, this is one of the contexts that public construction clients are attempting to use procurement to address societal challenges.

However, implementing strategies across different organizational levels presents challenges, as tensions can arise, and projects may not always carry out the intended strategies of their parent organizations. In construction projects, actors from both client and contractor organizations collaborate to interpret and enact the procurement strategies in their specific project context.

This research aims to increase the understanding of public procurement of continuous work and its enactment in inter-organizational projects. To fulfill this aim, the research of this thesis builds on a qualitative research design, with two longitudinal case studies of the Swedish Transport Administration's road operation and maintenance projects. These case studies investigated two different efforts by the Swedish Transport Administration to use collaborative procurement

strategies to stimulate innovation in its inter-organizational operation and maintenance projects. Adopting a process- and practice-based theoretical approach enabled a focus on the project actors interpreting, adapting, and enacting the plans of the client parent organization.

The findings demonstrate how the procurement of continuous work results in projects exhibiting both temporary and permanent organizational aspects due to their successive, time-constrained contracts. Unlike new-build construction projects, where tasks are completed linearly, operation and maintenance tasks focus on continuous fulfillment. This reflects a shift in project management thinking, emphasizing ongoing tasks of preservation over traditional project completion.

Additionally, the thesis reveals that while procurement strategies can foster innovation, it requires alignment between long-term objectives and immediate project characteristics. Operation and maintenance projects offer opportunities to integrate long-term societal objectives into procurement. The findings highlight the necessity for procurement strategies to be flexible and contextually adapted. Project managers must negotiate and align diverging strategies with local project conditions, recognizing the value of both formal and informal collaborative practices. In summary, the research advocates for viewing procurement as a dynamic and adaptive process rather than a static plan.

The thesis makes several contributions to both theory and practice. It advances the understanding of construction procurement by highlighting the unique dynamics of continuous work organized in operation and maintenance projects. The thesis demonstrates how procurement strategies in operation and maintenance contexts can facilitate incremental and reactive innovations, leveraging these towards responding to broader societal challenges. By analyzing the balance between formal procurement strategies and collaborative practices, the thesis enriches existing research on collaboration in construction.

For practice, the findings emphasize the importance of integrating long-term goals into procurement while allowing for the flexibility needed to address project-specific issues. The thesis also highlights the need of balancing the implementation of formal procurement strategies with the development of informal project-level practices.

Keywords: construction procurement, inter-organizational collaboration, construction project organizing, construction innovation, infrastructure projects, operation and maintenance

Sammanfattning

Europeiska unionen har uppmanat sina medlemsländer att använda upphandling för att adressera samhällsutmaningar såsom klimatförändringar. Därför efterfrågar europeiska offentliga beställare i allt högre grad innovativa lösningar vid upphandling av arbeten, varor och tjänster. Men användning av upphandling för utveckling är inte utan utmaningar, särskilt i en kontext av politisk påverkan och lagreglering.

Inom byggsektorn representerar offentliga beställare en betydande del av marknaden, vilket ökar intresset för upphandlingsmetoder som stödjer utveckling. Dessa beställare utvecklar ofta strategier för att främja innovation i sina interorganisatoriska projekt. Tidigare forskning har identifierat samverkansinriktade upphandlingsstrategier som avgörande för att främja innovation i byggprojekt. Dessa strategier inkluderar formella verktyg och aktiviteter för samarbete som förväntas genomföras av aktörerna i de interorganisatoriska projekten.

Begreppet 'projektifiering' syftar på den ökande användningen av projekt i funktionella organisationer, där linjearbete omvandlas till projekt inom både offentliga och privata sektorer. Inom byggsektorn har projektifieringen främst påverkat organiseringen av drift och underhåll. Traditionellt utfördes drift- och underhållsarbete kontinuerligt med interna resurser, men nu upphandlas och organiseras det i interorganisatoriska projekt. Detta är alltså en av de kontexter där offentliga beställare inom bygg vill använda upphandling för att möta samhällsutmaningar.

Att implementera strategier på olika organisatoriska nivåer medför dock utmaningar, eftersom spänningar kan uppstå och projekt kan frångå sina moderorganisationers avsedda strategier. I byggprojekt samarbetar aktörer från både beställar- och entreprenörsorganisationer för att tolka och tillämpa upphandlingsstrategierna i deras specifika projektkontext.

Denna forskning syftar till att öka förståelsen för offentlig upphandling av kontinuerligt arbete och dess görande i interorganisatoriska projekt. För att uppnå detta bygger forskningen på en kvalitativ design med två longitudinella fallstudier av Trafikverkets vägdrifts- och underhållsprojekt. Dessa fallstudier undersökte två olika försök från Trafikverket att använda samverkansinriktade

upphandlingsstrategier för att stimulera innovation i sina projekt. Genom ett process- och praktikbaserat teoretiskt perspektiv möjliggjordes fokus på projektaktörernas tolkning, anpassning och görande av moderorganisationens planer.

Resultaten visar hur upphandlingen av kontinuerligt arbete leder till att projekten uppvisar både tillfälliga och permanenta organisatoriska aspekter på grund av deras successiva, tidsbegränsade kontrakt. Till skillnad från typiska byggprojekt, där uppgifter utförs linjärt, fokuserar drift- och underhållsprojekt på kontinuerlig uppfyllnad av uppgifter. Detta återspeglar ett skifte i projektledningen, med betoning på löpande uppgifter snarare än på traditionell projektavslutning.

Avhandlingen visar också att även om upphandlingsstrategier kan främja innovation, kräver det en anpassning mellan långsiktiga mål och projektens karaktär. Drift- och underhållsprojekt erbjuder möjligheter att integrera långsiktiga samhällsviktiga mål i upphandlingen. Resultaten lyfter fram behovet av att upphandlingsstrategier är flexibla och kontextuellt anpassade. Projektledare måste förhandla och samordna divergerande strategier med lokala projektförhållanden och se värdet av både formella och informella samarbetspraktiker. Sammanfattningsvis förespråkar forskningen att upphandling bör ses som en dynamisk och anpassningsbar process snarare än en statisk plan.

Avhandlingen bidrar med flera insikter till både teori och praktik. Den fördjupar förståelsen av byggupphandling genom att belysa de unika dynamikerna hos kontinuerligt arbete som organiseras i drift- och underhållsprojekt. Avhandlingen visar hur upphandlingsstrategier i dessa kontexter kan underlätta inkrementella och reaktiva innovationer, vilka kan användas för att möta bredare samhällsutmaningar. Genom att analysera balansen mellan formella upphandlingsstrategier och samarbetspraktiker på projektnivå, berikar avhandlingen befintlig forskning om samverkan inom byggsektorn.

För praktiken betonar resultaten vikten av att integrera långsiktiga mål i upphandlingen samtidigt som man tillåter den flexibilitet som behövs för att hantera projektspecifika frågor. Avhandlingen lyfter också fram behovet av att balansera genomförandet av formella upphandlingsstrategier med utvecklingen av informella praktiker på projektnivå.

Acknowledgements

Completing this thesis has truly been the most fun I've ever had. Over the past six years, the journey has been as challenging as it has been rewarding, filled with discovery, growth, and the invaluable support of remarkable people who have been with me every step of the way. I'm profoundly grateful to everyone who made this adventure not only possible but also enjoyable.

First of all, the research in this thesis would not have been possible without funding from Trafikverket, for which I am very grateful. Additionally, I wouldn't have learned anything about the procurement of continuous work or its enactment without the people I've had the privilege to observe and interview, both from Trafikverket and contractors. Thank you for willingly taking your time to share your experiences and thoughts with me.

The person who deserves the largest thank you is my main supervisor, Per Erik Eriksson. Per Erik, throughout these years, you've managed to give me the perfect balance between freedom and guidance, allowing me to develop independency in a safe space. Thank you for teaching me what it means to be a researcher, and for showing me that academic writing is so much fun! I truly could not have asked for a better supervisor.

I am also fortunate to have had the support of two amazing co-supervisors: Johan Larsson and Tina Karrbom Gustavsson. Johan, thank you for always being there and for always hyping me up. No matter how busy you've been, your door has always been open. Tina, thank you for always asking the right, and difficult, questions. This thesis would not be what it is today without your feedback and insights.

During these years I've had the opportunity to connect with researchers across the country, especially through the ProcSIBE network. I am grateful to the seniors and PhD students there who have enriched my journey. Malena Havenvid, thank you for being such a good 'paj'-opponent, your feedback provided invaluable guidance for these last months of writing. It was also through ProcSIBE that I first met Lilly Rosander, Susanna Hedborg and Klara Granheimer. Lilly, thank you for all discussions on reading, writing, parenting, and the puzzle of Trafikverket. Susanna, you're such a role model to me! Thank you for all writing processes and collaborations. Klara, thank you for being the best possible person to avoid mingles together with (and for showing me how to ride the subway).

I also want to take the opportunity to thank all of the seniors and former and current PhD students at IHB. You make even the grey T pavilion a fun workplace, and I'm so happy to be your colleague. Thank you for all fika room talks, for all of the laughs and advice – on research, teaching, and life in general.

There are two people whose support has made these years far more manageable: Mathilda Norell and Henrik Eriksson. Mathilda, I'm so happy to have shared this journey with you! Together we have made it through the highs and lows over the past six years: navigating pregnancies, welcoming babies, surviving a pandemic, and tackling the trials of paper writing. Your companionship has made all the difference. And Henrik. Finding a friend in you has been one of the greatest gifts of this PhD experience. Thank you for being there and making me laugh even in the toughest of times. I never not want to sit across from you in the corridor. Let's bingo forever.

There are also people outside of the T pavilion and the academic world that have been such a big part of this process – my friends and family. Mona, my best friend. Thank you for being there for the past 25 years. And to the rest of the Lindbergs: Stefan, Valter and Iris, you are the best neighbours in the world. Thank you for all of the dinners, wine nights, and playdates. And, of course, the Bälinge crew wouldn't be complete without you, Jonsson. I look forward to many more porch gossip sessions about the latest neighborhood news.

To my Nilsson/Nilsson Vestola family: Helena and Christer, thank you for being the best 'fammo' and 'faffa'. Mum and Dad, thank you for showing me the importance of having a chilled bottle of champagne ready *in case of celebration*. I can't wait to celebrate the completion of this thesis with you over a meal of haggis in May.

To the rest of my friends and family, thank you all for being a part of my life, for cheering me on and for reminding me of the importance to take breaks so I can enjoy time with you.

There is one person who could be included in several of the paragraphs in these acknowledgements: as a fellow PhD student, as a part of the Bälinge crew, as friend, and family. Jenny, thank you for being all over my life! We have made it through this PhD journey together, although at opposite sides of campus. Soon we will both finally be done.

Lastly, my own little family. Anton, thank you for believing that I can do anything. Some of that faith actually spills over on me, making me a little bit more confident and causes me to do stuff like this – completing a PhD thesis. And finally, Bob and Loa. Thank you for letting me re-discover the world through your eyes. I love you so much.

Emilia
Luleå, November 2024

Appended papers

Paper 1 **Nilsson Vestola, E.**, Eriksson, P. E., Larsson, J., & Karrbom Gustavsson, T. (2021). Temporary and permanent aspects of project organizing – operation and maintenance of road infrastructure. *International Journal of Managing Projects in Business, 14*(7), 1444-1462.

Nilsson Vestola was the lead author, developed the focus of the paper, and developed and analyzed the empirical material. All authors were actively involved in writing the paper.

Paper 2 **Nilsson Vestola, E.**, & Eriksson, P. E. (2023). Engineered and emerged collaboration: vicious and virtuous cycles. *Construction Management and Economics, 41*(1), 79-96.

Nilsson Vestola was the lead author and developed the focus of the paper together with Eriksson. Nilsson Vestola developed and analyzed the empirical material. Both authors were actively involved in writing the paper.

Paper 3 **Nilsson Vestola, E.**, Larsson, J., & Hedgren, E. (In press). Public clients pursue innovation, but what's going on at the project level? A case study of infrastructure operation and maintenance. *Construction Management and Economics*.

Nilsson Vestola was the lead author, developed the focus of the paper, and developed and analyzed the empirical material. All authors were actively involved in writing the paper.

Paper 4 **Nilsson Vestola, E.**, & Hedborg, S. Wiggle room in practice: Project managers navigating paradoxes through collaboration. *(under review in a project management journal)*.

Nilsson Vestola was the lead author and developed the focus of the paper. The authors jointly developed and analyzed the empirical material and were both actively involved in writing the paper.

Additional publications

Hedborg, S., **Nilsson Vestola, E.**, & Eriksson, P. E. (2024). Delrapport till Trafikverket: Pilotprojekt som strategipraktik för förändring – rekommendationer utifrån utvärdering av samverkanskontrakt inom baskontrakt väg [interim report to the Swedish Transport Administration]. Luleå: LTU.

Nilsson Vestola, E., & Hedborg, S. (2024). Managing public-private projects: Responding to paradox between contracts and local context. At IRNOP conference 2024, Stockholm, Sub theme: Humans and organizations in Project Society.

Hedborg, S., **Nilsson Vestola, E.**, & Kadefors, A. (2024). Struggling with strategizing in public client organisations: managing strategic projects in inter-organisational contexts. *International Journal of Project Management*, *42*(7), 102645.

Kadefors, A., Hedborg, S., **Nilsson Vestola, E.**, & Eriksson, P. E. (2023). Delrapport till Trafikverket: Samverkan Hög inom väg- och järnvägsunderhåll: Uppföljning av tidiga skeden i tre pilotkontrakt [interim report to the Swedish Transport Administration]. Stockholm: KTH.

Hedborg, S., **Nilsson Vestola, E.**, & Kadefors, A. (2023). Constructing a strategic project: a project-based organisation's fumbling efforts to change inter-organisational routines. At 39th EGOS colloquium, Cagliari, Sub-theme 70: Routines dynamics: enacting and crossing boundaries.

Nilsson Vestola, E., Larsson, J., Eriksson, P. E., & Karrbom Gustavsson, T. (2023). Slutrapport till Trafikverket: Utvecklingsfrämjande åtgärder inom drift och underhåll väg: Drivkrafter och hinder till innovation i fyra Baskontrakt [final report to the Swedish Transport Administration]. Luleå: LTU.

Nilsson Vestola, E., & Eriksson, P. E. (2020). Delrapport till Trafikverket: Underhållsupphandling i Trafikverket – Uppföljning och utvärdering av

innovationspiloter Baskontrakt Väg [interim report to the Swedish Transport Administration]. Luleå: LTU.

Karrbom Gustavsson, T., Eriksson, P. E., & **Nilsson Vestola, E.** (2019). Förstudierapport till Trafikverket: Entreprenörernas upplevelser av anbudsskedet i innovationspiloterna för vägunderhållskontrakten Vilhelmina och Skellefteå Södra [pre-study report to the Swedish Transport Administration]. Stockholm: KTH.

TABLE OF CONTENTS

PROLOGUE

> *Today, the public sector's activities are seldom exposed to competition. In activities that are not subject to competition, there are not the same effective barriers against cost increases, etc. Therefore, the activities of the public sector must be subjected to more market-like conditions. This means that supplier and client relationships should be developed. Contracting and procurement should be systematically tested in public operations.*
> *(Prop. 1990/91:100, app. 2, p. 6)*

The Swedish government's budgetary proposal for 1991 reflected the contemporary thoughts about how the public sector should develop to emulate the private market with client and supplier relationships. Earlier in 1990, the Swedish Road Administration (SRA) had submitted a proposal to the government that included suggestions for reorganization of the agency (Prop. 1990/91:87). The main idea of the proposal was to divide SRA's activities into client and supplier functions, which was approved by the government that wrote: *"We also find it essential that the organization of the agency's production tasks is conducted on commercial grounds. It is particularly important that the road administration utilizes and promotes competition in the supplier sector"* (Prop. 1990/91:87, p. 92).

The dividing of SRA's operations into client and supplier functions was thus the first step in preparing for competition through procurement. In the budgetary proposal for 1993 the Swedish government wrote that *"all production in the Swedish Road Administration should be adapted to market conditions and as soon as possible be subjected to full competition and transferred to another principal"* (Prop. 1992/93:100, app. 7, p. 14). It was also stated that by 1994, 100 % of SRA's new-build projects should be procured in competition, while the corresponding number for the operation and maintenance (O&M) work should be at least 50 %. This signals

that it was expected that the development towards competition would be slower for operation and maintenance than for new-build activities.

While the construction industry is a traditional project-based context, the operation and maintenance of the built environment is based on long-term and continuous work. Opening the operation and maintenance for competition required a shift from a continuous effort performed by the agency's in-house staff, to the procurement of O&M work from private contractors. The first step in this process was SRA's client unit commissioning operation and maintenance as subsequent time-constrained projects from SRA's production unit, a process of projectification within the public agency. The next step was procurement of the operation and maintenance, in which SRA's production unit as well as private contractors could submit tenders. In 2009, the production unit was turned into an independent public company, and the work of operation and maintenance was thus fully outsourced.

One

INTRODUCTION

This chapter provides the rationale for conducting the research in this thesis. The background for the research is explained, leading to a description of the specific research problem addressed. This is followed by the research aim and the research questions that this thesis aims to answer. Lastly, the outline of the thesis is presented.

Background

Public procurement refers to *"the acquisition of goods and services by government or public sector organizations"* (Uyarra and Flanagan, 2010, pp. 126–127). This process encompasses a wide range of activities, including designing procurement documents, soliciting bids, evaluating offers, and awarding and managing contracts (Eriksson, 2010). As a crucial function within the public sector, public procurement ensures that public funds are spent efficiently and transparently, achieving value for money, supporting policy objectives, and delivering public services. Consequently, public procurement is governed by regulations designed to uphold these principles.

Today, public procurement is seen as a strategic tool to solve societal challenges (Grandia et al., 2023; OECD, 2023). The European Union (EU) is calling for its member states to use public procurement to stimulate innovation (European Commission, 2021), recognizing the critical role innovation plays in European efforts for societal development (European Commission, 2022). In the EU, approximately 2 trillion euros is spent on public procurement annually, corresponding to about 14 % of the gross domestic product (GDP) of the EU's

member states (European Court of Auditors, 2023). This makes public procurement a potentially powerful tool for driving a sustainable development.

In the construction sector, public clients constitute a significant purchasing power wielding considerable influence. This significant role explains the sector's increased interest in development-friendly procurement (OECD, 2017). Since the construction industry accounts for approximately 40 % of global energy and process-related CO_2 emissions (United Nations Environment Programme, 2022) public construction clients are important actors in efforts to reach sustainability goals. Therefore, public construction clients develop procurement strategies aimed at promoting innovation in their inter-organizational projects.

The construction sector is inherently project-based. However, 'projectification' (Midler, 1995) has had an impact through the increase of projects within public construction clients. Operation and maintenance (O&M) of public infrastructure was traditionally performed in a continuous manner with public agencies' in-house resources but are now organized in inter-organizational projects. Following the merger of the Swedish Road Administration (SRA) and the Swedish Rail Administration in 2010, the Swedish Transport Administration (STA) was established. Thus, the projectified O&M work described in the prologue is now procured, governed and managed by STA.

In Sweden, STA is the largest public construction client, with an annual procurement budget of approximately 62 billion SEK (around 5,3 billion euros). As a member of the EU, Sweden's government and parliamentary policies are influenced by EU directives, which in turn shape STA's procurement strategies. In response, STA has developed procurement strategies aimed at fostering innovation and contributing to the development of a more sustainable transport system. One of the government agency's main strategies for increased innovation in its projects is the use of collaborative procurement. This resonates well with prior research highlighting that innovation in inter-organizational construction projects can be facilitated by the use of procurement strategies for collaboration (Blayse and Manley, 2004; Eriksson, 2017; Hedborg Bengtsson et al., 2018; Carbonara and Pellegrino, 2020). These collaborative procurement strategies stipulate the formal tools and activities for collaboration that are expected to be implemented and enacted (Weick, 1979) in inter-organizational projects.

STA and other public construction clients procuring infrastructure operation and maintenance, provide an empirically derived argument to study procurement of continuous work and its enactment in inter-organizational projects. Despite the growing body of research on procurement strategies and collaboration in construction, there is limited insight into how continuous work is procured and

organized. Furthermore, little attention has been given to the specific challenges of procurement strategy enactment in inter-organizational projects.

Research problem

The previous section highlights several key factors: first, public procurement is increasingly recognized as a strategic tool to address societal challenges; second, public construction clients are adopting collaborative procurement strategies to foster innovation and sustainability; and third, the projectification of O&M work introduces tensions between continuous, long-term objectives and the short-term organizing inherent to project-based work. These factors underscore the need for a deeper understanding of public procurement of continuous work and its enactment in inter-organizational projects.

Strategy in projects: Integrating intent and enactment

The process of projectification (Midler, 1995), with its increased share of project activities and its spreading of project organizing to new sectors is part of the explanation for the latest decades' development of project research. During the 1980s and 1990s, there was a rise in project studies applying organization theory, today often referred to as the 'Scandinavian School of Project Studies' (Sahlin-Andersson and Söderholm, 2002) or the 'Scandinavian School of Project Management' (Jacobsson et al., 2016). This school rose as a counterreaction towards traditional project research, which was considered too focused on planning and controlling (Packendorff, 1995). Instead of optimization and finding best practices, the Scandinavian School focuses on projects as temporary organizations (e.g. Lundin and Söderholm, 1995; Packendorff, 1995). This enables putting the people of projects and their doings in the center of analysis.

Adopting a process perspective enables viewing projects as temporary organizations instead of as tools by their parent organizations (Lundin and Söderholm, 1995; Packendorff, 1995). Projects are thus recognized to have the characteristics of other types of organizations. From a strategic management perspective, this poses a challenge since attributing projects with organizational characteristics means that projects are strategizing units that may develop strategies deviating from their parent organizations' intentions (Artto et al., 2008). Strategy implementation between different organizational levels has inherent tensions, which should be explored to understand the relationship between strategic

intentions and their enactment (Weiser et al., 2020). Instead of viewing projects as plans of parent organizations, a practice perspective (e.g., Feldman and Orlikowski, 2011; Nicolini, 2012) enables focus on the project actors interpreting, adapting, and enacting plans (Blomquist et al., 2010).

Scholars of strategy in project-based contexts have called for an integrative view of strategy intent and enactment (Artto et al., 2008; Söderlund and Maylor, 2012). A practice perspective rejects *dualism*s, instead treating conceptual oppositions as *dualities* (Feldman and Orlikowski, 2011). While dualisms create binary distinctions, dualities encourage a more integrative and holistic understanding of the relationship between two concepts. Therefore, an integrative view of strategy rejects separation between intent and enactment, instead viewing them as interconnected elements.

Public procurement: Both strategic intent and enacted practice

Studying public procurement of inter-organizational construction projects through the perspectives of process and practice, and adopting principles of Scandinavian School of Project Studies, implies exploring the relationship between the intent of public construction clients and the enactment at the project level.

Public procurement strategies establish the formal rules of inter-organizational construction projects. However, prior research in construction has shown that strategies can be developed and shaped at all organizational levels (Löwstedt et al., 2018). Implementing procurement strategies into inter-organizational projects presents a challenge, as strategy implementation across different organizational levels involves inherent tensions (Weiser et al., 2020). In construction projects, actors from both client and contractor organizations work together to interpret and enact the strategies in their specific project context. Consequently, it should not be assumed that the project actors will execute the strategies of their parent organizations exactly as intended (Artto et al., 2008; Söderlund and Maylor, 2012).

Public clients face conflicts between their focus on long-term goals and the discontinuous characteristics of project organizing (Hodgson et al., 2019). While the public sector is not traditionally project-based, the construction sector is. Therefore, the challenges of reconciling longitudinal strategies with short-term organizing may be particularly pressing for public construction clients, as these tensions are found across their organizations.

The projectification of O&M work raises yet another challenge for public construction clients; short-term project organizing of continuous work. Hence, public construction clients procuring operation and maintenance face several tensions that affect the outcomes of their procurement strategies:

1. strategy implementation across organizational levels,
2. long-term goals and discontinuous project organizing, and
3. project-organizing of continuous work.

And it is within this complex landscape that European public clients of infrastructure operation and maintenance are expected to use procurement as a tool for addressing societal challenges. The continuous characteristics of O&M work offer public construction clients the opportunity to engage in innovation and development in a stable, long-term manner. Yet, despite its potential, there is limited knowledge on public clients procuring continuous work.

Aim and research questions

This thesis will contribute to current construction management research by building on the traditions of the Scandinavian School of Project Studies and adopting a theoretical approach grounded in the perspectives of process and practice. The aim of the research is to increase the understanding of public procurement of continuous work and its enactment in inter-organizational projects. To fulfil this aim, the thesis seeks to answer two research questions, presented below.

There is a need to increase the understanding of how the projectification of public agencies has formed procurement of continuous work, and the effects of this practice. The combination of projectification and procurement is of particular interest for the development of construction management research. The procurement of continuous work, such as O&M work, presents public construction clients with unique challenges. The continuity of these activities requires a combination of project-based approaches and a more sustained, long-term focus. Understanding how these projects are organized through procurement is critical, yet underexplored. Therefore, the first research question asks:

> RQ1: How are infrastructure operation and maintenance projects organized through procurement of continuous work?

Embracing strategic intent and enactment as dualities, analyzing public procurement strategies with an integrative view means considering it as both a planned process and an enacted practice. Recognizing that projects are not merely 'obedient servants' of their parent organizations (Artto et al., 2008), implies that public construction clients should not expect their procurement strategies to be implemented exactly as intended at the project level. Procurement strategies of construction projects are designed within the client parent organization, but implemented in projects where multiple stakeholders collaborate. In practice, the procurement strategies are enacted by actors across organizations, raising questions about how inter-organizational collaboration influence the intended outcomes of the client parent organization. To understand how procurement strategies for continuous work are enacted through collaboration in practice, the second research question asks:

> RQ2: How are procurement strategies enacted through collaboration in inter-organizational infrastructure operation and maintenance projects?

To answer these questions, two case studies were conducted, each examining efforts by STA to use collaborative procurement strategies to stimulate innovation in its inter-organizational road O&M projects. While the first case study helped me immerse in the O&M context and provided key insights for answering the first research question, both case studies contributed to addressing both research questions by allowing me to gather knowledge through a longitudinal approach.

Outline of the thesis

This is a compilation thesis, consisting of a 'kappa' and four appended papers. Excluding the prologue and epilogue, the kappa is sectioned into seven chapters. In this first chapter, the background of the research has been introduced along with a discussion of the research problem leading to the aim and the two research questions. In the two following chapters, the theoretical background is presented: first as previous research and then as the theoretical approach of this thesis. While Chapter Two presents the research context of the thesis, the theoretical approach in Chapter Three introduces the 'key' with which I will understand and interpret the research findings. Chapter Four describes the research process and methods, including the case studies, development and analysis of the empirical material, as well as a discussion about research quality. The four appended papers are

summarized in Chapter Five, followed by a discussion where the answers to the research questions are discussed in Chapter Six. Chapter Seven concludes this thesis with theoretical contributions, practical implications, and a discussion on research limitations and future research.

Two

PREVIOUS RESEARCH

This chapter provides the research context for the thesis, discussing key insights of previous research on public construction procurement for facilitating change, construction project collaboration, and public projectification. These are the main literature fields that the research builds on, as well as aims to contribute to.

Public construction procurement for facilitating change

Public procurement refers to the process through which public organizations acquire goods, works and services from external sources. This process involves a variety of activities, including the design of procurement documents, the solicitation of bids, the evaluation of offers, and the awarding and management of contracts (Eriksson, 2010). Public procurement is governed by regulations designed to ensure that public funds are spent efficiently and transparently, achieving value for money. Public procurement practices are also influenced by policy and regulatory frameworks at various levels. For example, the EU's directives on public procurement provide guidelines that member states must follow, ensuring that procurement strategies of public agencies align with broader policy objectives such as sustainability and innovation.

The significance of public procurement, however, extends beyond the mere acquisition of goods, works and services. Public procurement can be used not only to fulfill immediate needs but also to achieve broader organizational and societal goals, such as sustainability and social value creation. Public procurement is a crucial component in the development of our society, and has therefore previously been

recognized as a strategic tool for addressing global challenges such as climate change (OECD, 2023). Public procurement can be used strategically to encourage change and innovation (Edler and Georghiou, 2007), and governments are increasingly using their purchasing power to oblige private actors to contribute to public objectives (Grandia et al., 2023). In Europe, governments are adopting this approach to procurement in response to the EU's call for member states to use public procurement as a means to stimulate innovation (European Commission, 2021).

Procurement can be used strategically by public clients when deciding *how* the goods, work, or services are to be procured. However, since public procurement is regulated through laws, such as the Swedish Public Procurement Act (see Konkurrensverket, 2017), utilizing procurement for development is not without challenges (Håkansson and Axelsson, 2020). Yet another challenge lies in the fact that public clients must balance immediate project goals with broader societal impacts. This forces public clients to integrate long-term visions into projects that are usually focused on short-term deliverables (Hodgson et al., 2019; Kuitert et al., 2019).

In the construction sector, public clients represent a large share of the market, causing a raised interest in development-friendly procurement in this context (OECD, 2017). The roles of public construction clients are changing as they are increasingly expected to take on a broader view, moving away from simply commissioning projects to also safeguarding public values. This role-shift demands new skills and practices, such as managing complex cross-sector collaborations and ensuring that both public and private interests are balanced.

Previous research on construction procurement has shown that public construction clients can utilize procurement to create social value through employment requirements (Troje and Kadefors, 2018), reduce carbon emissions (Granheimer et al., 2022) and implementing circular economy (Ahmed et al., 2024), foster innovation (Hedborg Bengtsson et al., 2018; Järvenpää et al., 2024), and strengthen the collaboration and integration with suppliers (Rosander and Kadefors, 2023). Exploring two different efforts by a public client to use collaborative procurement strategies to stimulate innovation, this thesis specifically focuses on the latter two objectives: fostering innovation and enhancing collaboration, thereby aligning to a growing understanding of how procurement strategies can not only meet immediate project needs but also create long-term value through improved project outcomes and stronger inter-organizational relationships.

In a construction context, the role of clients is often viewed as promoting and facilitating supplier-led innovation (e.g., Vass and Karrbom Gustavsson, 2017; Kuitert et al., 2019; Lindblad and Karrbom Gustavsson, 2021; Larsson et al., 2022). However, there are examples of clients taking a more active role by co-creating with their suppliers (Eriksson et al., 2017). From a contractor perspective, barriers to innovation may include a perceived lack of demand for innovation, rigid specifications that limit flexibility, and challenges in engaging effectively with the procuring client (Uyarra et al., 2014). To address these barriers, numerous studies have identified key elements of public construction clients' procurement and contracting strategies – such as the choice of delivery system, reward system, partner selection approach, and collaboration models – that can act as critical enablers of innovation (Blayse and Manley, 2004; Eriksson, 2017; Hedborg Bengtsson et al., 2018; Carbonara and Pellegrino, 2020).

Public clients develop procurement strategies aimed at fostering innovation, which is expected to take place at the project level. However, in the construction sector, the linkage between the project and its parent organizations complicates innovation efforts (Dubois and Gadde, 2002; Crespin-Mazet et al., 2021). As an example, there are often discrepancies between organizational-level calls for proactive innovation and a project-level focus on reactive innovation (Eriksson et al., 2017). Loosemore (2015) challenges the common perception that the construction industry is not highly innovative, highlighting that project actors engage in creative problem-solving on a daily basis. These incremental innovations typically arise as reactive responses to unforeseen challenges. Due to the inherent uncertainty and complexity of construction projects, such reactive problem-solving is frequently regarded as a key source of innovation in the industry (Ozorhon, 2013; Loosemore, 2015; Eriksson et al., 2019).

Larsson et al. (2022) found that while long-term maintenance responsibilities can motivate contractors to explore sustainable solutions early in a project, traditional delivery models tend to encourage incremental innovations with effects limited to the project level. Additionally, client requirements play a significant role in driving or hindering innovation, as they dictate the specific outcomes expected from the project (Blayse and Manley, 2004; Ingemansson Havenvid et al., 2016; Ozorhon et al., 2016). These factors further illustrate how the dynamics between project and organizational levels shape the nature and scope of innovation in construction projects, and thus the importance of understanding the relationship between the levels if public construction procurement is to successfully facilitate change.

Prior research has recognized that collaborative procurement strategies better promote innovation within construction projects, than traditional procurement models (Eriksson et al., 2019), which will be elaborated on in the next section.

Collaboration in construction projects

Inter-organizational collaboration can take various forms, ranging from formal partnerships and alliances to informal networks and joint ventures, encompassing both public and private sector entities. By pooling resources, expertise, and capabilities, organizations can enhance their collective ability to innovate, solve problems, and deliver value to their stakeholders. The increased responsibility of public construction clients responding to societal challenges signifies a heightened importance for increased collaboration with contractors (Kuitert et al., 2019). While the benefits of inter-organizational collaboration are substantial, several challenges must be addressed to ensure its success. These include aligning the goals and interests of diverse organizations.

Time-limited interaction between public and private actors is characterized by contradictions, creating significant challenges in the inter-organizational collaboration (Kronlid and Baraldi, 2020). Inter-organizational projects across public and private sectors represent a specific type of inter-organizational project since these cross-sector projects include the challenge of aligning the *"disparate goals, incentives, and management practices"* (Caldwell et al., 2017, p. 906) of the public and private parent organizations. Public clients are focused on long-term goals and service continuity, while private contractors may prioritize profitability (Kuitert et al., 2019). This creates a tension between the public sector's commitment to continuity and the private sector's focus on financial gains. Considering the contradictory nature of inter-organizational projects across public and private organizations, the collaboration between public and private project actors presents particular challenges.

When public construction clients procure work from suppliers, procurement strategies play a vital role in shaping the collaboration between clients, contractors, and other stakeholders. The chosen procurement strategies impact the inter-organizational collaboration between clients and contractors, both through procurement strategies specifically aimed at strengthening collaboration and by other aspects such as chosen methods for bid evaluation and compensation (Eriksson and Laan, 2007).

Prior research has shown how traditional public construction procurement, which heavily emphasizes price and efficiency, can diminish 'softer' values and lead to adversarial relationships with suppliers (Eriksson and Laan, 2007; Kuitert et al., 2019). Public construction clients that aim for an increased collaboration with its contractors may apply collaborative procurement strategies. Procurement strategies for collaboration not only dictate the terms of the partnership but also impact project performance by fostering stronger relationships between parties (Eriksson and Westerberg, 2011). These strategies constitute the formal side of collaboration, which are the collaborative activities specified in the contractual documents (Bresnen and Marshall, 2002). This formal collaboration includes collaborative procurement models and collaboration tools. Integrated project delivery, alliance contracting, and project partnering (Lahdenperä, 2012), early contractor involvement (Rosander, 2022), and public-private partnerships (Demirel et al., 2017), are examples of procurement models developed to increase collaboration between construction clients and contractors. The aim of these models is to foster a collaborative environment by aligning the interests of the parties through contract structures that aim to prioritize collective success over individual gains. At a more detailed level, collaboration tools are specific mechanisms stipulated within contracts to facilitate teamwork and communication. These can include, for example, open book accounting, co-location and collaboration workshops. Hence, a public construction client's collaborative procurement strategy may include collaboration models with/or collaboration tools. While procurement models establish the broader collaborative framework, tools support the practical implication of collaboration in the everyday execution of the project.

Much collaboration in construction projects has concentrated on formal aspects (e.g., Bayliss et al., 2004; Eriksson, 2010; 2015; Lahdenperä, 2012). However, the plans of the client parent organization, in the form of procurement strategies, do not necessarily align well with the inter-organizational project's context. Hence, in addition to the formal collaborative procurement strategies, there is also an informal side of collaboration (Bresnen and Marshall, 2000; 2002), consisting of personal relationships, direct interaction between participating individuals, trust building, shared values, and previous experiences (Bygballe et al., 2015). Unlike formal collaboration, which is shaped by procurement strategies, informal collaboration develops locally within the unique context of each project (Bresnen, 2009; 2010; Hartmann and Bresnen, 2011). As the informal aspects of collaboration are dependent on the social processes taking place within the project (Bresnen and Marshall, 2002), this emergence is highly

dependent on individuals, their relationships, and their attitudes toward partnering (Hietajärvi and Aaltonen, 2018; Bygballe and Swärd, 2019).

Prior research on construction collaboration has recognized an interplay between the formal and informal sides of collaboration and has shown that procurement strategies for collaboration may work as guidelines for the partnership, but that the collaboration will emerge informally in its local context (Bresnen, 2009; 2010; Hartmann and Bresnen, 2011; Nikulina et al., 2022; Eriksson et al., 2023). The procurement strategies for collaboration are negotiated through informal processes, at the same time as they shape the development of informal practices (Bygballe et al., 2015; Nikulina et al., 2022; af Hällström et al., 2024). Thus, public construction clients' procurement strategies may be overridden by, or adjusted to, informal collaborative practices (Vosman et al., 2023).

Recognizing the interplay between formal and informal collaborative practices, inter-organizational project collaboration cannot only be understood through procurement strategies for collaboration but also by the project actors' everyday collaborative practices. The formal and informal sides of collaboration should be viewed as complementary and interrelated.

While procurement strategies for collaboration are recognized as a tool for public clients to enhance their responses to societal challenges, public procurement regulations can also complicate the relationships between clients and contractors. Strong collaboration requires long-term relationships, trust and openness, which can conflict with legal obligations, such as transparency and fairness, mandated by procurement laws (Kuitert et al., 2019). Prior research has also shown that procurement strategies for collaboration may conflict with other procurement strategies of the same public construction client, complicating the development of new collaborative practices at the project level (Rosander and Kadefors, 2023). Procurement strategies that may conflict with a collaborative procurement strategy include lowest-bid selection of tenders and the inclusion of rigid and detailed production requirements.

Procurement is not only a powerful tool for structuring contracts but also for shaping industry practices and encouraging a shift towards collaborative governance models. Aaltonen and Turkulainen (2022) showed how public construction clients' procurement strategy of project alliancing drove industry-wide transformation in Finland. Procurement can become a lever for introducing new governance practices aimed at increasing trust, shared responsibility, and joint innovation across construction projects. Thus, while the collaborative procurement strategies are expected to be implemented within construction

projects, collaboration in construction projects is not merely a project-level phenomenon as it can lead to sector-wide cultural shifts when supported by institutional frameworks (Aaltonen and Turkulainen, 2022; Kadefors et al., 2024).

Public projectification

Ever since Midler (1995) introduced the concept of projectification in his study of the Renault firm, scholars have increasingly explored the phenomenon in which private as well as public organizations turn line work into projects (Schoper et al., 2018). The key drivers behind this shift include EU funding policies (Godenhjelm et al., 2015) and the increased need to manage the production of complex goods (Hobday, 2000). The public sector is not traditionally project-based, meaning that the scope of projectification has reached beyond typical project-oriented industries (Schoper et al., 2018). The use of projects has traditionally been associated with the disciplines of engineering and business management, and has spread from these sectors to public administration (Sjöblom, 2009). This may provide an explanation for the need for further research on the effects of public sector projectification (Hodgson et al., 2019).

Through the process of projectification, we now live in a 'Project Society', in which projects are not only becoming increasingly prominent but also a more and more diverse phenomenon (Lundin et al., 2015; Lundin, 2016). Today, projects are utilized in the public sector for both routine operations and as transformative initiatives aimed at improving organizational or operational conditions (Hodgson et al., 2019). The projectification of the public sector is a multi-level phenomenon affecting individuals, organizations, and society, and there is a need for a better understanding of the contradictions between these levels (Packendorff and Lindgren, 2014; Jacobsen, 2022).

It was the market-based ideas of New Public Management, which emerged in the 1980s and 90s, that blurred the lines between public and private sectors in Western countries (Hodgson et al., 2019). Projects are often described as a 'post-bureaucratic' form of organizing (Hodgson, 2004). The appeal of the post-bureaucratic organizing form of projects lay in its promise of both adventure and control (Sahlin-Andersson, 2002). Therefore, the increased use of projects aligned well with the goal of that era, aiming to make the public sector more results-driven, flexible, and cost-effective.

Even though the trend of projectification of the public sector rose as a way to mimic the private market and minimize bureaucracy, previous research has

been disagreeing on whether this aim has been reached or if the increased use of projects in the public sector instead reinforces fixed rules and hierarchies (Rowe et al., 2024). While project organizing is often perceived to increase flexibility and allow innovative work methods, Fred (2020) found that project management models are used in the public sector to increase control. However, Spanuth et al. (2020) concluded the opposite; an increase of temporary organizing in the German public and private sectors led to an increase in flexibility, and a decrease in bureaucracy.

This shift toward project-based work has reshaped how public organizations operate, influencing the delivery of public services to the governance structures that oversee these processes. As projects become the dominant mode of organizing work, they introduce new ways of thinking and acting, which bring both opportunities and challenges. Project organizing may offer public clients the opportunity to balance adventure and control (Sahlin-Andersson, 2002). However, the emphasis on short-term results inherent in project-based approaches might come at the expense of long-term goals. Reconciling the public sector's inherent focus on stability and long-term goals with the discontinuous and flexible characteristics of project organizing has garnered significant scholarly interest (Hodgson et al., 2019). However, despite projectification leading to one of the most important shifts in public policy, our understanding of how it has influenced practice remains limited (Fred, 2020). There is a lack of theoretical understanding of what this projectification has meant in practice, suggesting a need to explore how it has affected the processes of public clients.

While the public sector is not traditionally project-based, the construction sector is. In a construction context, the projectification has mainly affected the organizing of operation and maintenance. This process of projectification has happened simultaneously with outsourcing, turning public agencies into construction clients procuring and managing inter-organizational O&M projects. In addition to the debated expectations of the projectification for increased flexibility and decreased bureaucracy, the outsourcing of work through public procurement is expected to increase efficiency and effectiveness by leveraging the expertise of private suppliers (Håkansson and Axelsson, 2020). Public outsourcing refers to the practice by which public sector organizations contract out certain functions, services, or activities to external private sector providers. This process involves the transfer of responsibility for the delivery of specific services or functions, but the public clients retain accountability for ensuring that these services meet predefined standards and objectives.

The empirical phenomenon of project is in constant development. Thus, in our 'Project Society', there are now projects that do not fit into Lundin and Söderholm's (1995) original framework for what distinguishes a project (Karrbom Gustavsson and Hallin, 2015). To avoid oversimplifying the project phenomenon, there is a need to embrace the inherent 'fuzziness' of the concept, viewing projects as pluralistic and dynamic rather than rigidly defining what they are and are not (Jacobsson et al., 2015). Such a perspective may be even more important when exploring projectification in the public sector, where the temporary and permanent aspects of organizing are interwoven (Fred, 2015). Gaining a theoretical understanding of the projectification of public construction clients, requires exploring the empirical phenomenon of the project organizing of continuous work – such as infrastructure operation and maintenance.

Three

THEORETICAL APPROACH

In this chapter, the theoretical approach of the research is presented, providing the perspectives and constructs through which the empirical material is to be interpreted and understood. The theoretical approach of this thesis combines process and practice perspectives on organizing and is applied to the relevant theoretical backgrounds of project organizing and strategizing.

An approach of process and practice

In the development of process organization research, Weick (1979; 1995) has been a leading figure, shifting the focus from 'organization' as a static entity to 'organizing' as a dynamic process. Weick defines organizing as *"a consensually validated grammar for reducing equivocality by means of sensible interlocked behaviors. To organize is to assemble ongoing interdependent actions into sensible sequences that generate sensible outcomes"* (Weick, 1979, p. 3). This process-oriented perspective represents a shift in organizational research, moving from seeking the answers of 'what'-questions in static entities, to exploring 'how'-questions in organizations as emergent phenomena (Langley and Tsoukas, 2016).

Instead of viewing the social world as composed of static entities where processes merely occur, a process ontology views the world as fundamentally processual, with things materializing out of ongoing activity (Langley et al., 2013). Consequently, organizational matter is thus not static but dynamic, constantly in

a state of becoming. Organizational processes do not occur in isolation but emerge in conjunction with, and are interrelated with, their continually reconstituted context (MacKay and Chia, 2013). This perspective emphasizes that organizations, their actors, and their contexts are all in a state of constant, interrelated flux.

Process and practice-oriented perspectives are closely related, as both share an ontological basis in viewing the world as being in constant flux (Nicolini, 2012; Jarzabkowski et al., 2016b). Within a process ontology, process meets practice since organizational flux is not a result of random exercise, but is dependent on the practices of individuals (Langley et al., 2013). Weick's (1979) concept of enactment refers to the process by which organizational environments are actively constructed by the actions of individuals, rather than existing independently. Enactment emphasizes that actors shape their reality through their actions, and these actions, in turn, generate the structures they operate within.

The 'practice turn' in the social sciences, influenced by scholars like Giddens (1984) and Bourdieu (1990), has partially developed from the process tradition (Blomquist et al., 2010). This turn has heightened interest in the role of activity within studied processes. Barley and Kunda (2001) highlighted the importance of 'bringing work back in' to organization studies, advocating for a renewed focus on the actual processes and practices of work, putting more attention to the localized, lived realities of organizational actors. Barley and Kunda contended that organization studies had become overly abstract, calling for a return to the question of what work is, using qualitative research methods that integrate work practices and aspects of organizing.

Since people are the performers of practices, their doings and sayings are critical to study when undertaking a practice perspective. However, while the activities of people are central, adopting a practice perspective is not as easy as simply observing and reporting on what people do (Nicolini and Monteiro, 2017). Practices are culturally and historically embedded norms that become discernible through observed patterns of activities (Chia and MacKay, 2007), making these patterns the primary unit of analysis for practice researchers. These patterns are not studied in isolation but are understood as situated actions. In applying a practice perspective to organizational research, organizations are seen both as sites where activities are performed and as the outcomes of those activities (Nicolini, 2012). The interrelatedness between patterned activities and their social context is central to a practice perspective, as people's everyday practices significantly impact their social environment (Feldman and Orlikowski, 2011).

In a practice perspective, dualisms are rejected in favor of treating conceptual oppositions as dualities (Feldman and Orlikowski, 2011). Whereas dualisms create rigid binary distinctions, dualities promote a more integrative and holistic understanding of the relationships between opposing concepts. Paradoxes denote *"persistent contradictions between interdependent elements"* (Schad et al., 2016, p. 6). Adopting a paradox perspective in the study of contradictory demands in organizations enables a simultaneous focus on conflicting and interdependent demands (Smith and Lewis, 2011). People in organizations enact the ongoing process of responding to paradoxes within their everyday practice (Jarzabkowski et al., 2013). Hence, there is a shared ontological basis between practice and paradox perspectives (Lê and Bednarek, 2017). Prior research has shown the fruitfulness of combining these two perspectives (e.g. Clegg et al., 2002; Jarzabkowski and Lê, 2017).

According to Nicolini (2012), there is no singular, unified practice theory; instead, it comprises a family of theories with both similarities and differences. Therefore, rather than adhering strictly to a specific 'practice theory', the theoretical approach of this thesis builds upon the perspectives of process and practice. The appeal of a practice perspective *"lies in its capacity to describe important features of the world we inhabit as something that is routinely made and re-made in practice using tools, discourse, and our bodies"* (Nicolini, 2012, p. 2). The process perspective emphasizes the unfolding, dynamic nature of organizational activities, while a practice perspective recognizes that it is active work by individuals that maintain or disrupt the processes. Together, these perspectives offer a deeper understanding of how organizations are continuously shaped and reshaped. This theoretical approach of doing and becoming will now be applied to the relevant theoretical backgrounds of project organiz*ing* and strategiz*ing*.

Project organizing

The building of the pyramids and the Chinese wall, the American Apollo program, and the voyages of Colombus are classical examples of historical projects, often mentioned to illustrate that projects are an ancient form of organizing. The main features that define these undertakings as projects are their limitations of time and tasks (Sahlin-Andersson and Söderholm, 2002). Thus, project organizing can be understood as the *"assignment of responsibility to see that the task is fulfilled within the time specified and with the resources at hand"* (Lundin et al., 2015, p. 2).

The Scandinavian School of Project Studies emerged in the 1980s and 1990s in Scandinavian countries and Finland, integrating organization theory with project research (Jacobsson et al., 2016). This approach emphasized empirical research focused on the practical realities of project management, providing detailed insights into the dynamics within projects (Sahlin-Andersson and Söderholm, 2002). The Scandinavian approach contrasts with the more prescriptive and normative theories often found in mainstream project management literature by employing qualitative in-depth and comparative case studies.

Instead of viewing projects as systems, the Scandinavian perspective regards them as temporary organizations (Lundin and Söderholm, 1995; Packendorff, 1995). Traditional system-based project studies treat projects as 'goal-fulfilling subsystems' centered on planning and control (Packendorff, 1995). The Scandinavian approach, however, shifts the focus from optimization and best practices to understanding the realities within projects and their empirical contexts (Sahlin-Andersson and Söderholm, 2002).

Lundin and Söderholm (1995) proposed a sequencing model to conceptualize how temporary organizations evolve from creation to termination, offering a process-based understanding of projects rather than a static systems-based view. They also introduced four key concepts (see Table 1) to distinguish temporary organizations from permanent ones: *time*, *task*, *team*, and *transition*. Temporary organizations emphasize action and change within a defined time frame, challenging traditional views of organizations as stable and enduring entities. This framework prompted a reevaluation of organizational theories to account for the temporary nature of many organizational endeavors.

Bakker (2010) reviewed the body of literature on temporary organizations and excluded the concept of transition because *"there was relatively little literature that could be matched with Lundin and Söderholm's description of this concept"* (p. 471). However, Jacobsson et al. (2013) argued that the transition concept is more critical than initially suggested, advocating for a shift from a focus on time to an emphasis on transitions. The view of the temporary organization as a transitionary unit can therefore be considered as debated.

Following Engwall's (2003) seminal work, project scholars increasingly acknowledge the importance of linking project practices to their broader organizational environments. Projects are thus organizationally embedded and need to be studied in the light of their contexts. Parent organizations are permanent structures in the project's environment, where the client parent

Table 1: Lundin and Söderholm's (1995) basic concepts for the temporary organization.

CONCEPT	EXPLANATION
Time	*Time* is considered a critical aspect in temporary organizations, defining their duration and time horizon. The limited duration of temporary organizations fosters urgency and a focus on achieving specific goals within a set timeframe. Their lifecycle follows a linear path through distinct phases: initiation, execution, and termination, moving sequentially from start to end.
Task	The concept of *task* defines the specific goal that legitimizes the existence of a temporary organization. This task, focused on action, can range from unique, one-time projects to more standardized, repeatable activities. Unique tasks are single, goal-specific endeavors, while repetitive tasks involve similar projects executed multiple times.
Team	*Teams* in temporary organizations are formed around the task, assembled for the project's duration and disbanded upon completion. Team members have other organizational 'homes' before, during and after being involved in the temporary organization, bringing influences from these contexts into the temporary organization. This can lead to team members having conflicting interests and expectations.
Transition	*Transition* refers to the change or transformation that temporary organizations generate, central to their purpose. These organizations are established to achieve outcomes distinct from the current state, creating a qualitative shift from start to finish. The types of transitions vary, from incremental developments to radical changes.

organization governs and finances the project while the supplier parent organization provides it with human and material resources (Winch, 2014). Artto et al. (2008) highlighted the importance of recognizing that inter-organizational projects have more than one parent organization, which may have conflicting interests concerning the project. This implies tensions between the temporary organization and its permanent parent organizations (Burke and Morley, 2016; Stjerne and Svejenova, 2016; Geraldi et al., 2020), e.g. relating to autonomy versus embeddedness, learning and knowledge transfer, human resource management and resource dependence (Burke and Morley, 2016).

Project organizing involves the endeavor of a permanent (or at least more stable) parent organization trying to plan and oversee the execution of

another more temporary organization. However, viewing projects as temporary organizations recognizes that projects share characteristics with other forms of organizations. Even though many of the traditional project management tools aim to assist the project owner or manager in their planning of projects, the possibilities (and desirability) for successful planning can be questioned (Lundin and Söderholm, 1995; Packendorff, 1995). The challenges of planning a project depend on several factors, including the level of autonomy, complexity, the number of parent organizations, and the ambitions and experiences of the involved individuals. Even in repetitive projects, these factors vary, leading to uncertainty and making projects difficult to plan (Lundin and Söderholm, 1995; Packendorff, 1995).

Strategizing

Emergent strategies were recognized by Mintzberg (1978) as strategies that are not planned and are realized despite, or in the absence of, intentions (Mintzberg and Waters, 1985). In this process perspective on strategy, strategy is both something that the organization has – plans and intentions – and something that the organization does – behaviors and actions. Such a perspective acknowledges the possible gap between what is planned and what is realized. And it is this gap, and this relationship, between intentions and actions that are of interest to understand how strategies develop in organizations (Mintzberg and Waters, 1985).

Over the past three decades, strategy-as-practice has rapidly emerged as a prominent alternative to traditional strategic management. It arose in response to the top-down, static, and abstract approach to strategy. Rooted in the process tradition, strategy-as-practice emphasizes the practices occurring within organizational processes (Johnson et al., 2007), offering a more dynamic and practice-oriented view of strategy. Viewing strategy through a practice perspective, strategy consists of the actions of practitioners and the practices that they draw upon (Jarzabkowski et al., 2007). This perspective thus enables the study of strategy as the intended as well as emerged strategic activities (Vaara and Whittington, 2012).

In a practice perspective, strategy is viewed as a *"situated, socially accomplished activity"* (Jarzabkowski et al., 2007, p. 7) that members of an organization do, rather than something the organization has (Jarzabkowski, 2004; Jarzabkowski et al., 2007). Thus, strategy-as-practice focuses on the everyday actions through

which strategy is formulated and implemented. Strategizing encompasses all activities that *"lead to the emergence of organizational strategies, conscious or not"* (Vaara and Whittington, 2012, p. 287). This perspective highlights the importance of examining not only formal strategic initiatives but also informal, emergent practices that shape strategic outcomes. Strategy is not an abstract concept crafted exclusively by executives in boardrooms; rather, it emerges from the collective actions of individuals at all levels of the organization. From informal break room conversations to formal meetings, strategizing unfolds through a variety of situated actions.

Strategy is enacted through situated practices within micro-contexts, while being shaped by the broader macro-context that provides shared structures for action (Jarzabkowski, 2004). In the strategy-as-practice perspective, the micro and macro levels of strategy are seen as interrelated, connecting the actions of individuals with the larger organizational structures (Whittington, 2006; Vaara and Whittington, 2012). As actors engage in strategizing, they may adapt existing practices to fit the specific circumstances of their micro-context (Jarzabkowski, 2004). Thus, the strategy-as-practice perspective highlights the importance of understanding the context in which strategizing occurs.

Strategy is typically evaluated by how closely the outcomes of its implementation align with the original plan. However, it is also recognized that strategy implementation across different organizational levels involves inherent tensions (Weiser et al., 2020). This raises the question of whether strategy compliance should be the primary measure of success. From a practice perspective, the focus shifts away from a purely top-down view of strategy to acknowledging that successful implementation often requires local adaptations (Jarzabkowski et al., 2016a). This perspective suggests that some degree of misalignment between organizational-level strategy and operational-level execution may actually be necessary to enhance overall strategic performance (Jarzabkowski et al., 2016a). In order to understand the relationship between strategic intentions and enactment, it is necessary to explore the paradoxical tensions inherent in the implementation of strategy between different levels of an organization (Weiser et al., 2020), such as between parent and project organizations.

In project studies, researchers have argued for the need to reshape the view of projects; from being extensions of their parent organizations that simply obey and execute formal business strategies handed down from top management, to acknowledging projects as independent temporary organizations where strategies are more informally and unintentionally expressed and realized (Artto et al., 2008;

Söderlund and Maylor, 2012). Taking a practice perspective on projects does not mean dismissing that *"plans are a cornerstone of any project"* (Blomquist et al., 2010, p.11). In its contractual documents, an inter-organizational project's formal and explicit plan and expectations are set out in detail. These contractual documents of inter-organizational projects are a source of paradox, since this *"often very unclear paperwork"* (p. 592) is translated into complex project contexts (van Marrewijk et al., 2008). When the contractual documents do not align with the reality in the local context of the project, project managers need to improvise to move the project forward (Blomquist et al., 2010). Thus, in their praxis, the project managers adapt the top management's strategies (Jarzabkowski, 2004).

Project organizing and strategizing in construction

Acknowledging the 'theory of a temporary organization' as presented by Lundin and Söderholm (1995), time is a central concept in temporary organizing. However, in construction projects, delays are common (Zidane and Andersen, 2018; Johnson and Babu, 2020). This indicates that completing the client's requested task frequently takes precedence over adhering to the original timeline. Construction projects can thus become less temporary in order to succeed in completing the requested transition. This entails situations where the original procurement strategies are adapted to accommodate unforeseen delays, shifts in project scope, or evolving stakeholder needs.

Furthermore, procurement strategies may also be adapted by the project actors. In heterogeneous contexts like construction, implementing strategy across various interfaces, such as between parent organization level and project level, can be particularly challenging. Strategic efforts may face resistance from project actors who believe their context to be unique and incomprehensible to outsiders (Räisänen and Löwstedt, 2014). This raises the question of *"who is then to be considered a 'strategist' … ?"* (Löwstedt et al., 2018, p. 896): the individual formally assigned the role or the one empowered to strategize through their situated, context-specific knowledge?

Löwstedt and Sandberg (2020) explore how standardized work practices imposed by construction organizations are resisted by site managers in Sweden, who prioritize their professional autonomy and experiential knowledge. The study reveals that standardization efforts, aimed at increasing efficiency and consistency, often clash with site managers' preferences for flexibility, personal judgment, and adaptation to unique project conditions. In addition, Sandberg et

al. (2021) show how site managers reinforce flexibility from their parent organizations, enhancing their own control and authority in the projects.

An explanation for this behavior may be that the site managers perceive standardized procedures as restrictive and disconnected from project contexts, leading them to engage in informal practices that align more closely with their professional identities (Löwstedt and Sandberg, 2020). This highlights a recurring tension in construction projects between formal, top-down strategies and the adaptive practices of professionals who rely on tacit knowledge to meet project demands.

Four

RESEARCH METHODS

This chapter presents and discusses the research approach, process, and methods. It starts with a description of my research journey during my time as a PhD student. I then go on to explain my continuous literature review followed by a description of the two case studies that the research is based upon. The development and analysis of empirical material are described before the chapter ends with a discussion about research quality.

Research approach and process

My PhD journey began in August of 2018, two months after I earned my degree of Master of Science in engineering. My master's program focused on industrial design, with a specialization in production design, which meant that the construction context was very much new to me when I joined the research group of Construction Management and Building Technology. The research project that I became involved in was initiated to evaluate the experiences and effects of STA's implementation of new procurement strategies for collaboration in two of their road O&M projects. The new procurement strategies aimed to facilitate project-level innovation, allowing me to build upon the knowledge I had gained during my master's studies on how organizational aspects influence production-related aspects such as innovation potential. Later, in 2022, I had the opportunity to be involved in a second research project, exploring the implementation of a new collaborative contract model in STA's operation and maintenance of roads and railways.

Both of these research projects were part of the multidisciplinary research network ProcSIBE (Procurement for Sustainable Innovation in the Built Environment), in which a significant portion of the research has focused on various aspects of STA and its procurements. In addition to LTU, the network involves researchers from four other Swedish universities (KTH, Chalmers, Lund University, and Karlstad University), providing an environment to discuss procurement-related research from different perspectives with other PhD students as well as with senior researchers.

In my thesis work, I have embraced an emergent research approach, allowing the study to evolve organically in response to the findings that surfaced throughout the research process. Rather than adhering strictly to a pre-defined set of research questions or methods, I remained open and flexible, adjusting my focus and approach as new insights emerged from the field. When starting my PhD studies, I had no preexisting knowledge of infrastructure procurement or road operation and maintenance. Therefore, my initial aim was to understand the context of infrastructure operation and maintenance, both its public procurement strategies and the project-level practices. As my understanding of the context developed, I began to see differences and complexities between what was written in the projects' contractual documents, and the project actors' actions. This spurred an interest in adopting a practice perspective to enable an integrative view of public procurement, viewing it as both a planned process and an enacted practice.

To be able to draw upon a progressive research design with two case studies investigating two different efforts by STA to use collaborative procurement strategies to stimulate innovation has had a major impact on the development of my research approach. Since the two projects were set in the same context, there was no 'learning period' for me in the second research project. The approach has therefore been truly longitudinal as I have been able to study the procurement of infrastructure operation and maintenance in real-time throughout my PhD studies. Instead of getting 'snapshots' of ambitions, procurement designs, and end states, I have been fortunate to develop the empirical material across time in a continuous manner. This has been central in the development of this thesis' ontological position of doing and becoming, taking process and practice as the units of analysis.

Although the research has been empirically driven, I have consistently reviewed and compared my findings with relevant literature and analyzed them through appropriate theoretical frameworks. This process will be elaborated on in the next section.

Continuous literature review

The theoretical background of this thesis emerged from a literature review that I conducted continuously throughout my PhD studies. This review contributed to developing background knowledge on public project organizing and procurement and led to the formulation of the theoretical framework. My literature review primarily drew from research papers published in journals but also included conference proceedings, books by prominent scholars, EU reports, documents from the Swedish government and STA, other agency reports, and websites.

I identified and selected relevant literature through a combination of database searches, manual browsing of key journals, course literature, reference lists from relevant articles, and recommendations from my supervisors. The approach was intentionally emergent and flexible, allowing the review to evolve as the research progressed, rather than following a strict systematic review protocol. Instead of adhering to rigid inclusion and exclusion criteria, my search aimed to gather a wide range of perspectives and insights relevant to the research topic and theoretical approach.

The literature was organized thematically, with themes developing progressively as I reviewed the material. Rather than working within predefined categories, the themes emerged through an iterative process, as I identified patterns and connections across various studies.

Looking back on my research journey, I can identify five distinct phases in the continuous literature review, as outlined in Table 2. These phases are distinct due to the introduction of key themes, shaped by influential activities guiding my theoretical focus. In *Phase 1*, at the start of my PhD studies, I aimed to familiarize myself with the literature on procurement – a central topic for Case study 1 and one that I had not encountered during my master's studies. The initial focus on public procurement, collaborative procurement, and innovation procurement laid the groundwork for understanding the role of procurement in the context of the construction sector.

During *Phase 2* I took a course in innovation in projects and networks. While the course emphasized innovation, my key takeaway was the literature on temporary organizing. This became particularly relevant as it highlighted how O&M projects differed from new-build construction projects. This realization led me to write Paper 1, where I explored the interplay between temporary and permanent organizing in O&M projects.

During *Phase 3*, my attention shifted to inter-organizational collaboration, particularly within the realm of construction procurement. This change in focus was influenced by a course on construction procurement and inter-organizational relations. The course deepened my understanding of the complexities surrounding collaboration between client and contractors in public infrastructure projects, which became a key theme in Paper 2.

Phase 4 marked a deepening of my exploration into strategy-as-practice, project strategy, and construction innovation. This phase was shaped by a course on organization theory and the development of Paper 3, which focused on the strategic aspects of construction projects. In particular, I searched for literature that would help me understand how public procurement, through client-parent organization strategies, shapes collaboration and innovation within projects.

Finally, *Phase 5* introduced a focus on projects-as-practice and organizational paradoxes. This phase was influenced by the development of Paper 4 and my ongoing exploration of paradox theory, which provided a lens for analyzing the tensions inherent in public project organizing and project management.

Table 2: Introduction of key themes during the five phases of the continuous literature review

PHASE	KEY THEMES INTRODUCED	INFLUENTIAL ACTIVITIES
Phase 1	Public procurement Collaborative procurement Procurement of innovation	Starting PhD studies
Phase 2	Temporary organizing Projectification Project management of public infrastructure	Course in innovation in projects and networks Paper 1
Phase 3	Inter-organizational collaboration Project partnering Deliberate and emergent strategies	Course in construction procurement and inter-organizational relations Paper 2
Phase 4	Strategy-as-practice Practice theory Project strategy Construction innovation	Course in organization theory Paper 3
Phase 5	Projects-as-practice Paradox theory Organizational paradoxes	Paper 4

Case studies

The aim of this thesis is to increase the understanding of public procurement of continuous work and its enactment in inter-organizational projects. This focus on theory elaboration, rather than theory testing, made a case study approach particularly appropriate (Eisenhardt, 1989). Accordingly, the research design was structured to facilitate "*empirical impressions for novel thinking*" (Alvesson and Kärreman, 2011) and the empirical material for this thesis was gathered through two longitudinal case studies of STA's road O&M projects.

Context description

Currently, STA faces the necessity of enhancing both efficiency and innovation to address contemporary challenges and meet strategic objectives. Creating procurement strategies that enable suppliers to meet the agencies efficiency and innovation needs is strategically important for fostering a long-term sustainable transport system. In the area of operation and maintenance the goal is to find approaches that allow maintenance resources to be used more effectively.

STA oversees the maintenance of nearly 100,000 kilometers of public roads in Sweden, aiming to ensure safety and accessibility year-round. The Swedish public road system is divided into approximately 110 geographical areas, covering 550 to 1750 kilometers of road. Each geographical area is operated by a procured external contractor carrying out the O&M work, i.e. the O&M project. STA's road O&M projects are carried out through contracts that are four to six years long (four years with one or two option years) and include, for example, winter maintenance (e.g. snow ploughing), maintenance of paved and unpaved roads, and exchanging damaged road equipment. STA maintains strict quality standards, regularly inspecting contractors' work to ensure compliance with its national guidelines.

Since the early 2010s, a basic level of collaboration has been implemented in road O&M projects, intended to be applied across all STA projects. This collaboration model includes the formation of a document outlining common measurable goals, plans for the collaboration process, conflict management strategies, risk analysis, and continuous follow-up on the established goals.

Table 3: Case study overview.

	CASE STUDY 1	CASE STUDY 2
Main purpose	To evaluate the experiences and effects of STA's implementation of new procurement strategies for collaboration in two of their road O&M projects, by comparing these with two neighboring standard road O&M projects.	To evaluate the experiences and effects of STA's implementation of a new collaborative contract model in two of their road O&M projects, by comparing these with two neighboring standard road O&M projects.
Time of study	2018-2022	2022-ongoing
Projects included	Pilot project 1 Pilot project 2 Standard project 1 Standard project 2	Pilot project 3 Pilot project 4 Standard project 3 Standard project 4

Case selection

The case studies in this thesis (summarized in Table 3) investigated two distinct efforts by STA to enhance formal collaboration in its inter-organizational O&M projects beyond the basic level. By implementing new collaborative procurement strategies, STA wanted to develop the project-level collaboration with its contractors, aiming to improve efficiency and benefit innovation. In Case study 1, STA implemented an extended version of the basic collaboration model. In Case study 2, a new contract model was developed to enable early contractor involvement. Thus, the thesis is based on a longitudinal study of two iterations of STA's efforts to implement extended formal collaboration. An overview of the collaborative procurement strategies with its different collaboration models is compiled in Table 4.

Compared with single-case studies, multiple-case studies typically provide a more robust base for theory building, as they allow for comparison between different cases (Eisenhardt and Graebner, 2007; Yin, 2014). The cases of a multiple-case study should be literal or theoretical replications, meaning that they should be expected to produce similar or contrasting results (Yin, 2014). Similarly, Eisenhardt and Graebner (2007) write about including 'polar types' with anticipated high/low outcomes.

Table 4: Overview of the collaborative procurement strategies in the projects.

COLLABORATION LEVEL	FORMAL COLLABORATION ACTIVITIES	CASE PROJECTS
Basic collaboration	Joint goal management Joint risk management Joint conflict management Continuous follow-up	SP1, SP2, SP3, SP4
First effort with extended formal collaboration	Standard activities + Co-location Open books Collaboration workshops in the establishment phase	PP1, PP2
Second effort with extended formal collaboration	Two-phase contracting model with early contractor involvement. Activities include mutually agreed target cost and production plan. Possibilities to adjust STA's production requirements.	PP3, PP4

Following these recommendations, both case studies included both pilot projects and standard projects. The standard projects were selected based on their comparability to the pilot projects and their neighboring location, ensuring that contextual factors such as geographic, environmental, and regional influences were consistent across the cases. This enabled me to capture STA's increased strategies for collaboration and innovation in the projects, and the related project-level actions, compared to 'standard conditions' in the basic level. By studying both types of projects, the research can provide a comparative analysis that highlights differences and similarities in implementation processes, challenges faced, and outcomes achieved. This comparison is crucial for understanding the impact of the experimental nature of pilot projects versus the more traditional approach of standard projects.

Since the Swedish government has given STA directives to use procurement to increase innovation in the supplier market, the STA parent organization aims for an increased rate of innovation at the project level. To further develop innovation possibilities in its road O&M projects, the STA procured two 'innovation pilots' in the winter of 2017/2018. The innovation pilots were formulated by the STA to encourage project-level innovation through a new development-promoting procurement strategy.

Case study 1 includes two innovation pilot projects (PP1 and PP2) as well as two comparable standard road O&M projects (SP1 and SP2). The procurement

strategy for the innovation pilots incorporated three development-promoting elements:

1. An innovation bonus of up to 500,000 SEK per year, offered from the second year of the contracts.
2. A reward system combining a fixed price and cost reimbursement with a pain-share/gain-share arrangement linked to a target cost.
3. An extended version of STA's basic collaboration model, which includes co-location, open-book accounting, and collaboration workshops during the establishment phase.

Case study 2 includes the two pilot projects (PP3 and PP4) that were part of STA's second effort with extended formal collaboration, and also two comparable standard road O&M projects (SP3 and SP4). The focus of this case study is on evaluating a new collaborative contract model. The new contract model is structured in two phases: Phase 1, where the contractor is selected for a design phase to collaboratively develop both the contract contents and the preliminary cost estimate; and Phase 2, the execution. In the spring of 2021, PP3 and PP4 were procured as a pilot test for the application of this new contract model within STA's operation and maintenance.

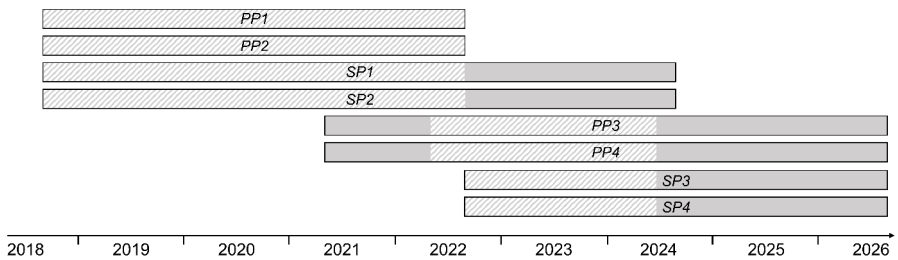


Figure 1: Timeline of the contract periods for each project. The periods marked with stripes represent the time of development of the empirical material.

Developing the empirical material

The research has been ongoing since 2018, enabling me to follow the O&M projects longitudinally in real time. The empirical material was gathered through interviews, observations, document studies, as well as through interactive

feedback. The timeline of the contract periods for each project and the time of development of empirical material is visualized in Figure 1.

The volume of empirical material differed between standard and pilot projects. The goal of developing empirical material in the pilot projects was to establish detailed documentation of processes and challenges related to the implementation of the new procurement strategies. Pilot projects are inherently exploratory and experimental. As such, they often require more intensive and frequent efforts to capture detailed insights into their implementation processes, early challenges, and iterative adaptations. This exploratory nature necessitates a deeper and more frequent engagement with participants, than what is required in standard projects. To achieve this, a comprehensive approach for developing empirical material was conducted. This included capturing real-time empirical material on the implementation processes, involving more frequent interactions and detailed observations than for the standard projects. Therefore, the main part of the observations was done in the pilot projects, focusing on formal collaboration workshops and meetings.

Conducting a longitudinal study allowed for the observation of relationships, as dynamic and evolving. Overall, the case studies has allowed me to immerse deeply in context and the developed empirical material, which is necessary to identify consequential everyday practice (Jarzabkowski et al., 2021).

Observations

The appended papers of this thesis are based on approximately 191 hours of observations, of which I have conducted 156 hours in both case studies, while my coauthor for Paper 4 contributed 35 hours in Case study 2. The observations have not been conducted during any specific, confined period, but has been ongoing over the years. The observations have focused on different types of important meetings. Applying a practice perspective, meetings are viewed as scenes of action (Nicolini and Monteiro, 2017), where strategies are enacted and negotiated in real time.

By attending various types of collaboration workshops and meetings, and regular site meetings, I had the opportunity to obtain firsthand insights into the everyday work of project actors and their enactment of the client's procurement strategies. Before Covid-19, I attended all meetings and workshops in person. After the pandemic many of the meetings could be attended online, and I therefore took the opportunity to participate in shorter collaboration meetings via Skype.

While conducting the observations, I took field notes by hand to record as much as possible of the events as they unfolded and my immediate reflections. I focused on capturing key aspects of interactions, including the behavior of participants, verbal exchanges, and non-verbal cues (such as gestures and body language). I made sure to note interesting quotes that could be elaborated on in interviews or used for illustration in writing processes. I also recorded contextual information, such as the physical environment of the meetings or workshops, who attended, and the atmosphere (e.g., formal or informal, tense or collaborative). Since most of the observations were done at collaboration workshops and meetings, much of the field notes captured different collaboration exercises, as the following representative example shows:

> *The participants were divided into two groups, with a mix of company affiliations ([the partnering facilitator] was very careful to divide the participants into 'new' groups to ensure a mix between [contractor] and STA and to make sure that everyone had worked with everyone). The exercise consisted of the participants discussing and presenting their ideas on the most important points from the previous kickoff meeting and identifying any uncertainties or questions that remained. Both groups identified that the most important topic from the previous meeting was understanding what collaboration actually entails. The uncertainties and questions of the groups included:*
>
> - *How to collaborate for everyone in the project? Not just those present at the meeting.*
> - *Who should be involved in the collaboration work?*

After each observation session, I took additional time to reflect on and expand my notes, adding interpretive comments, personal reflections, emerging questions, and preliminary analytical thoughts. I transcribed my notes digitally, organizing them under relevant headings. By recording both descriptive and reflective notes, my field notes not only documented the events, but also captured my evolving understanding of the observed events and practices.

In addition to the 156 hours of formal observations, I also had the opportunity to observe and participate in informal gatherings. I was invited to lunches and dinners in connection with the meeting observations, and also chatted with the participants during coffee breaks and car rides between sites. These settings offered a more relaxed environment, where participants often seemed more open, and candid compared to the formal meetings. During

meals, participants frequently discussed their work experiences with one another, sharing stories about past projects and reflecting on current challenges. During several car rides to and between project sites, I had the opportunity to engage in one-on-one conversations with various project actors. These moments provided insights into their perspectives, motivations, and concerns regarding the project. The relaxed atmosphere of the car rides encouraged informal reflections about the project's progress. Participants often articulated thoughts and feelings they might not have expressed in larger group settings.

I did not take field notes during these informal observations. Therefore, after each informal interaction, I took time to reflect on the conversations and experiences and to jot down key themes, quotes, and impressions while they were still fresh in my mind, which could look like this:

> *During the lunch I talked with [STA's regional manager]. I described Paper 4 and said that my view is that the projects in which the collaboration is considered as good, the project managers do deviations from the production requirements while the site manager is flexible regarding their pricings. [STA's regional manager] shared this view and added that the project managers don't want to disclose this – "they want to avoid drawing attention to the fact that they are not following proper procedures".*

In this study, observations have been crucial in enabling me to understand the practices and context of operation and maintenance. Without these observations, I might have assumed that project-level practices resulted directly from the procurement strategies, without any adaptations. By observing meetings and informal gatherings, I gained insights into how client and contractor project actors collaborate and enact the strategies of their parent organizations.

My participation in the various types of meetings has been dependent on the project managers or partnering facilitator inviting me. While this approach has generally worked well, there may have been meetings of interest that I was not invited to observe. This oversight can be attributed to my status as a non-project member, which led to instances where I was simply forgotten in the Outlook invitation. Additionally, on at least one occasion, I was not invited due to the sensitive nature of the meeting, which relates to my role as an outside observer. In that occasion, the client and contractor collaboration had turned to the worse. The client project manager thought that the presence of an outsider observing and documenting their actions would be too uncomfortable for the participants.

In all the O&M projects I have observed, I had the opportunity to introduce myself and explain my role in the meetings. During these observations, I sat at the same table as the project actors (when at in-person meetings) and participated in their 'check-in' and 'check-out' meeting activities. Consequently, it is safe to say that all other participants at the meetings were aware of my presence and the purpose behind it.

Interviews

Key topics that emerged during the observations were subsequently incorporated into the interview guides and explored further in interviews with respondents in both pilot projects and standard projects. All interviews were semi-structured, allowing respondents the flexibility to elaborate on their experiences. With permission from the respondents, the interviews were recorded and transcribed verbatim.

In total, I conducted 47 interviews out of which I drew on 34 in the appended papers. In these papers, I focused on interviews with project managers, site managers, and regional managers to gain insight into the strategic and organizational perspectives. Although the full set of interviews also included blue-collar workers, foremen, and other roles, I concentrated on managerial perspectives to better understand decision-making processes and the dynamics of project management in O&M contexts. These 34 interviews are summarized in Table 5, complemented by four interviews conducted by my co-author in Paper 4.

The interviews were divided into four rounds between 2018 and 2024. The first three interview rounds were conducted in Case study 1, and the 4th round in Case study 2. The first round of interviews focused on exploring the nature of O&M projects, including their content, organization, and complexity. Early in the research process, these projects were understood as a distinct type within the construction context, differing significantly from new-build projects. The aim was to uncover the unique characteristics of O&M projects, such as their ongoing nature, the specific challenges they present in terms of organizing, and how they require different governing and management approaches compared to new-build construction projects. This understanding provided a foundation for investigating how procurement and collaboration unfold in such projects.

The second round of interviews aimed to capture how the project actors approached collaboration and innovation within O&M projects, focusing on their enactment of the procurement strategies. The goal was to explore how the project

actors fostered collaborative and innovative practices, addressed challenges, and adapted their approaches to meet the unique demands of continuous work. This round provided insights into the collaborative processes that enabled or hindered innovation, as well as the tools and strategies used to implement new ideas within the constraints of O&M projects.

In the third round of interviews, the focus shifted to outcomes related to both collaboration and innovation in Case study 1. This included exploring the project actors' final reflections on their collaboration, the types of innovation introduced, the purpose behind these innovations, and how they were evaluated within the project context. The aim was to understand the tangible results of collaborative efforts and how innovation was measured in terms of its impact, relevance, and contribution to the success and development of the O&M projects.

Finally, the fourth round of interviews, the first one in Case study 2, focused on exploring the project actors' early experiences with the new contract model in PP3 and PP4, providing early insights into how the contract models shaped inter-organizational relationships, collaboration, and outcomes. Conducting interviews in SP3 and SP4 as well, allowed me to further explore the interplay of formal and informal collaborative mechanisms in road O&M projects.

*Table 5: Overview of interview rounds and respondents, *conducted by co-author in Paper 4.*

ORGANIZATION	PROFESSIONAL ROLE	PROJECT	LENGTH (MIN)
1st round of interviews: 2019-2020			
STA	1st regional manager	PP1 and PP2	30
STA	1st project manager	PP1	51
Contractor	Regional manager	PP1	56
Contractor	Site manager	PP1	30
STA	Project manager	PP2	32
Contractor	1st site manager	PP2	43
Contractor	2nd site manager	PP2	21
STA	Project manager	SP1	49
Contractor	Site manager	SP1	57
STA	1st project manager	SP2	49
Contractor	Site manager	SP2	55
2nd round of interviews: 2020-2021			

STA	2nd regional manager	PP1 and PP2	79
STA	2nd project manager	PP1	73
Contractor	Regional manager	PP1	126
Contractor	Site manager	PP1	63
STA	Project manager	PP2	82
Contractor	Regional manager	PP2	61
Contractor	Site manager	PP2	54
STA	Regional manager	SP1	48
STA	Project manager	SP1	41
Contractor	Regional manager	SP1	51
Contractor	Site manager	SP1	62
STA	Regional manager	SP2	40
STA	2nd project manager	SP2	38
Contractor	Regional manager	SP2	55
Contractor	Site manager	SP2	57
3rd round of interviews: 2022			
STA	2nd project manager	PP1	53
Contractor	Site manager	PP1	50
Client	3rd project manager (same as PM in SP1)	PP2	55
Client	Project manager	SP1	55
Contractor	Site manager	SP2	54
4th round of interviews: 2023			
Client	Project manager	PP3	70
Contractor	1st site manager	PP3	85
Contractor	2nd site manager	PP3	52
Client	Project manager	PP4	40★
Contractor	Site manager	PP4	49★
Client	Project manager	SP3	50
Client	Project manager	SP4	53★
Contractor	Site manager	SP4	37★

Document study

The documents included various kinds of texts related to STA's overall missions, organization, management, strategies, and directives. Additionally, I collected documents specifically related to the four projects, such as meeting protocols, specifications, procurement documents, and contracts. Meeting protocols from meetings I attended enabled me to verify details in my field notes, while protocols from meetings I could not attend offered retrospective insights into the activities and discussions that occurred.

The documents provided insights into the formal, explicit plans and expectations surrounding the projects. They shed light on the evolving priorities within STA and the formal collaborative structures within each project. The materials also helped shape my interview guides by identifying key themes and terminologies used by project actors. Furthermore, documents such as directives, contracts, reports, and organizational charts were useful in tracing how STA's collaboration and innovation goals were formalized over time and by which departments.

Interactive feedback

A fourth activity that I have been engaged in throughout the research process involves gathering interactive feedback from project actors and other STA representatives on both oral presentations and writing processes. Since starting my PhD studies, I have attended an annual research seminar where ProcSIBE (and other) researchers have presented their latest findings and recommendations to STA. These seminars have given STA representatives the opportunity to comment and discuss the findings.

During these years I have been involved in writing five reports to STA based on the findings in Case study 1 and 2. Each report was shared with STA representatives, who provided input and critiques, both through written comments and during discussions at steering group meetings for the research projects where the reports were presented. This feedback facilitated in refining our findings and research outcomes, and also served as a verification process, where the STA representatives had the opportunity to validate or challenge our interpretations, ensuring the findings resonated with their lived experiences and practical concerns.

Additionally, in December 2023, I presented my research and preliminary findings at a collaboration workshop in PP3. This meeting brought together key project actors, including the contractor, STA representatives, and several

subcontractors. During the presentation, I shared findings and conclusions from Paper 3, and early thoughts for Paper 4. This sparked a discussion between the contractor and STA representatives on innovation in O&M projects and on the framing of operation and maintenance work as projects. Their discussions offered important insights, which I included in the writing processes of these papers.

Overall, this feedback has been instrumental in shaping my research, as it not only facilitated dialogue with key stakeholders but also served as a means of co-creating the empirical material with them. By incorporating their insights, critiques, and suggestions, this activity allowed for a deeper understanding of the practical aspects of the research context and ensured that the findings remained relevant and grounded in the contexts of the project environment. Thus, this interactive feedback has been crucial in developing the empirical material.

Reflections on developing the empirical material

As Barley and Kunda (2001) caution, interviews alone may not fully capture what people actually do in practice. To address this limitation, I also relied on observations, focusing on observed patterns and documented practices to gain a more comprehensive understanding of the processes at play. This combination of methods balanced the strengths of capturing participants' interpretations with a broader view of how activities and interactions unfold. Additionally, the document analysis framed these enactments within broader organizational and strategic contexts. Thus, the findings reflect not only observed and reported practices but also the interpretative act of stitching together these diverse sources into a coherent view of practice in the context of infrastructure operation and maintenance.

While my observations were crucial for understanding O&M work and the collaboration between client and contractor project actors, they may not fully reflect the depth and fluidity of everyday practices. A more embedded, ethnographic style of engagement could have allowed for an even closer study of these micro-level practices and the subtleties of interaction that are harder to observe in periodic or formal observation settings.

Analyzing the empirical material

Table 6: Overview of case projects included in the papers.

	PP1 & PP2	SP1 & SP2	PP3 & PP4	SP3 & SP4
Paper 1	✓			
Paper 2	✓	✓		
Paper 3	✓	✓		
Paper 4	✓	✓	✓	✓

The process of developing and analyzing the empirical material followed an iterative approach, where the empirics were developed and analyzed simultaneously. Throughout the research, I revisited the same empirical material multiple times, applying different theoretical and conceptual frameworks. Each iteration highlighted new aspects of the developed material. See Table 6, for an overview of which case projects were included in each paper.

The analysis of the empirical material employed throughout the studies follows the 'narrative strategy' outlined by Langley (1999). Consequently, I constructed chronological narratives for the eight projects under study, drawing from the interview transcripts, field notes and document material. These narratives were detailed, offering 'thick descriptions' of the projects. This process was continuous, capturing the projects as they evolved.

As the amount of empirical material differed between the standard and pilot projects, the level of detail of chronological narratives varied. According to Langley (1999) the approach of constructing narratives for analyzing the empirical material, is suitable when having one or few cases, this was handled by allowing the level of detail to differ between standard and pilot projects. The approach of chronological narratives is useful as an initial step in the analysis (Langley, 2009). However, since these chronologies became quite descriptive and detailed, further analytical steps were needed to produce overarching themes from the empirical material. This process differed between the four appended papers.

In *Paper 1*, a deductive approach was employed to examine the relationship between O&M projects and short-term projects. I applied Lundin and Söderholm's (1995) framework, which distinguishes between temporary and permanent organizations by focusing on the key themes of time, task, team, and transition. These themes were used to differentiate the temporary and permanent aspects of project organization within the O&M projects. Paper 1 provided the

thesis with a crucial contextual understanding of the organizing of infrastructure operation and maintenance. It highlighted the unique characteristics of O&M projects, such as their cyclical and repetitive nature, which differentiates them from new-build construction projects. This contextual backdrop enabled subsequent analyses on procurement strategies and inter-organizational collaboration, in Paper 2, Paper 3 and Paper 4.

The analysis for *Paper 2* followed an abductive approach, involving iterative cycles between the empirical material and the relevant literature. For Paper 2, this literature centered on both formal (engineered) and informal (emergent) collaboration, and the analysis focused on how both these sides of collaboration were practiced in the O&M projects. The empirical material was categorized according to formal and informal aspects of collaboration, as recognized in the literature.

In *Paper 3*, an inductive approach was taken, prioritizing the development of insights directly from the empirical material. This approach allowed for the exploration of discrepancies between clients' pursuit of innovation and its enactment at the project level, without relying on predefined themes or categories.

The analysis for *Paper 4* was abductive, relying on literature on strategizing in project-based contexts, and on organizational paradoxes. The analysis focused on how project managers and site manager navigate formal contractual documents while adapting to the specific demands of the project context.

For the compilation of this thesis, the empirical material from these four papers has been integrated into a cohesive reasoning focusing on how procurement strategies influence the organizing of inter-organizational infrastructure O&M projects. Examining procurement through the lenses of project organizing, collaboration, client intent, and practical project management challenges, enables this thesis to provide a nuanced understanding of the public procurement strategies and their enactment in infrastructure O&M projects.

Each appended paper offers insights that support the thesis's aim, allowing for an analysis of public procurement within the realm of continuous and inter-organizational O&M work. Table 7 provides an overview for understanding the alignment between the overarching aim, the specific research questions, and the contributions of the appended papers. In addressing RQ1, Papers 1 and 3 make significant contributions, with Papers 2 and 4 offering additional insights. The alignment of these papers with RQ1 highlights the ways in which each study examines the organizing and continuity of O&M projects. Together, these insights contribute empirical findings that enable this thesis to answer RQ1.

Papers 2, 3, and 4 primarily address RQ2, delving into the collaborative processes that facilitate the enactment of procurement strategies. While Paper 1 offers some relevance to RQ2, it is more peripheral, providing contextual understanding rather than directly addressing collaborative enactment.

Even though the empirical material also included findings concerning the contractors' strategies related to procurement, the analysis has been intentionally limited to the perspective of the client's procurement strategies. This focus allows for a clearer examination of how public clients strategies are enacted in practice and how they shape inter-organizational relationships. The insights from contractors serve to support the understanding of how these strategies are enacted in practice, but the primary analysis remains centered on the client parent organization's approach to procurement. By anchoring the analysis within the client's perspective, the thesis emphasizes the role of public procurement as a tool for collaboration and innovation, while acknowledging that contractors' responses are crucial to fully understand the enactment in the inter-organizational projects. This approach thus provides a structured yet multidimensional view of a public client's procurement strategies in the context of infrastructure operation and maintenance.

Table 7: Relationship between aim, research questions, and appended papers.

AIM	RESEARCH QUESTIONS	APPENDED PAPERS			
		1	2	3	4
Increase the understanding of public procurement of continuous work and its enactment in inter-organizational projects.	RQ1: How are infrastructure O&M projects organized through procurement of continuous work?	✓	(✓)	✓	(✓)
	RQ2: How are procurement strategies enacted through collaboration in inter-organizational infrastructure O&M projects?	(✓)	✓	✓	✓

Research quality

Embarking on an emergent research approach came with its share of uncertainty and hesitation. This open-ended method meant I had no clear sense of what I might uncover or where the process would ultimately lead. However, it also

allowed me to explore uncharted theories and raise new questions. My lack of prior experience in the fields of construction and infrastructure procurement proved to be an advantage for this exploratory research design, as I approached the field without preconceived notions about potential research problems. This openness enabled me to challenge assumptions in the existing literature, potentially contributing to meaningful theoretical developments (Alvesson and Sandberg, 2011).

However, it is also important to recognize that this process was not entirely unrestricted and free. Throughout the research, I worked closely with supervisors who provided feedback, shared preferences, and at times held differing viewpoints, all of which shaped the direction of my work. Additionally, the project was anchored in initial funding applications, which included commitments and expectations regarding certain thematic areas and research questions. These structured elements provided valuable guidance and boundaries, helping to ensure that the research remained relevant and aligned with anticipated objectives, while still allowing room for exploratory insights. The conclusions of this thesis, therefore, reflect both the benefits of an open-ended approach and the influence of collaborative guidance and funding expectations, balancing freedom with a degree of structured focus.

Flyvbjerg (2006) argues that the ability to generalize findings from case studies depends on selecting cases that hold *"strategic importance in relation to the general problem"* (p. 229). In this research, the emergent nature of the study aligns well with Flyvbjerg's argument, as the research questions and problems were not fixed from the outset but instead evolved in response to insights generated through the case studies themselves.

The longitudinal nature of the study allowed for prolonged engagement with the research context and participants, fostering trust and enabling a deeper understanding of the setting. This extended involvement facilitated the development of rich, in-depth empirical material. As I conducted interviews within this increasingly familiar context, respondents were able to provide more detailed information, often referring to meetings and events they knew I had observed. I believe that this growing familiarity greatly enhanced the quality of the developed empirical material.

Including both pilot and standard projects enriches the empirical material, providing a more robust foundation for analysis (Eisenhardt and Graebner, 2007). This diversity of sources allows for a deeper and more nuanced understanding of the organizational context. To enhance the credibility of the study, triangulation of empirical sources was applied (Miles and Huberman, 1994), including semi-

structured interviews, participant observations, and document analysis. Triangulation helps to corroborate findings and provides a more comprehensive understanding of the research phenomena, reducing the impact of confirmation bias.

Throughout my research, I have discussed the findings in detail with practitioners, taking the opportunity to get feedback from informants, which can be considered a method for confirming findings (Miles and Huberman, 1994). These interactions have occurred in various formats with project actors as well as with individuals belonging to the central parts of STA. During my observations I have taken the opportunity to discuss findings with the project actors from both client and contractor organizations, either strictly informally during lunches and dinners, or in a more formal way through meeting presentations followed by discussions. The emerging findings have also continuously been presented to the steering group and project groups of the two research projects. This process helped verify the accuracy of the interpretations of the empirical material and ensured that the findings genuinely reflected participants' experiences and perspectives.

In addition, I regularly engaged in discussions with peers and supervisors to gain diverse perspectives and challenge subjective interpretations. This provided an opportunity to challenge assumptions and interpretations, reducing researcher bias and enhancing the credibility of the findings (Miles and Huberman, 1994).

Five

SUMMARY OF APPENDED PAPERS

In this chapter, the four appended papers are summarized. The summaries include the purpose of each article, followed by a description of which case studies and projects that the article's empirical material is based upon. The methods are also described in terms of what they aimed to capture. Then, the findings and overall contributions, for both literature and this thesis, are presented.

Paper 1

Temporary and permanent aspects of project organizing: Operation and maintenance of road infrastructure

The purpose of this paper was to explore the interdependencies between temporary and permanent aspects of project organizing and how these affect the management of public infrastructure O&M work.

The article was based on empirical material developed during the first two years in the two innovation pilot projects of Case study 1. In this paper, the collaborative procurement strategies of the innovation pilot projects were not interesting per se. Rather the methods aimed to capture STA's project organizing of infrastructure operation and maintenance through procurement.

This article draws upon Lundin and Söderholm's (1995) demarcations between temporary and permanent organizations. Instead of using the four

themes of time, task, team, and transition to separate temporary and permanent organizations, the themes were used to distinguish temporary and permanent aspects of project organizing.

The paper identifies a strong mix of both temporary and permanent aspects within the O&M projects. While the projects are time-limited, they lack distinct phases between initiation and termination, resembling a more permanent organizational structure. The tasks within O&M projects are highly repetitive and standardized, which makes them more characteristic of a permanent organization than the unique, one-off tasks typical of temporary projects. Despite the time-limited contracts, the teams are often consistent across multiple project cycles, leading to a more permanent team structure and creating long-term collaborative relationships. The projects aim to preserve the road network rather than transform it, limiting the extent of transition, a key feature of temporary organizations. However, the introduction of innovation pilot projects reflects some attempts at creating transitions in practices and processes.

Thus, the findings show how project organizing within a projectified public infrastructure sector results in a mixture of interdependent temporary and permanent organizational aspects. Table 8 illustrates the temporary and permanent aspects of project organizing found in the O&M projects.

The paper contributes to the literature on project management by highlighting the existence of significant permanent aspects within projects traditionally considered temporary. It challenges the traditional demarcations between temporary and permanent organizations and emphasizes the importance of recognizing these interdependencies in O&M projects. The study broadens the theory of temporary organizations by showing that even projects with time-limited contracts can exhibit long-term, repetitive tasks and stable teams, which are more characteristic of permanent organizations. This offers a more nuanced understanding of public sector projectification, particularly in the context of infrastructure operation and maintenance.

The paper contributes to answering the first research question by showing how the procurement of repetitive O&M contracts creates a blend of temporary and permanent organizing. This procurement approach leads to time-constrained contracts with stable standardized tasks, the possibility of stable client-contractor relationship, and limited transitions, emphasizing the long-term, process-like nature of O&M work rather than the unique, transformational aspects of typical projects. This demonstrates how procurement of continuous work influences the organizing by combining temporary and permanent characteristics within time-constrained projects.

This paper established an understanding of the context for infrastructure operation and maintenance, which was essential for the development of the subsequent papers.

Table 8: Temporary and permanent aspects of project organizing in infrastructure O&M projects.

	TEMPORARY ASPECTS	PERMANENT ASPECTS
Time	Time-limited contracts (4-6 years) Phases at the start and finish of the project	No phases in the ongoing 'production' of the project Formed around the calendar year No final deadline: continuous maintenance work throughout long infrastructure lifecycles (80–120 years)
Task	The maintenance projects include some tasks which can be considered small projects	Repetitive and non-unique tasks, performed in the same way in all maintenance projects Ongoing process The main tasks cannot be completed Long-term expectations and goals
Team	Cross-functional team with complementary competences Participants who are not located full-time at the site office have other 'homes'	The contractors' staff located at the site office do not have other 'homes' The project team may participate in multiple projects Participants are often familiar with each other's skills
Transition	None	No transformation as a result of the project: the product should be preserved

Paper 2

Engineered and emerged collaboration: Vicious and virtuous cycles

The purpose of this paper was to study how engineered (formal) and emerged (informal) collaboration interplay in inter-organizational projects by identifying formal and informal collaborative practices.

This paper was based on empirical material developed during the first three years in all four projects included in Case study 1. Including the two standard O&M projects as well as the innovation pilot projects, enabled a comparison between formal and informal collaborative practices.

The study identifies that the interplay between formal and informal collaborative practices leads to either virtuous or vicious cycles. The public client's procurement practices comprise the deliberate strategies for the inter-organizational relationship. In projects with strong informal relationships, these formal mechanisms supported collaboration, creating virtuous cycles. In contrast, projects lacking these informal bonds experienced collaboration difficulties, leading to vicious cycles. Practices such as co-location, open books, and collaboration workshops were found to be important formal practices that support informal interactions and build trust. Informal practices, like personal relationships, trust, and shared values between project managers, were key drivers for collaboration, especially in long-term, successive projects like operation and maintenance.

This paper contributes to the literature on construction collaboration by illustrating how formal and informal collaborative practices interact cyclically, influencing project outcomes. It offers detailed empirical examples of how virtuous and vicious cycles emerge in infrastructure projects, showing that both engineered and emerged practices are essential for long-term collaboration. The study also highlights the importance of combining formal tools with strong informal relationships for good inter-organizational collaboration, expanding the understanding of collaboration dynamics in public procurement contexts.

The paper contributes to answering the second research question by demonstrating how formal (engineered) procurement strategies, such as co-location and open books, are enacted through their interaction with informal (emerged) practices like trust, personal relationships, and shared values. It shows that formal strategies alone are insufficient for successful collaboration; their effectiveness depends on how they interplay with informal practices at the project

level. This underscores the importance of adapting formal strategies to local project contexts, offering insights into how procurement strategies evolve through both formal and informal collaborative mechanisms.

This paper paved the way for how I look upon formal and informal mechanisms, and the importance of their interrelatedness. With this paper, a practice perspective was chosen for this thesis, to capture and highlight human action.

Paper 3

Public clients pursue innovation, but what's going on at the project level? A case study of infrastructure operation and maintenance

The purpose of this paper was to bridge the gap between societal macro-level calls for innovation and micro-level enactment in inter-organizational projects. The study focuses on understanding the discrepancies between innovation strategies promoted by public clients, such as the Swedish Transport Administration, and the actions taken within specific projects to implement those strategies.

This paper was based on empirical material developed throughout Case study 1 in all four projects. By including both the two innovation pilot projects and the two standard O&M projects, we could observe how STA's increased formal intent for innovation was perceived and enacted at the project level.

The directives of the EU influence the policies and the decisions of the Swedish government, which in turn affect STA's formal innovation strategies. Because of the macro-level calls for innovation by the EU and the Swedish government, the STA has developed strategies to promote innovation in the supplier market.

The research identifies a gap between the macro-level calls for innovation from public clients and the actual micro-level enactment of these innovation strategies in projects. The paper identifies several discrepancies between the public client's macro-level innovation goals and the project-level execution of those goals. This includes inconsistencies in how innovation is defined, assessed, and rewarded. At the project level, reasons for these discrepancies were identified as project actors had a hard time understanding what innovation actually meant in operation and maintenance due to the characteristics of their everyday work.

This disconnect can lead to project-level failures in innovating for long-term development. The study emphasizes the need for public clients to align their procurement strategies with the practices and contexts at the project level. This alignment is crucial for effectively translating macro-level innovation intents into actionable outcomes.

The paper contributes to the literature on public procurement and construction project management by providing a project-level perspective on how innovation is enacted in O&M projects. It highlights the importance of aligning procurement strategies with both macro-level innovation goals and the everyday practices at the project level. By adopting a strategy-as-practice perspective, the study contributes to the understanding of how public clients' innovation strategies are adapted through collaboration in inter-organizational projects. It also underscores the need for more coherent innovation-promoting measures that account for the specific challenges of O&M projects.

This paper contributed to answering the second research question by revealing how public procurement strategies aimed at promoting innovation are interpreted and adapted by project-level actors. It shows that despite top-down innovation goals from public clients, such as the Swedish Transport Administration, the enactment of these strategies at the project level faces barriers, including strict contractual requirements and budget constraints. The findings highlight how the dynamic between public and private actors plays a crucial role in the enactment of innovation strategies, handling the gap between macro-level goals and micro-level contexts.

This created an interest to understand *how* the inter-organizational project actors implement and adapt the procurement strategies of their parent organizations, hinting at the importance of collaboration between the project managers and site managers. This provided the rationale for Paper 4.

Paper 4

Wiggle room in practice: Project managers navigating paradoxes through collaboration

The purpose of this paper was to understand how project managers and site managers navigate paradoxes in inter-organizational projects. The focus is on how these managers respond to conflicts between contractual documents and local project contexts through collaborative practices.

The study explores paradoxes faced by the project managers and site managers in eight O&M projects involving STA as the public client, and private contractors. The article was based on empirical material from all projects included in both case studies after the completion of Case study 1, and two years into Case study 2. Including standard projects as well as all pilot projects enabled exploring the project managers' informal collaborative practices in three different levels of the client's formal collaboration.

By applying a practice perspective, the study investigates both formal and informal collaboration, analyzing how contractual 'wiggle room' allows project managers to negotiate and manage contradictions between organizational-level strategies and project-specific contexts. The study identifies two key paradoxes: project managers' paradox: Balancing adherence to standardized production requirements versus flexibility to adapt to the local context. And the site managers' paradox: Balancing profit (from tactically priced contracts) versus delivering quality.

The findings of this paper suggest that project managers practice contractual wiggle room to informally negotiate with site managers. When the client project managers allowed flexibility in the requirements, the contractors were open about their pricing tactics. However, when the public client increased its formal collaborative activities, the informal collaborative practices became unbalanced and disrupted. These findings suggest that public clients should develop procurement strategies that allow project-level collaboration practices to evolve.

The paper contributes to the literature on inter-organizational project collaboration and public procurement by highlighting the importance of informal collaborative practices in managing paradoxes. It challenges the assumption that formal collaboration strategies alone can resolve project-level tensions, emphasizing that successful project management in public procurement contexts requires a balance of formal and informal collaboration. Moreover, the study provides insights into how project managers adapt strategies to reconcile the often-conflicting demands of their parent organizations and the local project context.

This paper contributes to answering the second research question by demonstrating how procurement strategies are enacted through a blend of formal and informal collaboration in inter-organizational infrastructure projects. It shows that public procurement strategies, such as contractual requirements and formal collaboration tools, shape project interactions, but that informal practices, like contractual wiggle room, play a critical role in negotiating conflicts between these formal strategies and local project contexts. The

findings highlight that collaboration is not only determined by top-down procurement strategies but also evolves through everyday interactions between project managers and site managers.

Six

DISCUSSION

This chapter provides a discussion of the findings of the appended papers, in relation to the two research questions that this thesis aims to answer. First, the answer to RQ1 is discussed, describing the procurement of continuous work. Then RQ2 is answered, describing how procurement strategies are enacted through inter-organizational collaboration.

Procurement of continuous work

To explore how the organizing of operation and maintenance is formed through procurement, this first section of the discussion aims to answer the first research question:

> RQ1: How are infrastructure operation and maintenance projects organized through procurement of continuous work?

To address this research question, the discussion will focus on three key areas: *Project organizing of operation and maintenance*, *Temporary and permanent organizing*, and *Procuring for change in operation and maintenance.*

Project organizing of operation and maintenance

The research presented in this thesis draws on empirical material developed from eight O&M projects, all procured by STA. Given the continuous nature of O&M

work, these projects are procured through a successive, time-constrained format – in this thesis referred to as procurement of continuous work. Paper 1 was developed to deepen the understanding of the unique context of O&M projects, by drawing on Lundin and Söderholm's (1995) framework, differentiating between temporary and permanent forms of organizing. The findings from this paper reveal that O&M projects include both temporary and permanent organizational aspects, concurring with prior research noting that there are projects that do not fit into Lundin and Söderholm's original framework (Karrbom Gustavsson and Hallin, 2015). Paper 1 shows how this dual nature is due to the continuity of operation and maintenance, which is managed through successive, time-constrained contracts. Consequently, each contract period becomes an inter-organizational project designed to deliver uninterrupted service of the road network.

Due to the long-term and continuous characteristics of project organizing of operation and maintenance, it is valuable to differentiate these projects from new-build construction projects. In a new-build construction project, project actors are assigned the responsibility to complete a specific task within a specified timeframe (Lundin et al., 2015). In these projects, time is viewed as linear, with the project progressing from phase to phase, from creation to termination (Lundin and Söderholm, 1995). Delays in these projects are common (Zidane and Andersen, 2018; Johnson and Babu, 2020), as task completion often takes precedence over adhering to deadlines. However, in O&M projects, time plays a fundamentally different role. Failure to start an O&M project on time would result in gaps in the operation and maintenance of critical infrastructure, potentially leading to disruptions in societally essential services.

The aim of a new-build construction project is to fulfil and thereby complete a task. However, in the infrastructure O&M projects, the task cannot be completed in the traditional sense. Instead, the findings in Paper 1 show how the objective is to continuously uphold an assigned level of task fulfilment. In the studied O&M projects, the overall task was to preserve the standard of the road network in the assigned geographical area. This overall task could be broken down into smaller tasks related to, for example, the current season, weather conditions, and traffic accidents. Consequently, fulfilling the task is not a linear process. Project performance can fluctuate, and poor management can even lead to a decline from optimal performance levels. The relationship between task fulfilment and time is visualized in Figure 2. For new-build construction projects, the concept of transition (Lundin and Söderholm, 1995; Jacobsson et al., 2013) is

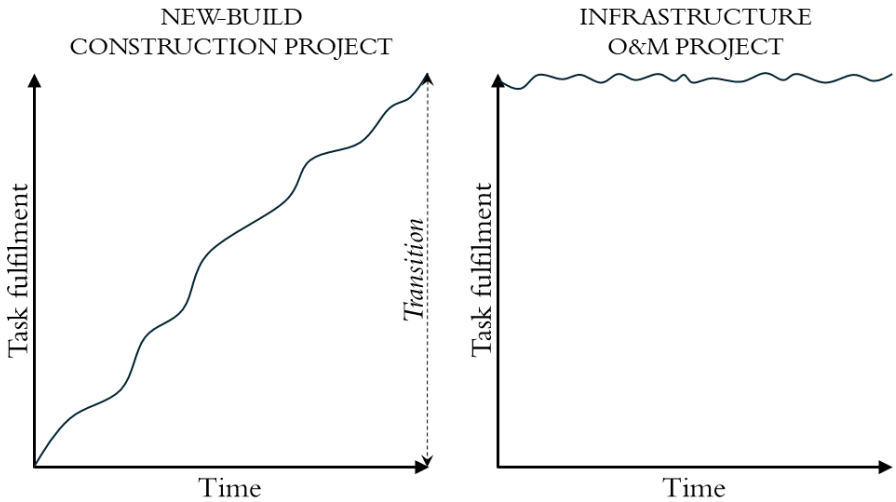


Figure 2: Time and task fulfilment in new-build construction projects and infrastructure O&M projects.

also included. In the debate on whether transition is central to temporary organizations (Bakker, 2010; Jacobsson et al., 2013), infrastructure operation and maintenance contribute a non-transitional project form. This continuous nature of O&M work challenges a view of temporary organizations as units marked by distinct transitions, suggesting instead a more fluid approach to project organizing.

Temporary and permanent organizing

Paper 1 illustrates that O&M projects exhibit both temporary and permanent aspects of organizing. Prior research has identified tensions between temporary organizations and their surrounding permanent organizations, particularly in areas such as autonomy versus embeddedness, learning and knowledge transfer, human resource management and resource dependence (Burke and Morley, 2016). These organizational tensions are commonly found between projects and their parent organizations, such as between the O&M projects and their client and contractor parent organizations. However, the findings from Paper 1 reveal that tensions between temporary and permanent aspects of organizing can also exist within the O&M projects themselves.

This dual nature of O&M projects reflects the broader phenomenon of 'projectification' (Midler, 1995), which has transformed routine, ongoing tasks into project-based activities in both public and private sectors (Godenhjelm et al.,

2015; Schoper et al., 2018). Despite the continuous nature of infrastructure operation and maintenance, these activities are increasingly structured as projects, raising questions about the broader implications of public sector projectification. The trend of projectification signifies an empirical shift in the nature of 'project organizing' advocating for a view of projects as pluralistic and dynamic rather than rigidly defining what they are and are not (Jacobsson et al., 2015). The projectification of the public sector, as studied in prior research (Fred, 2015; Godenhjelm et al., 2015; Jacobsen, 2022), has typically focused on intra-organizational projects. However, the findings from this thesis demonstrate that public project organizing also occurs in inter-organizational contexts when continuous work is procured, such as in O&M projects. While the time-constrained nature of O&M work may not fit the traditional project model, it is crucial to recognize that the actions undertaken by STA do constitute a form of public project organizing.

O&M projects exemplify the growing diversity of what constitutes a 'project' (Lundin et al., 2015; Lundin, 2016); rather than adhering to traditional notions of clear beginnings and endings, these projects demonstrate how project-based structures can adapt to fit more continuous, repetitive, or maintenance-oriented tasks. As such, the projectification of O&M work suggests a redefinition of project boundaries, challenging established views on the temporality and uniqueness of projects and further expanding the project management discipline's scope.

A project's parent organizations are usually considered as permanent structures (Winch, 2014). However, this permanency can certainly be discussed. In the case of STA, its role as a public client of infrastructure O&M projects is not static. As shown by this thesis in general, and Papers 2, 3, and 4 in particular, STA is using pilot projects with increased formal collaboration to stimulate innovation in road operation and maintenance. These pilot initiatives serve as testing grounds for new procurement strategies. Through these efforts, STA is actively reshaping its approach to governing and managing long-term infrastructure projects. This evolution challenges the assumption that parent organizations in projects are stable, permanent entities. Instead, STA's experiments in pilot projects, shows how it is continuously adapting. Thus, the supposed permanency of STA, and other public construction clients, is not as clear-cut, as its roles and structures are actively evolving in response to both internal ambitions and external pressures, further underscoring the dualities present in the procurement of continuous work.

Procuring for change in operation and maintenance

Public procurement is recognized as a strategic tool that plays a crucial role in societal development, addressing global challenges such as climate change (OECD, 2023). To drive this societal development, public procurement is increasingly recognized as a key mechanism for encouraging innovation and development. Prior research has concluded that general public procurement can be used as a strategic tool to drive change and innovation (Edler and Georghiou, 2007), which has also been shown by previous research on public construction procurement (Blayse and Manley, 2004; Eriksson, 2017; Hedborg Bengtsson et al., 2018; Carbonara and Pellegrino, 2020). Following this line of research, Paper 3 investigated the project-level enactment of STA's pursuit of innovation.

The findings from Paper 3 reveal inconsistencies between the public client's procurement and control strategies, and the project-level practices. These discrepancies led to conflicts between the public client's pursuit of societally important innovation and the more reactive practices occurring at the project level. Paper 3 shows how public clients may have broad, ambitious definitions of innovation that encompass various improvements and new practices, while project actors tend to interpret innovation more narrowly, focusing on immediate and practical changes. This aligns with previous research that highlights gaps between proactive innovation at the organizational level and reactive innovation at the project level (Eriksson et al., 2017). Thus, Paper 3 provides a deeper understanding of the complexity of using public procurement for development (Håkansson and Axelsson, 2020).

Larsson et al. (2022) found that while long-term maintenance responsibilities can motivate contractors to explore sustainable solutions early in a project, traditional delivery models tend to encourage incremental innovations with effects limited to the project level. The findings of Paper 3 concur with this, and add that how innovation is defined, assessed, and rewarded, also contribute to discrepancies between parent organizations' calls for broader innovation, and the project-level focus on project-specific development. Additionally, Paper 4 identifies that the O&M project actors experience the production requirements as too rigid, which could also be part of the explanation for difficulties for larger innovations at the project level (Blayse and Manley, 2004; Ingemansson Havenvid et al., 2016; Ozorhon et al., 2016).

While prior research has largely focused on how public clients pursue innovation in response to broader societal challenges, Paper 3 shifts focus to the project level, highlighting the potential for public construction clients to foster

incremental, reactive innovations through procurement. As Loosemore (2015) noted, construction is indeed an innovative sector if taking into account the everyday problem-solving activities going on at the project level. In continuous work such as operation and maintenance, public clients have the opportunity to leverage incremental project-level developments in their procurements. Paper 3 thus suggest that public clients could pursue change and address societal challenges through utilizing their role as repeat clients, by adapting and developing their procurement strategies in response to project-level practices of innovation. While public clients are increasingly expected to leverage their purchasing power to oblige private actors to contribute to public objectives (Grandia et al., 2023), the findings of Paper 3 highlight the possibility of public construction clients procuring continuous work to contribute to public objectives by leveraging incremental project-level innovations.

One of the challenges public construction clients face is integrating long-term goals with projects that typically focus on short-term deliverables (Hodgson et al., 2019; Kuitert et al., 2019). However, in O&M projects, public clients are presented with an opportunity to incorporate long-term objectives due to the continuous nature of the work. Because the goals of O&M projects are inherently long-term – focused on maintaining infrastructure standards over time – the potential for balancing immediate project goals with broader societal impacts is greater than in new-build construction projects.

Paper 3 agrees with prior literature noting that procurement strategies have the potential to incentivize innovation (Blayse and Manley, 2004; Eriksson, 2017; Hedborg Bengtsson et al., 2018; Carbonara and Pellegrino, 2020), but, emphasizes that public clients must align their control and follow-up tools with their long-term societal goals. These findings underscore the need for public clients to adjust their formal strategies to accommodate ongoing project-level activities. To effectively drive innovation, Paper 3 suggests that public clients need to ensure their procurement strategies are closely aligned with actual project needs and practices. Public clients must grasp how their strategies impact project execution and outcomes by assessing how procurement strategies translate into real-world practices.

Procurement enactment through collaboration

To understand how the public construction client's procurement strategies for continuous work are enacted in the inter-organizational O&M projects, this section will address the second research question:

> RQ2: How are procurement strategies enacted through collaboration in inter-organizational infrastructure operation and maintenance projects?

To answer this question, the discussion will focus on three key areas: *Project-level enactment of procurement strategies*, *Balancing formal and informal collaborative practices*, and *Flexibility in procurement implementation*.

Project-level enactment of procurement strategies

In Europe, public clients play a complex and pivotal role in translating EU and national directives into actionable project-level outcomes. However, as highlighted in Papers 2 and 3, this process should not be viewed solely as a top-down approach. Project-level practices also significantly influence organizational outcomes, suggesting that public clients need to be aware of these practices. Rather than viewing projects as rigid plans, this thesis emphasizes focusing on what is actually happening, rather than what is intended to happen (Packendorff, 1995). Adopting a process and practice-based theoretical approach when examining procurement strategies reveals how project actors enact these strategies.

Paper 2 demonstrates that procurement strategies in inter-organizational O&M projects are enacted through a combination of formal, structured practices and the organic development of informal relationships. Thus, the findings of Paper 2 concur with prior research recognizing that procurement strategies for collaboration may work as guidelines for the partnership, but that the collaboration will emerge informally in its local context (Bresnen, 2009; 2010; Hartmann and Bresnen, 2011; Nikulina et al., 2022; Eriksson et al., 2023). This indicates that collaborative procurement strategies are applied differently depending on the local conditions of each project as formal tools in the project environment are adapted to align with the specific dynamics, relationships, and challenges of the project.

It is not only collaborative procurement strategies that are adapted at the project level. Paper 3 explores the disconnect between the strategic objectives set

out by public clients – such as promoting innovation – and their enactment at the project level. The paper reveals that procurement strategies designed at the organizational level often fail to account for the project-specific contexts faced by project actors. Paper 3 shows discrepancies between the public client's strategies for innovation and the project-level enactment, as the project actors experienced difficulties in aligning innovation efforts with their everyday O&M work. Räisänen and Löwstedt (2014) showed how strategic efforts in construction may face resistance when project actors believe their contexts to be unique and incomprehensible to outsiders. Paper 3 shows how this finding is applicable in a public client's efforts to increase innovation in its inter-organizational O&M projects. As the first section of this discussion showed, operation and maintenance truly represent a 'unique' type of project, deviating from new-build construction projects. Therefore, the findings of Räisänen and Löwstedt (2014) make it no surprise that O&M project actors are sceptic towards new procurement strategies developed outside of the project, affecting their enactment of said strategies.

Prior research has focused on the barriers for innovation as experienced by the contractor project actors (e.g. Uyarra et al., 2014). The findings of Paper 3 add to the understanding of the project-level enactment of innovation strategies, by including the client project actors in the analysis. Public construction clients may intend to use procurement to drive innovation, but client and contractor project actors often face barriers such as rigid contractual requirements and a lack of flexibility, which hinders their ability to innovate.

Additionally, Paper 4 shows how project managers and site managers collaborate to adapt their parent organizations' procurement strategies. Through the informal collaborative practice of negotiation, they adjusted the parent organizations' strategies to their specific project contexts. The concept of contractual 'wiggle room' enables public project managers to informally negotiate with private partners, allowing them to adapt to local project conditions and resolve paradoxes that arise from conflicting organizational objectives. These findings concur with the findings of Vosman et al. (2023) who found that project actors may adjust, or override, construction clients' procurement strategies through informal collaborative practices. In inter-organizational infrastructure projects, collaboration between client and contractor is central to procurement enactment. Rather than being a top-down, one-directional process, procurement outcomes are shaped through ongoing negotiations and interactions.

Paper 4 highlights the role of informal practices – wherein managers use their discretion to adapt formal strategies to the unique needs of projects. Similarly, Löwstedt and Sandberg (2020) describe site managers' pushback

against top-down standardization as they prioritize their experiential knowledge over prescriptive rules. Furthermore, Sandberg et al. (2021) show that site managers strengthen their flexibility within the standards set by their parent organizations, allowing them to enhance their own control and authority over project processes. Paper 4 concur and add to the findings from these studies, by recognizing that the adaptation of formal strategies are also performed by public project managers in inter-organizational projects. This shared emphasis on the social dynamics of work suggests that formal strategies in construction need to account for the adaptive practices of professionals on-site, as rigid standards may clash with the individualized expertise and autonomy that managers value.

Balancing formal and informal collaboration

Adopting a theoretical approach of process and practice enabled viewing collaboration not just as the collaborative procurement strategies, but also as an informal side consisting of personal relationships, direct interaction between participating individuals, trust building, shared values, and previous experiences (Bresnen and Marhsall, 2000; 2002; Bygballe et al., 2015).

Paper 2 argues that the formal mechanisms such as co-location and collaboration workshops must be complemented by informal collaboration, including trust-building and personal relationships, to fully realize the goals of the procurement strategies. The findings of Paper 2 highlight the dynamic interplay between formal and informal collaboration, which can create both virtuous and vicious cycles. Good collaboration can reinforce formal strategies, while poor collaboration may undermine them. The interplay between formal and informal collaboration, implies that procurement strategies both shape and are shaped by informal collaborative practices at the project level (Bygballe et al., 2015; Nikulina et al., 2022; af Hällström et al., 2024).

The findings from Paper 2 show that while project actors collaborate to adapt procurement strategies, introducing formal collaborative practices can limit their ability to make these adaptations. Paper 4 further supports this, showing how public clients' efforts to formalize collaboration disrupted established informal practices. Introducing formal collaborative practices can sometimes limit the ability of project actors to adapt procurement strategies as formal processes may disrupt established informal practices, which play a significant role in the project's outcomes. Thus, while formal collaboration is important, it must be balanced with recognition of the informal practices that develop organically within the project environment.

Flexibility in procurement implementation

Flexibility in implementing procurement strategies is essential to address the unpredictable and context-specific demands of construction projects. Paper 4 highlighted the importance of maintaining adaptability in the implementing process, supported by prior research on construction management recognizing the need to aligning parent organization requirements with project contexts (Löwstedt and Sandberg, 2020; Sandberg et al., 2021). Hence, procurement strategies should not be seen as static plans. Drawing on practice theory (Feldman and Orlikowski, 2011; Nicolini, 2012), a holistic perspective considers both the technical and social dimensions that shape project execution and outcomes.

Viewing projects as temporary organizations, rather than tools of parent organizations (Lundin and Söderholm, 1995; Packendorff, 1995), acknowledges that projects themselves function as strategizing units (Artto et al., 2008). Project actors' enactment of their parent organizations' strategies may not always align with the original intentions. In fact, Paper 4 concurs with previous research concluding that misalignments and conflicts between parent organizations and project-level practices can sometimes enhance strategic performance and outcomes (Jarzabkowski et al., 2016a). Therefore, public clients should view procurement as a dynamic process that requires flexibility and adaptation. Rather than aiming for perfect alignment between procurement strategies and project practices, public clients should recognize the value of flexibility in addressing the specific needs and challenges of each project. This dynamic approach can lead to better project outcomes.

The findings of Paper 4 show how the project managers and site managers collaborate in response to paradoxes they face in their everyday work. These paradoxes were triggered when the contractual documents were to be translated into the complex inter-organizational projects (van Marrewijk et al., 2008). When the contractual documents did not align with the local context of the project, the project managers needed to improvise to find solutions (Blomquist et al., 2010). Previous strategy-as-practice research has argued that in their praxis, project managers adapt the top management's strategies (Jarzabkowski, 2004). The findings from Papers 2, 3 and 4 adds to this understanding by showing that it is not only the top management's strategies that are adapted in the O&M projects, but rather strategies originating from diverse departments within the client and contractor organizations.

Continuous work, such as operation and maintenance, may require more adaptive procurement strategies that evolve over time, as sustained collaboration

and long-term relationships become more critical than in new-build projects. This difference highlights an importance of flexibility and ongoing engagement in procurement strategies, in contrast to the fixed procurement strategies traditionally applied in new-build projects.

Even though projects are often described as a 'post-bureaucratic' form of organizing (Hodgson, 2004), promising both adventure and control (Sahlin-Andersson, 2002), the findings from Paper 3 and 4 reveal that project actors perceive the 'control' side to weigh more heavily. This emphasis on control contrasts with the notion that projectification in the public sector would bring about more flexible, market-oriented work methods by reducing bureaucratic constraints. In the discussion on whether or not this flexibility has been achieved (Rowe et al., 2024), the findings from Paper 4 show how the project managers experience their practice of flexibility to be unauthorized. That is, the procurement strategies emphasize control, but in their everyday work project actors find it necessary to practice flexibility.

However, this practice of unauthorized flexibility raises questions about the balance between adaptability and adherence to procurement regulations. Public clients operate within a complex framework of legal and institutional requirements that dictate procurement processes, aiming to ensure transparency, fairness, and accountability. The challenge lies in navigating these regulations while maintaining the necessary flexibility to respond to the unique demands of each project. To address this challenge, public clients could consider adopting a more nuanced approach to procurement implementation. This involves recognizing the potential for flexibility within regulatory frameworks, exploring mechanisms that allow for adaptive practices while still maintaining compliance.

Seven

CONCLUSIONS

This chapter concludes this thesis by first offering a summary of its major findings and then presenting its theoretical contributions and practical implications. Limitations of the research is also discussed, including suggestions for future research.

Fulfilling the aim

The aim of this thesis was to increase the understanding of public procurement of continuous work and its enactment in inter-organizational projects. The thesis achieves its aim by first describing how infrastructure O&M projects are organized through procurement of continuous work, and then exploring how procurement strategies are enacted through collaboration in the inter-organizational infrastructure O&M projects.

The research reveals that these projects contain both temporary and permanent aspects of organizing. The use of successive, time-limited contracts turns each phase of continuous O&M work into a time-constrained, inter-organizational project. The thesis provides insight into how these O&M projects differ from new-build projects by emphasizing the non-negotiable deadlines and ongoing nature of tasks, demonstrating that time is perceived differently in O&M work compared to new-build construction projects.

Furthermore, the research demonstrates that procurement in O&M projects is not just a top-down process; rather, it is continuously shaped by the interactions and negotiations between project actors, such as project managers and site managers. The findings emphasize the importance of both formal and informal collaboration in enacting procurement strategies.

Formal strategies provide structure, while informal relationships allow for adaptation and flexibility, crucial for addressing the specific challenges that arise during project execution.

Theoretical contributions

The thesis expands the understanding of construction procurement by analyzing how continuous work is procured in O&M projects. Traditionally, literature on procurement in construction has focused on new-build projects where the goal is task completion. However, this thesis reveals a different dynamic in O&M projects, where the aim is not to complete a task but to continuously uphold a certain level of performance. This distinction reshapes the way procurement strategies are applied, reflecting the need for ongoing management rather than finite outcomes.

Previous research has highlighted the challenge public clients face in balancing short-term project deliverables with broader societal goals (Hodgson et al., 2019; Kuitert et al., 2019). The thesis builds on this by showing that, in O&M projects, public clients have a unique opportunity to integrate long-term objectives into procurement strategies due to the continuous nature of these projects. This allows public clients to move beyond immediate concerns and focus on sustained impact over time, including broader goals such as sustainability. Through this, the thesis contributes to the understanding of procurement as a tool for facilitating change within the construction sector (e.g. Troje and Kadefors, 2018; Granheimer et al., 2022; Ahmed et al., 2024). It demonstrates how procurement strategies in O&M projects can facilitate incremental and reactive innovations at the project level, steering these innovations towards addressing broader societal challenges.

Existing literature recognizes the formal aspects of collaboration, such as contracts and procurement models (Bayliss et al., 2004; Eriksson, 2010; 2015; Lahdenperä, 2012), and the informal elements like personal relationships, trust, and shared values (Bresnen and Marshall, 2002; Bygballe et al., 2015). The thesis adds to the current literature on the interplay between formal and informal collaboration (Bygballe et al., 2015; Nikulina et al., 2022; af Hällström et al., 2024) by showing that in O&M projects, formal collaborative procurement strategies must work in tandem with informal collaboration practices that develop over time. In doing so, the thesis provides an important perspective on the need for balance between formal and informal collaboration strategies, particularly in

inter-organizational infrastructure O&M projects. It emphasizes that procurement strategies for collaboration should not only promote formal activities (e.g., workshops, co-location) but also allow for the organic development of informal practices that are contextually sensitive to the project's needs.

The thesis also expands the literature on public procurement by addressing the tensions between regulatory constraints and innovation. While public procurement is heavily regulated (e.g., through the Swedish Public Procurement Act), the thesis shows how public clients can still drive innovation by adapting procurement tools to local project conditions. This insight is crucial, as it suggests that procurement strategies, even within rigid legal frameworks, can be customized to promote reactive and incremental innovations at the project level (Blayse and Manley, 2004; Eriksson, 2017). Thus, the thesis underscores the importance of contextual flexibility in procurement strategies, providing a practical understanding of how public clients can use procurement as a tool for long-term developmental goals while adhering to regulatory requirements.

Practical implications

This thesis makes practical implications for two organizational levels of infrastructure operation and maintenance: public construction clients (the parent organization level) and public project managers (at the project level).

For public construction clients

Public construction clients, play a crucial role in ensuring that the procurement of infrastructure projects aligns with broader policy objectives. The thesis presents key insights that can help construction clients develop and manage procurement of O&M projects.

The thesis highlights the importance of aligning procurement strategies with long-term societal objectives, such as sustainability. Public clients should recognize that O&M projects offer unique opportunities to integrate these broader aims because they involve ongoing, continuous work. These public clients have the opportunity to exploit the continuous nature of O&M projects, by steering incremental innovations towards broader societal goals.

Public procurement is subject to strict legal and regulatory frameworks, which can sometimes restrict innovation and flexibility. The thesis demonstrates the importance of public construction clients balancing formal and informal

collaborative practices, within the scope of procurement regulations. For instance, procurement strategies could incorporate flexible contracting mechanisms – such as performance-based contracts – that allow project managers to adjust approaches as project needs evolve.

Public construction clients should build flexibility into procurement frameworks for collaboration, allowing project managers and contractors to foster informal, adaptive practices at the project level. Contracts should encourage the formation of informal working relationships that can evolve alongside formal mechanisms. For example, while a contract might mandate regular joint meetings, it should also allow space for informal problem-solving or encourage ongoing communication channels outside of official meetings.

The thesis cautions that an overemphasis on formal collaboration can sometimes disrupt well-established informal practices. Public construction clients should be cautious when introducing new formal collaboration models into long-term projects like operation and maintenance, where informal practices may already be working effectively. Rather than imposing rigid new structures, public construction clients should consult with project actors to understand existing informal dynamics and adapt formal frameworks that complement rather than override these practices.

For public project managers of O&M projects

Project managers overseeing O&M projects must navigate the complexities of continuous work, time-bound contracts, and inter-organizational collaboration. The thesis provides valuable insights that can help project managers optimize collaboration, adapt procurement strategies, and balance formal and informal practices.

The thesis underscores the importance of both formal collaboration mechanisms (mandated by procurement strategies) and the informal relationships that emerge organically over time. These informal practices, including trust-building and personal relationships, are crucial for adapting to project-specific challenges.

Project managers should recognize that both formal and informal collaboration are essential to project success. While adhering to formal procurement guidelines, they should also foster informal collaboration with contractors, suppliers, and other stakeholders. This could involve creating opportunities for informal communication, such as regular, non-structured meetings, trust-building exercises, or informal problem-solving discussions outside of formal contracts.

Project managers should work within the procurement framework while adapting formal tools (e.g., contractual terms, collaboration models) to suit specific project contexts. For example, they could negotiate with contractors on specific deliverables, timelines, or methods to ensure the project remains flexible and responsive to local conditions. This might include using contractual 'wiggle room' to negotiate informally and make adjustments to better reflect the project context.

The thesis highlights the inherent tensions between public sector goals (focused on long-term service continuity) and private sector priorities (focused on profitability). Project managers need to be aware of these tensions and find ways to align the objectives of public clients and private contractors. This could involve open, transparent discussions with contractors to clarify priorities, joint goal-setting sessions, and compromise-based approaches that ensure both public service continuity and contractor profitability. By aligning short-term contractor objectives with long-term public goals, project managers can reduce conflicts and enhance collaborative outcomes.

Limitations and suggestions for future research

While this thesis addresses important gaps in the literature on construction procurement and organizing, it is not without limitations, which open several promising pathways for future inquiry.

One limitation lies in the scope of the empirical material. The focus of this thesis has been on Sweden's largest public construction client, STA, allowing development of empirical material through two case studies of road operation and maintenance. While these cases offer valuable insights, they may not fully represent the diversity of procurement strategies and their enactment across other sectors or geographic regions. Future research could extend these findings by choosing other geographical contexts, which may reveal new dimensions of construction procurement. Specifically, exploring construction procurement and enactment outside EU could be especially revealing, as public clients in those regions are not subject to EU procurement regulations. Such studies could uncover how different regulatory environments influence procurement practices and their enactment through inter-organizational collaboration.

This thesis has demonstrated the challenges and opportunities of infrastructure O&M projects, an understudied area in literature on construction procurement. The O&M phase represents a significant part of the infrastructure

lifecycle, and further understanding is needed of the managerial and governance aspects. Future research could continue exploring the O&M projects, applying diverse theoretical and stakeholder perspectives.

For example, institutional theory could be a valuable lens for further examining the enactment of procurement strategies. By focusing on how norms, rules, and belief systems shape behaviors within organizations, institutional theory could deepen our understanding of procurement and its outcomes in infrastructure operation and maintenance. Adopting concepts such as institutional work, future studies could continue investigating how actors within O&M projects purposefully navigate and adapt procurement strategies.

Additionally, the study focused primarily on the perspectives of public clients and project managers, leaving room for future research to further explore the experiences and viewpoints of other stakeholders, such as contractors and subcontractors. Investigating how these actors perceive and respond to procurement strategies could offer a more balanced and holistic understanding of inter-organizational collaboration in O&M projects. While this thesis has given some attention to the enactment of contractor parent organization strategies, these strategies have not been in focus. Adopting a contractor perspective could explore tensions between client and contractor procurement strategies, further increasing our understanding of the project-level enactment.

EPILOGUE

As the attentive reader may have noted, all of the papers appended in this thesis deals with different kinds of dualities; temporary and permanent organizing, engineered and emerged collaboration, parent organization intent and project-level enactment, and contractual documents and local context. These dualities not only reflect the complexities inherent in infrastructure O&M projects, but also highlight the dynamic, sometimes paradoxical characteristics of public sector project management, where rigid frameworks meet fluid practices, and long-term goals must be balanced with short-term realities.

While the prologue of this thesis captured the historical development of STA's road O&M projects, I want to use this epilogue to briefly explain how I imagine the results of this thesis being useful in the future of public construction clients.

As public clients increasingly integrate sustainability goals into procurement strategies, the tension between immediate operational needs and long-term environmental goals will grow. This will necessitate procurement frameworks that are not only flexible but also forward-thinking, capable of evolving alongside these larger societal challenges.

Technological advancements - such as artificial intelligence, machine learning, and data analytics - are also transforming the way public infrastructure is managed. In the future, O&M projects may benefit from greater data-driven decision-making, enabling predictive maintenance and more efficient use of resources. Public clients will need to ensure that procurement strategies remain flexible enough to incorporate cutting-edge technologies, while still relying on the invaluable insights of experienced project managers and contractors.

This thesis has shown that dualities are not merely contradictions to be resolved, but essential dynamics that must be carefully managed. It emphasizes that public sector project management is not about

choosing one approach over another but about finding ways to integrate these seemingly opposing forces in a way that enhances project outcomes, fosters innovation, and ensures the long-term success of critical infrastructure projects. These insights will likely be important in the future of infrastructure O&M projects, as they can inform procurement strategies that promote resilience, adaptability, and sustainability in an ever-changing landscape.

REFERENCES

Aaltonen, K., & Turkulainen, V. (2022). Institutionalization of a collaborative governance model to deliver large, inter-organizational projects. *International Journal of Operations & Production Management*, *42*(8), 1294-1328.

af Hällström, A., Bosch-Sijtsema, P., & Poblete, L. (2024). Challenges with collaboration: the interaction of formal and informal ties in infrastructure construction. *Construction Management and Economics*, in press.

Ahmed, S., Majava, J., & Aaltonen, K. (2024). Implementation of circular economy in construction projects: a procurement strategy approach. *Construction Innovation, 24*(7), 204-222.

Alvesson, M., & Kärreman, D. (2011). *Qualitative research and theory development: Mystery as method.* SAGE Publications Ltd.

Alvesson, M., & Sandberg, J. (2011). Generating research questions through problematization. *Academy of Management Review*, *36*(2), 247-271.

Artto, K., Kujala, J., Dietrich, P., & Martinsuo, M. (2008). What is project strategy? *International Journal of Project Management, 26*(1), 4-12.

Bakker, R. M. (2010). Taking stock of temporary organizational forms: A systematic review and research agenda. *International Journal of Management Reviews*, *12*(4), 466-486.

Barley, S. R., & Kunda, G. (2001). Bringing work back in. *Organization Science*, *12*(1), 76-95.

Bayliss, R., Cheung, S. O., Suen, H. C., & Wong, S. P. (2004). Effective partnering tools in construction: a case study on MTRC TKE contract 604 in Hong Kong. *International Journal of Project Management*, *22*(3), 253-263.

Blayse, A., & Manley, K. (2004). Key influences on construction innovation. *Construction Innovation, 4*(3), 143-154.

Blomquist, T., Hällgren, M., Nilsson, A., & Söderholm, A. (2010). Project-as-practice: In search of project management research that matters. *Project Management Journal, 41*(1), 5-16.

Bourdieu, P. (1990). *The logic of practice.* Stanford University Press.

Bresnen, M. (2009). Living the dream? Understanding partnering as emergent practice. *Construction Management and Economics*, *27*(10), 923-933.

Bresnen, M. (2010). Keeping it real? Constituting partnering through boundary objects. *Construction Management and Economics*, *28*(6), 615-628.

Bresnen, M., & Marshall, N. (2000). Partnering in construction: a critical review of issues, problems and dilemmas. *Construction Management and Economics, 18*(2)**,** 229-237.

Bresnen, M., & Marshall, N. (2002). The engineering or evolution of cooperation? A tale of two partnering projects. *International Journal of Project Management, 20*(7)**,** 497-505.

Burke, C. M., & Morley, M. J. (2016). On temporary organizations: A review, synthesis and research agenda. *Human Relations, 69*(6), 1235-1258.

Bygballe, L., & Swärd, A. (2019). Collaborative project delivery models and the role of routines in institutionalizing partnering. *Project Management Journal, 50*(2), 161–176.

Bygballe, L., Dewulf, G., & Levitt, R. (2015). The interplay between formal and informal contracting in integrated project delivery. *Engineering Project Organization Journal, 5*(1), 22–35.

Caldwell, N. D., Roehrich, J. K., & George, G. (2017). Social value creation and relational coordination in public-private collaborations. *Journal of Management Studies, 54*(6), 906-928.

Carbonara, N., & Pellegrino, R. (2020). The role of public private partnerships in fostering innovation. *Construction Management and Economics, 38*(2), 140–156.

Chia, R., & MacKay, B. (2007). Post-processual challenges for the emerging strategy-as-practice perspective: Discovering strategy in the logic of practice. *Human Relations*, *60*(1), 217-242.

Clegg, S. R., da Cunha, J. V., & e Cunha, M. P. (2002). Management paradoxes: A relational view. *Human Relations*, *55*(5), 483-503.

Crespin-Mazet, F., Goglio-Primard, K., Havenvid, M. I., & Linné, Å. (2021). The diffusion of innovation in project-based firms – linking the temporary and permanent levels of organisation. *Journal of Business & Industrial Marketing, 36*(9), 1692–1705.

Demirel, H. Ç., Leendertse, W., Volker, L., & Hertogh, M. (2017). Flexibility in PPP contracts–Dealing with potential change in the pre-contract phase of a construction project. *Construction Management and Economics*, *35*(4), 196-206.

Dubois, A., & Gadde, L.E. (2002). The construction industry as a loosely coupled system: implications for productivity and innovation. *Construction Management and Economics, 20*(7), 621-631.

Edler, J., & Georghiou, L. (2007). Public procurement and innovation - Resurrecting the demand side. *Research Policy*, *36*(7), 949-963.

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, *14*(4), 532-550.

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, *50*(1), 25-32.

Engwall, M. (2003). No project is an island: linking projects to history and context. *Research Policy, 32*(5), 789-808.

Eriksson, P. E. (2010). Partnering: what is it, when should it be used, and how should it be implemented? *Construction Management and Economics*, *28*(9), 905-917.

Eriksson, P. E. (2015). Partnering in engineering projects: Four dimensions of supply chain integration. *Journal of Purchasing and Supply Management*, *21*(1), 38-50.

Eriksson, P.E. (2017). Procurement strategies for enhancing exploration and exploitation in construction projects. *Journal of Financial Management of Property and Construction, 22*(2), 211-230.

Eriksson, P.E., & Laan, A. (2007). Procurement effects on trust and control in client-contractor relationships. *Engineering, Construction and Architectural Management*, *14*(4), 387-399.

Eriksson, P. E., & Westerberg, M. (2011). Effects of cooperative procurement procedures on construction project performance: A conceptual framework. *International Journal of Project Management*, *29*(2), 197-208.

Eriksson, P.E., Leiringer, R., & Szentes, H. (2017). The role of co-creation in enhancing explorative and exploitative learning in project-based settings. *Project Management Journal, 48*(4), 22–38.

Eriksson, P. E., Pesämaa, O., & Larsson, J. (2023). Governing technical and organizational complexity through supply chain integration: A dyadic perspective on performance in infrastructure projects. *International Journal of Project Management*, *41*(4), 102479.

Eriksson, P. E., Volker, L., Kadefors, A., Lingegård, S., Larsson, J., & Rosander, L. (2019). Collaborative procurement strategies for infrastructure projects: A multiple-case study. *Proceedings of The Institution of Civil Engineers - Management, Procurement and Law*, *172*(5), 197-205.

European Commission. (2021). *The strategic use of public procurement for innovation in the digital economy SMART 2016/0040 - Final Report.* [online] Available from: https://www.euriphi.eu/wp-content/uploads/kk0221251enn.en_.pdf

European Commission. (2022). *A New European Innovation Agenda*. [online] Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022DC0332

European Court of Auditors. (2023). *Public procurement in the EU: less competition for contracts awarded for works, goods and services in the 10 years up to 2021.* [online] Available from: https://data.europa.eu/doi/10.2865/04787

Feldman, M., & Orlikowski, W. (2011). Theorizing practice and practicing theory. *Organization Science, 22*(5), 1240-1253.

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry*, *12*(2), 219-245.

Fred, M. (2015). Projectification in Swedish municipalities. A case of porous organizations. *Scandinavian Journal of Public Administration*, *19*(2), 49-68.

Fred, M. (2020). Local government projectification in practice–a multiple institutional logic perspective. *Local Government Studies, 46*(3), 351-370.

Geraldi, J., Stjerne, I., & Oehmen, J. (2020). Acting in time: Temporal work enacting tensions at the interface between temporary and permanent organisations. In T. Braun & J. Lampel (Eds.), *Tensions and paradoxes in temporary organizing* (Vol. 67, pp. 81-103). Emerald Publishing Limited.

Giddens, A. (1984). *The constitution of society.* Cambridge: Polity Press.

Godenhjelm, S., Lundin, R. A., & Sjöblom, S. (2015). Projectification in the public sector–the case of the European Union. *International Journal of Managing Projects in Business*, *8*(2), 324-348.

Grandia, J., Kuitert, L., Schotanus, F., & Volker, L. (2023). Introducing public procurement. In J. Grandia & L. Volker (Eds.), *Public Procurement: Theory, Practices and Tools* (pp. 1-18). Springer International Publishing.

Granheimer, K., Eriksson, P. E., & Karrbom Gustavsson, T. (2022). Adaptability in public procurement of engineering services promoting carbon reduction: an organizational control perspective. *Sustainability*, *14*(10), 5958.

Hartmann, A., & Bresnen, M. (2011). The emergence of partnering in construction practice: an activity theory perspective. *Engineering Project Organization Journal*, *1*(1), 41–52.

Hedborg Bengtsson, S., Karrbom Gustavsson, T., & Eriksson, P.E. (2018). Users' influence on inter-organizational innovation: mapping the receptive context. *Construction Innovation, 18*(4), 488–504.

Hietajärvi, A. M., & Aaltonen, K. (2018). The formation of a collaborative project identity in an infrastructure alliance project. *Construction Management and Economics*, *36*(1), 1-21.

Hobday, M. (2000). The project-based organisation: an ideal form for managing complex products and systems? *Research policy*, 29(7-8), 871-893.

Hodgson, D. E. (2004). Project work: The legacy of bureaucratic control in the post-bureaucratic organization. *Organization*, *11*(1), 81-100.

Hodgson, D. E., Fred, M., Bailey, S., & Hall, P. (Eds.). (2019). *The projectification of the public sector*. Routledge.

Håkansson, H., & Axelsson, B. (2020). What is so special with outsourcing in the public sector? *Journal of Business & Industrial Marketing, 35*(12), 2011-2021.

Ingemansson Havenvid, M., Hulthén, K., Linné, Å., & Sundquist, V. (2016). Renewal in construction projects: tracing effects of client requirements. *Construction Management and Economics, 34*(11), 790–807.

Jacobsen, R. (2022). Public sector projectification–A systematic review of the literature. *Scandinavian Journal of Public Administration*, *26*(4), 91-112.

Jacobsson, M., Burström, T., & Wilson, T. L. (2013). The role of transition in temporary organizations: linking the temporary to the permanent. *International Journal of Managing Projects in Business*, *6*(3), 576-586.

Jacobsson, M., Lundin, R. A., & Söderholm, A. (2015). Researching projects and theorizing families of temporary organizations. *Project Management Journal, 46*(5), 9-18.

Jacobsson, M., Lundin, R. A., & Söderholm, A. (2016). Towards a multi-perspective research program on projects and temporary organizations: Analyzing the Scandinavian turn and the rethinking effort. *International Journal of Managing Projects in Business*, *9*(4), 752-766.

Jarzabkowski, P. (2004). Strategy as practice: recursiveness, adaptation and practices-in-use. *Organization Studies, 25*(4), 529–560.

Jarzabkowski, P. A., & Lê, J. K. (2017). We have to do this and that? You must be joking: Constructing and responding to paradox through humor. *Organization Studies*, *38*(3-4), 433-462.

Jarzabkowski, P., Balogun, J., & Seidl, D. (2007). Strategizing: the challenges of a practice perspective. *Human Relations, 60*(1), 5-27.

Jarzabkowski, P., Kaplan, S., Seidl, D., & Whittington, R. (2016a). On the risk of studying practices in isolation: Linking what, who, and how in strategy research. *Strategic Organization*, *14*(3), 248-259.

Jarzabkowski, P., Kavas, M., & Krull, E. (2021). It's Practice. But is it Strategy? Reinvigorating strategy-as-practice by rethinking consequentiality. *Organization Theory*, 2(3), 26317877211029665.

Jarzabkowski, P., Le, J., & Spee, P. (2016b). Taking a strong process approach to analyzing qualitative process data. In A. Langley & H. Tsoukas (Eds.), *The SAGE handbook of process organization studies* (pp. 237-253). SAGE Publications Ltd.

Jarzabkowski, P., Lê, J. K., & Van de Ven, A. H. (2013). Responding to competing strategic demands: How organizing, belonging, and performing paradoxes coevolve. *Strategic Organization, 11*(3), 245-280.

Johnson, G., Langley, A., Melin, L., & Whittington, R. (2007). *Strategy as practice – research directions and resources*. Cambridge University Press.

Johnson, R. M., & Babu, R. I. I. (2020). Time and cost overruns in the UAE construction industry: a critical analysis. *International Journal of Construction Management*, *20*(5), 402-411.

Järvenpää, A. T., Larsson, J., & Eriksson, P. E. (2024). How public client's control systems affect contractors' innovation possibilities. *Construction Innovation, 24*(7), 83-101.

Kadefors, A., Aaltonen, K., Gottlieb, S. C., Klakegg, O. J., Lahdenperä, P., Olsson, N. O., Rosander, L. & Thuesen, C. (2024). Relational contracting in Nordic construction–a comparative longitudinal account of institutional field developments. *International Journal of Managing Projects in Business*, *17*(8), 22-46.

Karrbom Gustavsson, T., & Hallin, A. (2015). Goal seeking and goal oriented projects–trajectories of the temporary organisation. *International Journal of Managing Projects in Business*, *8*(2), 368-378.

Konkurrensverket. (2017). *Swedish public procurement act*. [online] Available from: https://www.konkurrensverket.se/globalassets/dokument/informationsmaterial/rapporter-och-broschyrer/informationsmaterial/swedish-public-procurement-act.pdf

Kronlid, C., & Baraldi, E. (2020). Time-constrained interactions in public-private collaboration projects. The case of ENABLE. *Journal of Business & Industrial Marketing*, *35*(6), 1037-1050.

Kuitert, L., Volker, L., & Hermans, M. H. (2019). Taking on a wider view: Public value interests of construction clients in a changing construction industry. *Construction Management and Economics, 37*(5), 257–277.

Lahdenperä, P. (2012). Making sense of the multi-party contractual arrangements of project partnering, project alliancing and integrated project delivery. *Construction Management and Economics*, *30*(1), 57-79.

Langley, A. (1999). Strategies for theorizing from process data. *Academy of Management Review*, *24*(4), 691-710.

Langley, A. (2009). Studying processes in and around organizations. In D. Buchanan & A. Bryman (Eds.). *The SAGE handbook of organizational research methods* (pp. 409-429). SAGE Publications Ltd.

Langley, A., & Tsoukas, H. (Eds.). (2016). *The SAGE handbook of process organization studies*. SAGE Publications Ltd.

Langley, A. N. N., Smallman, C., Tsoukas, H., & Van de Ven, A. H. (2013). Process studies of change in organization and management: Unveiling temporality, activity, and flow. *Academy of Management Journal*, *56*(1), 1-13.

Larsson, J., Eriksson, P.E., Lingegård, S., & Järvenpää, A.T. (2022). Innovation outcomes and processes in infrastructure projects: a comparative study of design-build and design-build-maintenance contracts. *Construction Management and Economics, 40*(2), 142-156.

Lê, J., & Bednarek, R. (2017) Paradox in everyday practice: Applying practice-theoretical principles to paradox. In: W.K. Smith, M.W. Lewis, P. Jarzabkowski & A. Langley (Eds.), *The Oxford handbook of organizational paradox* (pp. 490–509). Oxford University Press.

Lindblad, H., & Karrbom Gustavsson, T. (2021). Public clients ability to drive industry change: the case of implementing BIM. *Construction Management and Economics, 39*(1), 21-35.

Loosemore, M. (2015). Construction innovation: fifth generation perspective. *Journal of Management In Engineering, 31*(6), 04015012.

Lundin, R. A. (2016). Project society: Paths and challenges. *Project Management Journal*, 47(4), 7-15.

Lundin R. A., & Söderholm A. (1995). A theory of the temporary organization. *Scandinavian Journal of Management, 11*(4), 437–455.

Lundin, R. A., Arvidsson, N., Brady, T., Ekstedt, E., Midler, C., & Sydow, J. (2015). *Managing and working in project society*. Cambridge University Press.

Löwstedt, M., & Sandberg, R. (2020). Standardizing the free and independent professional: The case of construction site managers in Sweden. *Engineering, Construction and Architectural Management*, *27*(6), 1337-1355.

Löwstedt, M., Räisänen, C., & Leiringer, R. (2018). Doing strategy in project-based organizations: actors and patterns of action. *International Journal of Project Management, 36*(6), 889–898.

MacKay, R. B., & Chia, R. (2013). Choice, chance, and unintended consequences in strategic change: A process understanding of the rise and fall of NorthCo Automotive. *Academy of Management Journal*, *56*(1), 208-230.

Midler, C. (1995). "Projectification" of the firm: the Renault case. *Scandinavian Journal of Management, 11*(4), 363-375.

Mintzberg, H. (1978). Patterns in Strategy Formation. *Management Science, 24*(9), 934-948.

Mintzberg, H., & Waters, J. (1985). Of Strategies, deliberate and emergent. *Strategic Management Journal, 6*(3), 257-272.

Nicolini, D. (2012). *Practice theory, work, and organization: An introduction.* Oxford University Press.

Nicolini, D., & Monteiro, P. (2017). The practice approach: For a praxeology of organisational and management studies. In A. Langley & H. Tsoukas (Eds.), *The SAGE handbook of process organization studies* (pp. 110-126). SAGE Publications Ltd.

Nikulina, A., Volker, L., & Bosch-Rekveldt, M. (2022). The interplay of formal integrative mechanisms and relational norms in project collaboration. *International journal of project management, 40*(7), 798–812.

OECD. (2017). *Public Procurement for Innovation: Good Practices and Strategies*, (OECD Public Governance Reviews). OECD Publishing.

OECD. (2023). *Public procurement performance: A framework for measuring efficiency, compliance and strategic goals* (OECD Public Governance Policy Papers, No. 36), OECD Publishing.

Ozorhon, B. (2013). Analysis of construction innovation process at project level. *Journal of Management in Engineering, 29*(4), 455–463.

Ozorhon, B., Oral, K., & Demirkesen, S. (2016). Investigating the components of innovation in construction projects. *Journal of Management in Engineering, 32*(3), 04015052.

Packendorff, J. (1995). Inquiring into the temporary organization: new directions for project management research. *Scandinavian Journal of Management, 11*(4), 319-333.

Packendorff, J., & Lindgren, M. (2014). Projectification and its consequences: Narrow and broad conceptualisations. *South African Journal of Economic and Management Sciences*, *17*(1), 7-21.

Prop. 1990/91:87. *Om näringspolitik för tillväxt*. https://www.riksdagen.se/sv/dokument-och-lagar/dokument/proposition/om-naringspolitik-for-tillvaxt_ge0387/

Prop. 1990/91:100. *Med förslag till statsbudget för budgetåret 1991/92.* https://www.riksdagen.se/sv/dokument-och-lagar/dokument/proposition/med-forslag-till-statsbudget-for-budgetaret_gf03100/

Prop. 1992/93:100. *Med förslag till statsbudget för budgetåret 1993/94.* https://www.riksdagen.se/sv/dokument-och-lagar/dokument/proposition/med-forslag-till-statsbudget-for-budgetaret_gg03100/

Rosander, L. (2022). Same same but different: Dynamics of a pre-procurement routine and its influence on relational contracting models. *Construction Management and Economics*, *40*(11-12), 955-972.

Rosander, L. & Kadefors, A. (2023). Implementing relational contracting in a public client organization: the influence of policy clashes, resources and project autonomy. *Construction Management and Economics*, *41*(8), 651-669.

Rowe, K. M., Whitty, S. J., & van der Hoorn, B. (2024). Creating authority and autonomy: Necessary dialectical tensions in public sector project management. *Project Leadership and Society*, *5*, 100119.

Räisänen, C., & Löwstedt, M. (2014). Stakes and struggles in liminal spaces: construction practitioners interacting with management-consultants. *Engineering Project Organization Journal*, *4*(2-3), 123-133.

Sahlin-Andersson, K. (2002). A project management as boundary work. Dilemmas of defining and delimiting. In K. Sahlin-Andersson & A. Söderholm, (Eds.), *Beyond Project Management: New Perspectives on the Temporary-Permanent Dilemma*. Liber.

Sahlin-Andersson, K., & Söderholm, A. (Eds.). (2002). *Beyond project management: New perspectives on the temporary-permanent dilemma*. Liber.

Sandberg, R., Löwstedt, M., & Räisänen, C. (2021). Working in a loosely coupled system: exploring practices and implications of coupling work on construction sites. *Construction Management and Economics*, *39*(3), 212-226.

Schad, J., Lewis, M. W., Raisch, S., & Smith, W. K. (2016). Paradox research in management science: Looking back to move forward. *Academy of Management Annals*, *10*(1), 5-64.

Schoper, Y. G., Wald, A., Ingason, H. T., & Fridgeirsson, T. V. (2018). Projectification in Western economies: A comparative study of Germany, Norway and Iceland. *International Journal of Project Management, 36*(1), 71-82.

Sjöblom, S. (2009). Administrative Short-Termism— A Non-Issue in Environmental and Regional Governance. *Journal of Environmental Policy & Planning, 11*(3), 165-168.

Smith, W. K., & Lewis, M. W. (2011). Toward a theory of paradox: A dynamic equilibrium model of organizing. *Academy of Management Review*, *36*(2), 381-403.

Spanuth, T., Heidenreich, S., & Wald, A. (2020). Temporary organisations in the creation of dynamic capabilities: effects of temporariness on innovative capacity and strategic flexibility. *Industry and Innovation*, *27*(10), 1186-1208.

Stjerne, I. S., & Svejenova, S. (2016). Connecting temporary and permanent organizing: Tensions and boundary work in sequential film projects. *Organization Studies*, *37*(12), 1771-1792.

Söderlund, J., & Maylor, H. (2012). Project management scholarship: Relevance, impact and five integrative challenges for business and management schools. *International Journal of Project Management, 30*(6), 686-696.

Troje, D., & Kadefors, A. (2018). Employment requirements in Swedish construction procurement–institutional perspectives. *Journal of Facilities Management*, *16*(3), 284-298.

United Nations Environment Programme. (2022). *2022 Global Status Report for Buildings and Construction: Towards a Zero-emission, Efficient and Resilient Buildings and Construction Sector.*

Uyarra, E., & Flanagan, K. (2010). Understanding the innovation impacts of public procurement. *European Planning Studies*, *18*(1), 123-143.

Uyarra, E., Edler, J., Garcia-Estevez, J., Georghiou, L., & Yeow, J. (2014). Barriers to innovation through public procurement: A supplier perspective. *Technovation*, *34*(10), 631-645.

Vaara, E., & Whittington, R. (2012). Strategy-as-Practice: Taking Social Practices Seriously. *The Academy of Management Annals, 6*(1), 285-336

van Marrewijk, A., Clegg, S. R., Pitsis, T. S., & Veenswijk, M. (2008). Managing public–private megaprojects: Paradoxes, complexity, and project design. *International Journal of Project Management*, *26*(6), 591-600.

Vass, S., & Karrbom Gustavsson, T. (2017). Challenges when implementing BIM for industry change. *Construction Management and Economics*, 35(10), 597-610.

Vosman, L., Coenen, T. B., Volker, L., & Visscher, K. (2023). Collaboration and innovation beyond project boundaries: Exploring the potential of an ecosystem perspective in the infrastructure sector. *Construction Management and Economics*, *41*(6), 457-474.

Weick, K. E. (1979). *The social psychology of organizing* (second edition). Random House.

Weick, K. E. (1995) *Sensemaking in organizations.* SAGE Publications Inc.

Weiser, A. K., Jarzabkowski, P., & Laamanen, T. (2020). Completing the adaptive turn: An integrative view of strategy implementation. *Academy of Management Annals, 14*(2), 969-1031.

Whittington, R. (2006). Completing the practice turn in strategy research. *Organization Studies, 27*(5), 613-634.

Winch, G.M. (2014). Three domains of project organizing. *International Journal of Project Management, 32*(5), 721-731.

Yin, R. K. (2014). *Case study research: Design and methods* (Fifth edition). SAGE Publications Ltd.

Zidane, Y. J. T., & Andersen, B. (2018). The top 10 universal delay factors in construction projects. *International Journal of Managing Projects in Business*, *11*(3), 650-672.

Department of Civil, Environmental and Natural Resources Engineering
Division of Industrialized and Sustainable Construction

ISSN 1402-1544
ISBN 978-91-8048-680-4 (print)
ISBN 978-91-8048-681-1 (pdf)

Luleå University of Technology 2024

LULEÅ
UNIVERSITY
OF TECHNOLOGY