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New Procurement Approaches Facilitating Collaboration in the Construction Industry

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Experiences From the Bispevika Project

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Abstract

The construction industry is one of the largest industries in Norway, and the construction projects and their outcomes both affects the many project participants and the society. Yet, the industry is characterised by an adversarial behaviour, which has resulted in low productivity, conflicts, and cost- and time overruns. A root cause of these problems is a lack of collaboration among the project participants, and one of the solutions to resolve the lack of collaboration is a change in the procurement approaches.

It is observed that clients, like OSU and OBOS, are starting to change their procurement approach towards a more collaborative one, focusing on parameters like digitalisation, innovation, industrialisation and collaboration. In construction projects, the main contractors subcontract up to 90 per cent of the project value, and previous research has found their procurement approach to form the basis for the collaboration between the different actors in the project. As the procurement approaches of main contractors have received low attention relative to the clients' initiatives, this research set out to unveil how main contractors can facilitate collaboration with- and among subcontractors through their procurement approach.

To conduct the research, it was performed an in-depth case study of a construction project in Bispevika where both the client and main contractor were implementing a new, collaborative, procurement approach. It was conducted 14 semi-structured interviews, nine observations and performed an extensive exploratory phase before the main data collection.

Our research unveiled that there are several aspects main contractors should take into account to facilitate collaboration among project participants through their procurement approach, ranging from a continuous focus on developing solid relationships to formal contracts incentivising the subcontractors to work towards the common project objectives. As the construction industry is still characterised as an industry with an adversarial mindset, where a large share of the workforce shows persistence towards the "old" way of doing things, the implementation of new, collaborative, procurement approaches are, however, found challenging and it demands investments in terms of both time and money.

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List of Abbreviations

OSU – Oslo S Utvikling

NS – Norwegian Standard

BI – BI Norwegian Business School

B2B – Business to business

B2C – Business to consumer

1. Introduction

The Norwegian construction industry employed about 236 000 persons in 2016 and had an annual turnover of 527 billion NOK (SSB, 2018a), and is by that one of the largest industries in the country (SSB, 2018b). The importance of a well-functioning construction industry is therefore significant, as the projects and their outcomes both affects the many project participants and the society (Egan, 1998). The industry is, however, characterised by an adversarial behaviour, which has resulted in low productivity, conflicts, and cost- and time overruns (Hosseini et al., 2016). A root cause for these problems is a lack of collaboration among the project participants (Bankvall, Bygballe, Dubois, & Jahre, 2010; Lavikka, Smeds, & Jaatinen, 2015). One of the solutions suggested to resolve the lack of collaboration is a change in the procurement approach (Bemelmans, Voordijk, & Vos, 2012; Eriksson & Westerberg, 2011; Naoum & Egbu, 2015).

Through a case study, we are in this thesis striving to unveil what new procurement approaches, facilitating collaboration, imply and how they are implemented. This chapter serves to provide an insight into the background of our research, the research area, and our problem statement before we present the structure of the thesis.

1.1 Background

In 2016, Oslo S Utvikling (OSU – a Norwegian real estate and development company) invited the largest and most reputable main contractors to suggest how they can develop Bispevika to become the most attractive residential and commercial area in Norway, by using digitalisation, collaboration and industrialisation (AF Gruppen, 2018). This is in accordance with what other clients are starting to do. OBOS (a Norwegian housing company) for example, held an innovation competition in 2016 to find the right actors for their new major housing project at Ulven, requiring a collaboration between the main contractor, architects and consultants (OBOS, 2018; Veidekke, 2017). OSU chose to sign a partnership contract with the main contractor AF Gruppen where one of the ambitions was large reductions in the construction cost (AF Gruppen, 2018). This represents a new

procurement approach among clients, which is also supported by researchers (e.g. Bemelmans, Voordijk, and Vos (2012) and Hosseini et al. (2016)).

The construction industry is, however, so specialised that a single contractor cannot provide all the project related tasks itself (Akintan & Morledge, 2013). As a consequence, a main contractor must procure the capabilities and knowledge outside its core competence (Bemelmans et al., 2012). In a construction project, up to 90 per cent of the project value is therefore subcontracted (Arditi & Chotibhongs, 2005; Hartmann & Caerteling, 2010), leaving the main contractor dependent on their subcontractors to achieve the new project objectives from the client (Bemelmans et al., 2012). The procurement approach of the main contractor is found to form the basis for the collaboration between the different actors in the project (Pesämaa, Eriksson, & Hair, 2009). New procurement approaches implemented by the client should therefore not only be confined to the client – contractor relationship, but to a broader scope including the procurement of subcontractors who can contribute with valuable insight (Bygballe, Jahre, & Swärd, 2010).

1.2 Research Area

In general, procurement is of great importance for a company. Deloitte (2017) states that they, based on a recent survey of chief procurement officers across several industries and countries, "*remain confident that procurement does have a critical role in shaping companies' overall business models and supporting execution to deliver value*". It has been a shift away from the transactional role of procurement towards a more strategic role (van Weele, 2014) involving collaborative alliances, strategic partnerships and supply network management (Tassabehji & Moorhouse, 2008). Foerstl et al. (2013) found evidence that more mature procurement functions can in general significantly reduce costs, enhance quality, and contribute to the innovativeness of the products and services of the buying company, which in turn contributes to the company's performance.

In the context of the construction industry, Naoum and Egbu (2015) emphasise that procurement is a mechanism for linking and coordinating the project participants

throughout the whole building process, both contractually and functionally. While the procurement has matured to a strategic role in many industries, it is characterised by a short-term perspective in the construction industry (Bygballe et al., 2010; Eriksson & Nilsson, 2008). The short-term perspective comes from the strong focus on the project and its economy and has fostered competitive bidding as the main tool in supplier evaluations (Dubois & Gadde, 2000). The competitive bidding and price focus have resulted in constant shifts in the actor constellations across the different construction projects, which hinders continuity and long-term developments (Bygballe & Ingemansson, 2014). It has also resulted in adversarial relationships and disputes (Pesämaa et al., 2009), and Akintan and Morledge (2013) found the lack of trust as the main barrier to collaboration among the project participants.

Already in the 1990s, it was therefore identified a pressing need for change in the construction industry, where procurement was one of the areas where improvements were suggested (Egan, 1998; Latham, 1994). A change from the traditional procurement to a more collaborative procurement approach is considered amongst the most significant developments to improve the performance of the construction projects (Akintan & Morledge, 2013; Eriksson & Nilsson, 2008; Gadde & Dubois, 2010; Naoum & Egbu, 2015; Pesämaa et al., 2009). Reason being the effect procurement has on the relationship between the different actors in the project (Pesämaa et al., 2009), where a collaborative procurement approach can transform the adversarial relationships into collaborative ones (see figure 1) (Eriksson, Dickinson, & Khalfan, 2007). Techniques that have improved the performance in other industries, such as total quality management, supply chain integration and partnering, have therefore been introduced to the construction industry (Bygballe & Ingemansson, 2014; Dubois & Gadde, 2002a) in addition to management contracting and design and build contracts (Naoum & Egbu, 2015).

Figure 1: Illustration of how procurement influence the construction project (Naoum & Egbu, 2015; Pesämaa et al., 2009; Suprapto et al., 2016).

Despite the great interest of implementing, for instance, the partnering concept to the construction industry, it has still not yield the same positive effects as in other industries (Bygballe et al., 2010). Through a case study, Cicmil and Marshall (2005) found that following the steps of a new procurement procedure itself is not sufficient to ensure collaborative work and an achievement of the project objectives. A successful implementation requires a good understanding of the social setting in the project and openness and trust must be developed (Cicmil & Marshall, 2005). This is, however, not easy in an industry characterised by adversarial and arms-length relationships (Hosseini et al., 2016; Pesämaa et al., 2009). It is, in general, a mistrust between the main contractors and subcontractors (Akintan & Morledge, 2013), and Dainty, Briscoe, and Millett (2001) found that subcontractors are sceptical to the idea of partnering as they do not believe it will be mutually beneficial. The subcontractors might, in other words, be sceptic towards partnering as they do not understand the implication for both themselves and the overall project (Bygballe et al., 2010).

1.3 Problem Statement

The two preceding sections show that the procurement approach of main contractors must change from a competitive to a more collaborative approach in order to facilitate collaboration among the subcontractors. Yet, Hosseini et al. did in 2016 find that the Norwegian construction industry is still characterised by the traditional adversarial mindset, hindering the development of collaborative relationships. As the clients now have started to change their procurement approaches, requiring a closer collaboration among the project participants, we find the procurement approach of main contractors an interesting and relevant research topic. It has received considerably less focus in the literature than the client's procurement approach (Bygballe et al., 2010), at the same time as Eriksson and Laan (2007) found that there in general can be significant differences between theoretical prescriptions and empirical behaviours.

Ideally, we would have researched the complete procurement process, how it influences the collaboration among project participants, and compared the project outcome with a benchmark, to unveil what the new, collaborative, procurement

approaches imply and whether they succeed or not. That would, however, require a research lasting longer than the time available for this master thesis (for further elaboration, see section 2.4). Instead, the scope of this research is limited to new procurement approaches of main contractors with intentions of facilitating collaboration.

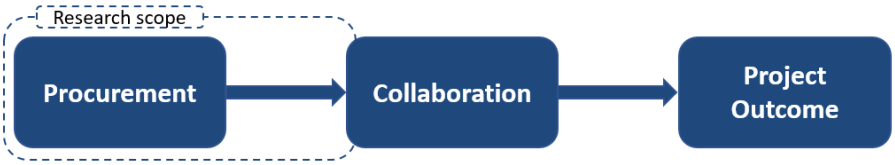


Figure 2: Illustration of the research scope.

With a basis in the discussion above, the primary question this research aims at answering is:

How can main contractors, through their procurement approach, facilitate collaboration among participants in construction projects?

The objective of this research is thereby to unveil what new, collaborative, procurement approaches imply and how they can be implemented by main contractors. Here, the project participants are limited to the collaboration among the main contractor and subcontractors. An in-depth understanding of the mechanisms main contractors can use in their procurement approach, to facilitate the desired collaboration with subcontractors, is found highly relevant. Both due to the practical relevance described, and the potential contribution to the literature. Most of the previous partnering literature has focused on the relationship between the client and main contractor (Bygballe et al., 2010), and through an extensive literature review Schneider and Wallenburg (2013) found that there are still need for further research on how to organise procurement, and one of the topics highlighted was relationship management.

To reach our objective and answer the primary research question, we have decided to focus on three sub-questions. Previous research shows that the subcontractors might have a scepticism towards collaborative procurement approaches (Bygballe et al., 2010; Dainty et al., 2001). An understanding of what the different project actors find as a motivation for the new procurement approach is thus found essential. The first sub-question is, therefore:

Why are construction companies currently implementing new, collaborative, procurement approaches?

Further, it is identified that a successful implementation of collaborative procurement approaches requires more than just following the steps in a procurement procedure (Cicmil & Marshall, 2005), and that previous initiatives have not yield the same effects as in other industries (Bygballe et al., 2010). It is therefore found important to get an in-depth understanding of the second sub-question, namely:

How are main contractors implementing new, collaborative, procurement approaches?

Lastly, it is identified that there might be several challenges the main contractors must overcome in their implementation of the collaborative procurement approach (Bresnen, 2009; Bresnen, Goussevskaia, & Swan, 2005; Cicmil & Marshall, 2005; Eriksson, 2008). We find it necessary to unveil challenges currently occurring in the implementation of new, collaborative, procurement approaches and get a deeper understanding of the implications of the unveiled challenges. This has led to the third research question:

What are the perceived challenges for successfully implementing new, collaborative, procurement approaches?

By researching the three sub-questions we unveiled insights necessary for answering our primary research question regarding how main contractors can facilitate collaboration with- and among subcontractors through their procurement approach. To study this, we followed a real case in Bispevika, where the main contractor implemented a new, collaborative, procurement approach.

1.4 The Empirical Setting

The construction project in Bispevika has ambitions of becoming the most attractive residential and commercial area in Norway, reduce the construction cost by up to 40 per cent, and change the collaboration patterns in the construction industry. To achieve the ambitions, the main contractor (AF Gruppen) had to re-engineer their

procurement practice, from a focus on competitive bidding to a focus on developing trustful and long-term relationships.

At the time of this research, AF Gruppen was in the middle of the implementation of their new, collaborative, procurement approach, and the construction project was thus found as an ideal empirical setting for our research. The primary focus in this research has been on the procurement towards strategic partners, at the same time as we used the project to get an understanding of the context of the procurement approach. This was found essential, as prior research has found the procurement procedures of the client and the general focus in the project to affect the procurement approach (Dubois & Gadde, 2000; Eriksson, 2008). A thorough presentation of the construction project is found in the case description in section 4.1.

1.5 Thesis Structure

The master thesis is divided into six chapters, where the first was this introduction. The second chapter presents the methodology of the research, with a justification of the choices we have made. In chapter three, previous literature related to the research area is reviewed and compiled to provide a theoretical background supporting the research. Chapter four provides a description of the case we have studied and a presentation and analysis of our empirical findings. A discussion comparing the empirical findings with the theoretical background is then presented in chapter five before the research is summed up in a conclusion in chapter six. In the conclusion, implications of our research are presented together with its limitations and suggestions for further research.

2. Research Methodology

This chapter provides a thorough description and justification of the research methodology we found suitable to answer our research questions. First, we are presenting our research strategy, followed by the research design. Then we present the different data collection methods we have used and the analytical process of the research. Lastly, we conclude the chapter by elaborating on how we secured the quality of our research.

2.1 Research Strategy

A research strategy is defined as a "*general orientation to the conduct of business research*" (Bryman & Bell, 2015, p.728) and describes how we have implemented our research. Within research strategies, there are two different directions, namely qualitative- and quantitative research. Contrary to quantitative research strategies, qualitative research strategies emphasise words instead of quantification in both the collection and analysis of data (Bryman & Bell, 2015).

The objective of our research has been to unveil what new, collaborative, procurement approaches imply and how they can be implemented by main contractors. To reach the objective and answer our research questions, we have been dependent on getting an in-depth understanding of the research area. We therefore found it necessary to conduct both interviews and observations, in addition to collecting secondary data. There, the focus was on why, what and how questions to increase our understanding and knowledge of the research area. In our analysis of the collected data the measures, such as types of challenges, motivational factors and mechanisms used in the implementation, were all of a qualitative character. Hence, we found the qualitative research strategy to be most applicable for our research (Bryman & Bell, 2015).

Traditionally, it is often distinguished between two theoretical approaches to research: inductive and deductive. A deductive approach is where the researcher, based on what is known and the theoretical domain within it, deduces a hypothesis that must be subject to a critical empirical examination (Bryman & Bell, 2015). On the contrary, the inductive approach involves drawing generalisable inferences out

of the empirical domain, where theory is the outcome of the research (Bryman & Bell, 2015). Another approach is the combination of the deductive and inductive approaches, involving a movement back and forth between the empirical and theoretical domains. The approach is then regarded as iterative (Bryman & Bell, 2015).

To answer our research questions, we found it necessary to have an iterative approach. We initiated the research by determining the theoretical scope, where extensive amounts of literature were reviewed. Academical articles from journals such as "Journal of Purchasing and Supply Management", "Construction Management and Economics" and "Journal of Project Management" were used as sources on established topics. As we proceeded with the data collection additional information and issues were found relevant, and new concepts emerged. We then moved back to the theory and expanded our theoretical framework before returning to the empirical domain. The matching of theoretical and empirical findings did, in other words, lead our research in new directions as the data collection proceeded. We found that as an important attribute of the process, as we had limited prior knowledge about the industry and topic, which made it difficult to predetermine a theoretical framework (Dubois & Gadde, 2002b). This iterative approach is a process defined as systematic combining (Dubois & Gadde, 2002b) and is illustrated in figure 3. The evolving framework is the cornerstone of systematic combining, and the approach allowed us to capture and take advantage of systematic characters of both our empirical setting and the theoretical models.

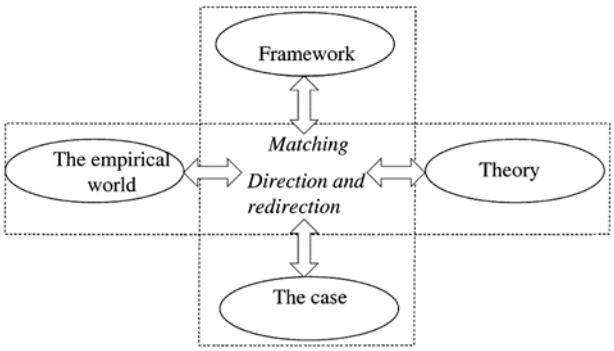


Figure 3: Illustration of the systematic combining (Dubois & Gadde, 2002b).

2.2 Research Design

The research design is described as a plan guiding the researcher through the process of collecting, analysing, and interpreting the data (Yin, 2014). In this

research, we found it necessary to conduct a detailed and intensive analysis of a real-life example of a construction project where a new, collaborative, procurement approach was implemented, which is consistent with the characteristics of a research design named case study (Bryman & Bell, 2015). We also found it necessary to use the systematic combining as research approach and Dubois and Gadde (2002b) therefore suggest the use of a case study, as it provides a flexibility supporting the systematic combining. Further on, our research questions include the words "why" and "how" that favours the use of a case study (Ellram, 1996; Yin, 2009). We also discovered that previous research, like Eriksson (2010) and Bresnen and Marshall (2000), have successfully used the case study design when researching the implementation of partnering and collaboration in the construction industry, indicating that a case study is an applicable design for our research. Based on these reasons, we decided to design our research as a case study.

A primary distinction when designing a case study is whether to conduct a single or multiple case study. Our research is designed as a single case study, with a case that can be characterised as critical, unusual, revelatory and longitudinal. This is in accordance with what Yin (2014) find as appropriate characteristics for when to conduct a single case study. A single case study was also preferable, as the limited time to conduct the research implied that it would be difficult to get an in-depth understanding of numerous cases, which was found crucial to answer our research questions. In the research, we therefore concentrated on the uniqueness of the single case and developed an in-depth understanding of its complexity (Bryman & Bell, 2015).

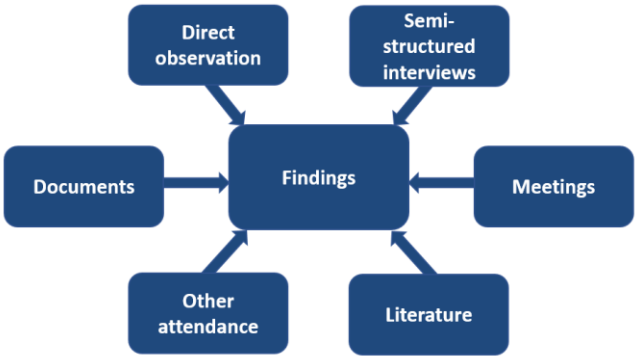
According to Ellram (1996) do case studies tend to set the boundaries of interest such as an organisation or an industry in a real-life setting. Further, Araujo and Dubois (2007) explain that the case selection is the most important methodological decision in a case study. A feature that made the real-time case study an appropriate design for our research was the possibility to conduct both observations and interviews with a wide variety of actors involved in the case (Bryman & Bell, 2015). When selecting the case, we therefore focused on finding a case where we could access the required data and obtain the desired information, to acquire the

knowledge found necessary to answer our research questions. This is in accordance with what Stake (1995) emphasises as important selection criteria.

The construction project in Bispevika (described in section 4.1) was selected as our case, as the main contractor was in the process of implementing a new, collaborative, procurement approach. A reason for the new procurement approach was the need for collaboration among the project participants to achieve ambitious project objectives. At the same time, a publicly stated objective of the project is to change the collaboration patterns in the construction industry. We therefore found the case to illustrate an example of how new procurement approaches can facilitate collaboration in the construction industry. The case was found especially interesting as it is a rare example of such an implementation within the Norwegian construction industry, making the case a unique source to potentially ground-breaking information. At the same time, the project participants showed great willingness to share information and take the time to participate in interviews, which allowed an increased understanding and learning. Our unique access to information made it possible to take advantage of the critical, unusual, and revelatory characteristics of the case and by collecting rich data.

2.3 Data Collection

The key point of any research is the data collection (Bryman & Bell, 2015) as the collected data will play a significant role on the conclusions of the research (Appannaiah et al., 2010). Data collection can, in general, be divided into two different categories, namely secondary- and primary data (Saunders et al., 2016). Secondary data is data collected by someone else for another purpose (Appannaiah et al., 2010), which in our research is represented by academic articles, books and documents received from project participants. Primary data is data collected by the researchers for the purpose of the research specifically (Appannaiah et al., 2010). As we wanted to conduct an intense and detailed examination of the case it is



suggested by Bryman and Bell (2015) and Ellram (1996) that semi-structured interviews and observations are appropriate sources for data collection. To answer our research question in a best possible way, we found both interviews and observations necessary for this research, which is further elaborated in section 2.3.1 and 2.3.2. To increase the credibility of our findings, we combined the primary data with our secondary data at the same time as we focused on getting an increased understanding of the industry in general. This is called a triangulation (Bryman & Bell, 2015) and is illustrated in figure 4.

As our knowledge about the construction industry and especially the project selected as case was limited, we found it necessary to spend a significant amount of time on an exploratory phase before the main data collection started. The reason for that is that the context highly affects the procurement (Bemelmans et al., 2012) and a good understanding of the industry and project was therefore found crucial for interpreting the data correctly. Figure 5 illustrates our data collection process, which is explained in greater detail in the upcoming sub-sections. In addition, appendix 8.1 show our data collection protocol where the time and place of the different meetings, observations and interviews are presented.

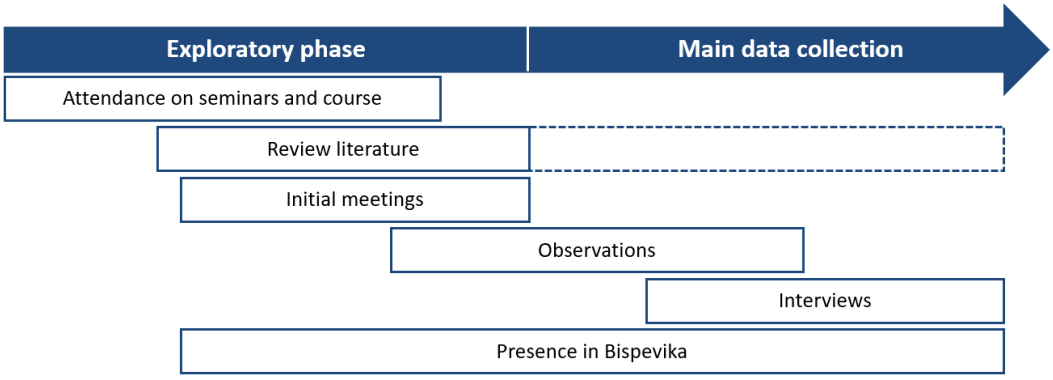


Figure 5: Illustration of the data collection process.

2.3.1 Interviews

Qualitative interviewing was found as a perfect venue for exploring the way the interviewees experienced and understood their own world. It also provides the researcher with unique access to the world of the interviewees (Kvale, 2007). Interviews in a case study have many alternative names and formats such as "intensive interview", "in-depth interviews", "unstructured interview" or "semi-

structured interview" (Yin, 2014). In our research, we sought to gather rich data and an interview format that facilitated follow-up questions and discussions was therefore preferred (Kvale, 2007). In addition, we found it necessary to prepare questions in an interview guide (see appendix 8.2), as it allowed us to secure the flow of the interviews. The interview guide was also found essential to cover all desired topics and to secure that we gathered consistent and relevant data throughout the interview process. The semi-structured interviews were therefore chosen for our research. The semi-structured format of the interviews was found very important, as it led us to increase the understanding of our topics and get clarifications if there were terms or concepts that were new to us. It did, in other words, allow us to increase our understanding and knowledge, at the same time as we secured well-elaborated answers from all interviewees (Bryman & Bell, 2015).

In total, we conducted 14 semi-structured interviews with a duration of approximately one hour. All interviewees were pre-selected to ensure that we would have sufficient variety of actors available for questioning. The pre-selection was based on a dialogue with our contact person in AF Gruppen, who provided a list of possible interviewees. We then performed a final selection based on the occupation of the potential interviewees and how the balance in roles among our interviewees was. Hence, the selection of interviewees included both employees of the main contractor, representatives from a variety of subcontractors, the client and external consultant. We found the variety of interviewees necessary in order to get opinions and descriptions from persons which also were somewhat distanced from the main contractor to mitigate the risk of receiving biased information. Table 1 presents the different groups of actors interviewed and a number representing each interviewee. It was decided to keep the interviewees anonymous to get as honest answers as possible, and the roles of each interviewee are therefore not distributed.

Table 1: Presentation of interviewees.

Group of Actor	Interviewee
Main Contractor	1, 2, 3, 4, 5, 6, 7
Subcontractor	8, 9, 10, 11, 12
Consultant	13
Client	14

In general, all interviewees held manager, executive or leading roles within their company, leaving us with great information provided by well-reflected persons who had sufficient insights into the project. This was found important as we sought to get a good understanding of the reasons behind-, effects of-, and experiences with the new procurement approach from a limited number of interviews. The face-to-face interviews are according to Yeung (1995) recommended as one of the most suitable techniques for collecting data in qualitative research. All our interviews except one, which was conducted over the phone, were conducted face-to-face which allowed for easier and smoother communications and interpretations of attitudes.

It was important for us to conduct interviews with the right progression regarding whom to interview first. We chose to interview one of the persons with highest influence and knowledge about the procurement approach first. This interview provided us with a broader understanding and we used the information and the insight to fill the gaps from our explanatory meetings. Together with the preliminary theoretical framework, the explanatory meetings and first interview laid the foundation for the interview guides (see appendix 8.2) of the other interviews, so questions were tailored to the role of the interviewee. This allowed us to retrieve as relevant and good information as possible from the remaining interviews.

We also experienced the benefit of both researchers participating in the interviews, both to assure that the questions were in line with the plan, and to ask good follow-up questions and discussions. The participation of both researchers also led to a more informal atmosphere during the interviews leading the interviewee to be relaxed and able to provide honest and reasonable answers (Bryman & Bell, 2015).

2.3.2 Observations

May (2002) suggests that any thorough qualitative researcher should conduct observations in addition to interviews. An observation is when the researcher is immersed in a group, observing behaviours and listing to what is said and done (Bryman & Bell, 2015). As the case found place in a real-life setting, it allowed us

to conduct observations of a variety of the steps in the new procurement approach, which supplemented the semi-structured interviews (Yin, 2014). We found observations to be a necessity to get a proper overview of the procurement approach and how the actors involved in the process acted during the various meetings. In addition, it provided an opportunity to check if the information we received through the interviews was correct. Prior to the observations, all participants were made aware that we were conducting an observation, and what the purpose of the observations was. Both researchers took field-notes during the observations, where each observation was followed by an internal discussion between the researchers where we compared notes and finalised our final document with corresponding notes, in order to get as objective notes as possible.

The construction of the project used as case started in June 2017, and some products/services were thus already procured, some were in the planning phase, while some were in the execution phase when our research took place. In addition, the completion of the complete procurement approach, described in section 4.1.1, took more time than we had available for data collection. It was therefore five of the formal procurement steps we managed to observe; the product/service strategy meeting, introduction day, presentation of bid, kick-off meeting, and optimisation of the process, where different subcontractors were present each time. In addition, we observed the internal planning meeting of the introduction day, and how the collaboration between the main contractor and subcontractors worked in different operational meetings. In total nine different meetings, lasting from one hour to a whole day, were observed. As a supplement to these observations, both researchers showed general presence at the construction offices where we observed how the co-location worked.

2.3.3 Initial and Exploratory Meetings

To increase our knowledge about the case project and the industry, a total of eight meetings were initiated. Actors who participated in these meetings were personnel of the main contractor holding different roles, such as the procurement manager, innovation manager, business development manager and planner, as well as a PhD candidate from BI – Norwegian Business School (hereby referred to as BI).

Discussions and information provided during these meetings ensured that we could develop a deeper understanding of the construction industry, as well as a deeper insight into the project itself. As we had little prior knowledge about the industry and the project, we found the meetings very useful. However, it is emphasised that all information provided by the main contractor employees might be subject to biases, therefore we only focused on the general information provided and did not put a lot of attention on details and opinions in these meetings (Bryman & Bell, 2015).

2.3.4 Participation and Attendances

The researchers have prior to and during the research period actively worked towards enhancing the overall knowledge and understanding of the construction industry. One of the researches currently holds a position as administrative assistant in a network association named Lean Construction Norway. By participating in different seminars, the researcher gained valuable insight into the current debates within the construction industry. At the same time, the different opinions of a wide variety of participants, currently holding positions in various companies engaged in the construction industry, was experienced. In relation to this research, the seminars "Workshop about the life science centre (Livsvitenskapssenteret); How to achieve lean extreme?" and "Lean design and project development in Bispevika" were found particularly interesting. Another seminar attended, outside the lean construction network, found useful for the research was a seminar at BI about the quality of the collaboration in road-work projects. One of the researchers also attended the course GRA 6723 (Supply chain risk management in project-based industries) at BI. Through the course, it was acquired useful knowledge about how the temporary project organisation affects the supply chain in the construction projects.

2.3.5 Secondary Data

To supplement the primary data collected, and support the findings, it was collected documents found relevant from project participants. The documents consist of everything from the main contractor's publicly available strategy plan, and their intentions with the project, to documents relevant for each of the steps in the

procurement process and the offer the main contractor gave the client when competing about the project.

2.4 Analytical Process

As outlined in the research strategy, our research has followed the logic of the systematic combining by continuously moving back and forth between the theoretical and empirical domains (Dubois & Gadde, 2002b). It started with our participation in a purchasing course at BI, where we developed an interest in procurement, and especially the potential within industries with immature procurement functions. We saw that the role had not been given the right amount of attention in some industries, and we wanted to explore the potential of prioritising the purchasing function for companies. With the theoretical background of how procurement ideally should be performed, it was surprising to see the practice in the construction industry. After being introduced to the construction project in Bispevika, where the main contractor was developing and implementing a new procurement approach, we decided it was an ideal case. After contact with the main contractor was established, a large amount of time was spent on reviewing the literature we, given our prior knowledge, found relevant. Based on the literature review, a preliminary theoretical framework was created with a strong focus on the formal procurement process.

An explorative phase was then initiated where we, through several meetings, got to know more about the aim of the construction project and the new procurement approach. We wrote down essential information from the meetings and discussed the notes afterwards to make sure we had the same understanding. Throughout the explorative phase new theories and directions emerged, which led us to reformulate our research question. Instead of focusing on the pure formal procurement process, we realised that several informal mechanisms were important for the implementation to succeed. In addition, we learned that a reason why the main contractor changed their procurement approach was to increase the collaboration in the project and improve the traditionally adversarial and conflicting relationships. We then went back into the theoretical domain and reviewed additional literature covering the emerging concepts and found support in the previous literature. We

were, in other words, adapting the scope of the research and expanding our theoretical framework as the data collection proceeded (Dubois & Gadde, 2002b).

After the literature relevant for the newly discovered concepts were reviewed, we conducted the semi-structured interviews which resulted in a deeper understanding of the concepts found relevant for the research, like co-location, trust, long-term perspective and digital tools used to facilitate collaboration in the project. All interviewees gave consent for us to audiotape the interviews, which allowed us to perform the time-consuming process of transcribing all the interviews. The transcriptions provided accurate information, which was found highly beneficial when analysing the data.

The observations were performed when relevant meetings appeared, in-between the exploratory meetings and interviews. During the observations, we followed the same logic as for the meetings and noted what we found essential and discussed the notes afterwards. The interviews, documents, observation- and meeting notes were then subject to analysis, where the theoretical framework laid the foundations. We coded the first two interviews together, to ensure that we agreed on what nodes we found important. For the next five interviews, we first coded them separately before we compared the nodes we had made. This resulted in an as objective coding as possible, at the same time as each of us discovered some new codes. After the, in total, seven interviews were coded we saw that it was few new nodes appearing, which made us confident that we would be able to cover the rest of the coding individually. For the final coding we therefore divided the remaining transcripts among us.

The time-consuming process of coding was done in a computer-assisted qualitative data analysis software (CAQDAS) named NVivo, where all collected data were analysed and sorted into nodes. The nodes were selected based on the perceived importance, repetition patterns mentioned in the data, and theory-related material (Bryman & Bell, 2015). After coding all interviews, observation- and meeting notes, and documents we had created 134 various nodes. The next step in the analysis was to group the nodes with corresponding nodes, and the cluster of nodes then represented themes. The thematic analysis left us with a few main sections

representing the largest and interlinked themes in our analysis. Table 2 presents how the key themes emerged, illustrated by quotations from the primary data.

Table 2: Coding of findings.

Key Themes	Quotations
Motivation for change	"If you look to other industries they have had powerful productivity gains the last 20 to 30 years, while in the construction industry we have almost had a productivity decrease". "We see a significant change in the industry regarding the size and complexity of the projects, and the need for having closer partnerships". "This change will happen, and it is better to join now than to start in two years and be behind". "If we can reduce our costs by 20 percent and "company x" and "company y" can do the same, I believe that we can have a tremendous competing power together which we can carry on and use in other projects". "In the moment we get to be partner and get the possibility to contribute on how we can maximise our progression, we can to something to improve profitability".
Formal implementation mechanisms	"You must evaluate more than the price. Because the price is something you can provide for the things you know, but if you are going to do something new it must be room for that within the evaluation criteria". "The climate in the project is dependent on how early the actors are involved in the process, how much the actor can affect what is going to be constructed, and how it is going to be constructed". "We have to try to get to the point where we have contract models which implies that we all are in the same boat. This is not totally possible, as it is us that are paying, and they are the ones receiving money, (…) but when we get there I believe that we move actions in the right direction".
Informal implementation mechanisms	"It is important that the subcontractors' top management understand what is happening here, and that they are in on it". "The procurement in Bispevika is first and foremost about by mapping what kind of road that will take us the longest and will provide us with the best results in the long-term". "We need more of the "WE" - I am certain that this is the right way to go".

	"We now put 2 billion NOK into the pockets of the main contractor and tell them to do the best they can. We must trust them, and they have to trust us".
Challenges faced in implementation	"If you have been in the industry for 40 years, you will continue with the way it has been the last 40 years ". "We are very unsure about the economy in the project, whether or not we are able to meet the objectives. We do of course work all we can to reach them". "We have to radically change, (...) this is a total different mindset, as we shall not think about what is best for us, but about what that is best for the project. This isn't something that you can do over a week. We need the whole project to get this into our blood". "To prove it out on the construction site, and to get the economic numbers, or the hours saved, to actually show the subcontractor that they have spent 15 percent less time than the normally do is a challenge".

What is noteworthy is that we, towards the end of our analytical process, realised that we had received a great amount of information about the intentions with the new procurement approach; how interviewees hoped the collaboration would emerge throughout the project as a result of the foundations laid in the procurement. Due to the progression of the construction project and the time restriction imposed by the master thesis, we were, however, not able to unveil how the procurement approach actually influenced the collaboration, which we found an important aspect of collaborative procurement approaches in the early stages of the analytical process. We therefore decided to narrow the scope of our research and focus on an in-depth analysis of how main contractors can facilitate collaboration among project participants through their procurement approach, illustrated in figure 6.

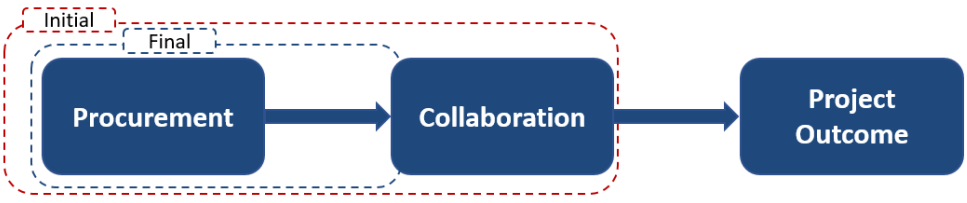


Figure 6: The development of our research scope.

2.5 Quality of the Research

It is proposed two primary criteria for evaluating the quality of qualitative research: trustworthiness and authenticity. Trustworthiness consists of four different criteria,

namely credibility, transferability, dependability and conformability (Bryman & Bell, 2015).

As the interviews were audiotaped the interviewees might be reserved to answer certain questions (Bryman & Bell, 2015). To secure the ***credibility*** of the research, we have used more than one source of data to study the phenomena, illustrated in figure 4, referred to as triangulation (Bryman & Bell, 2015). The comparison of data from all the sources through triangulation increases the understanding of the complex phenomena studied, at the same time as it increases the credibility of the research as the findings are cross-checked. All interviewees were informed, prior to the interview, that their responses would be anonymous and that the recordings would be deleted after the research was completed. We tried our best to inform about the audio recordings in a casual wording before the microphone was placed beside the interviewer to take the interviewees' focus away from the recorder. This was done to increase the probability for honest and open responses leading to credible answers from all interviewees.

Transferability relates to whether the findings of our research can be of use to others, in another context or time (Bryman & Bell, 2015). We believe that our in-depth analysis and findings can be useful for other clients, main contractors and subcontractors in the construction industry. Our research concerns challenges with the characteristics of the industry and other projects might face the same challenges that are enlightened in our research if, or when, they are going to implement a new, collaborative, procurement approach. Even though the focus of the research has been to use the uniqueness of the case to generate new insights, we therefore believe that many of our findings can be transferred to future projects aiming to adopt collaborative procurement approaches.

Dependability is an idea proposed by Lincoln and Guba (1985). They argue that the researcher should have an "auditing" approach to establish the merit of research in terms of trustworthiness. We have, throughout our research, secured and stored our field notes, interview transcripts and overview of interviewees in a case protocol, and our data analysis decisions in accessible manners (Bryman & Bell, 2015). This allows for easy access if needed to confirm or elaborate on our choices. We have

also, throughout the presentation of our empirical findings, referred to which interviewee who stated each quotation. That makes it easy to find the corresponding quotations in the case protocol, leaving a transparent research.

Conformability is concerned with ensuring that the researchers have acted in good faith during the lifespan of the research. This means that the researchers have not allowed personal values or beliefs sway the conduct of the research (Bryman & Bell, 2015). Bryman and Bell (2015) explain that when collecting data in a qualitative research it is easy to let personal opinions influence the questions asked, and how observations are interpreted. Throughout our whole data collection process, both researchers participated in all observations. Field notes were taken individually before compared and discussed after each observation. This limited the chances of the researches personal values or beliefs affecting the data collection. Both researchers were also present during all interviews, which facilitated great discussions and clarifications both with interviewees and internally among the researchers. The fact that all interviews were transcribed before analysed also increased the confirmability, as the answers from the interviewees were authentic in the coding to what was answered in the interviews (Bryman & Bell, 2015). Both researchers have had a focus on staying as objective as possible, proven with continuous discussion and collaboration through the process of writing the final thesis.

Lincoln and Guba (1985) propose that ***authenticity*** contains criteria such as fairness and ontological authenticity. An issue in qualitative research is that the researchers might have sympathy for the people and organisations studied (Bryman & Bell, 2015). A measure used to mitigate this was the presence of both researchers in all interviews and observations, allowing critical discussions about findings and interpretations after the interviews. It also allowed a continuous feedback if one of the researchers felt a leading question was asked, minimising the chance for further occurrence and a research influenced by leading questions posed by the researchers (Kvale & Brinkmann, 2009). We have also focused on conducting interviews with a wide variety of roles within different companies, to unveil different views on our topics of interest. At the same time, literature proposing opposite beliefs have been assigned equal focus when creating both the theoretical framework and research

questions. Based on these three measures, we are therefore confident that our research is fair.

With regards to the ontological authenticity, our research help members to arrive at a better understanding of their social milieu as the project has many persons involved in a wide variety of tasks. Our research provides an overview of the case, at the same time as the strategy of both the client and main contractor is presented.

The limitations of this research will be discussed in the final section of the thesis.

3. Theoretical Background

In this chapter, we review and compile previous literature and research to provide a theoretical background supporting our research. First, we present the characteristics of the construction industry, which Bemelmans et al. (2012) found to affect the procurement and collaboration in the industry. Then, we look further into arguments for why the procurement approach should change in the industry, by first reviewing what the traditional procurement approach is characterised by. Literature on how new procurement approaches can be implemented is then reviewed, by studying supplier selection, contracting and collaborative tools. Lastly, we review what researchers have found as challenges with a successful implementation of new, collaborative, procurement approaches.

3.1 Characteristics of the Construction Industry

A significant characteristic of the construction industry is the project organisation, which can be described as a temporary multiple organisation (Dubois & Gadde, 2000). It implies that construction projects are created to accomplish predetermined tasks, in a scheduled time-frame, with a multidisciplinary composition of participants employed by independent companies (Lehtiranta, 2014). This has led to a strong focus on the project and its economy, entailing a rather short-term perspective (Dubois & Gadde, 2002a, 2000). The short-term perspective is found to foster individual motives and objectives, and hinder a development of trust, common objectives and commitment to the relationships between the project participants (Bygballe et al., 2010).

The multidisciplinary composition of participants from independent companies comes from the fact that the industry is so specialised that a single company cannot provide all the tasks in the project by themselves (Akintan & Morledge, 2013). The main contractor therefore purchases the capabilities and knowledge outside their core competence (Bemelmans et al., 2012), which has resulted in that up to 90 per cent of the project-value is subcontracted (Akintan & Morledge, 2013; Arditi & Chotibhongs, 2005; Hartmann & Caerteling, 2010).

Over the years, the construction industry has faced an increased complexity, uncertainty, time pressure and customisation within the projects (Eriksson & Nilsson, 2008; Eriksson & Pesämaa, 2007; Pesämaa et al., 2009). What makes the construction industry highly complex is that each of the contractors normally uses their own network of suppliers again, leaving a whole set of interdependences (Dainty et al., 2001; Geraint, 2014; Tam, Shen, & Kong, 2011), as illustrated in figure 7. This results in a set of different supply chains serving the construction project, where each chain is also subject to other interdependencies outside the given construction project (Bankvall et al., 2010). The project owners therefore often lack a visibility of, amongst other, how tasks are progressing, which suppliers that might be underperforming or having financial trouble, and where there are shortages of material or capacity (Geraint, 2014).

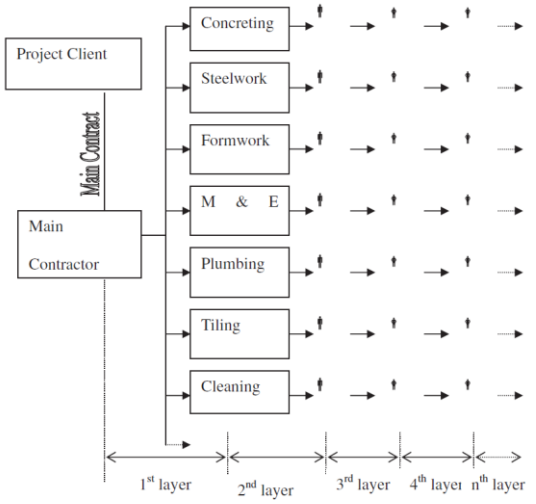


Figure 7: Illustration of a multilayer subcontracting system in the construction industry (Tam et al., 2011).

The complexity, emanating from the uncertainties and interdependencies, is found to set the conditions for the companies behaviour in the construction industry (Dubois & Gadde, 2002a; Lavikka et al., 2015). Further, Cicmil and Marshall (2005) found the complex process of communication and power relating among the project actors as a concern expressed by both practitioners and researchers. The reason for the concern can be seen in relation to the high fragmentation and adversarial behaviour characterising the industry, which has resulted in low productivity, cost- and time overruns, and conflicts (Aloini, Dulmin, Mininno, & Ponticelli, 2012; Hosseini et al., 2016).

A root cause for the problems in the industry, leaving a perceived poor supply chain performance, is lack of coordination and communication between the project participants (Bankvall et al., 2010; Lavikka et al., 2015; Naoum & Egbu, 2015). This lack of coordination and communication are found to come from the current arm's length and adversarial relationships, which hinders close collaboration

(Bankvall et al., 2010). Further, Pesämaa et al. (2009) stated that procurement sets the basis for the collaboration between the client and its main contractor, and the traditional procurement practices are found as a cause for the currently poor relationships (Eriksson, 2008; Eriksson & Laan, 2007).

A change in procurement practices is thus found as a solution to resolve the lack of collaboration among the project participants in the construction industry (Bemelmans et al., 2012; Eriksson et al., 2007; Eriksson & Nilsson, 2008; Eriksson & Westerberg, 2011; Naoum & Egbu, 2015). At the same time, an increased collaboration among the project participants is suggested to dramatically improve the performance of the construction projects (Bresnen & Marshall, 2000; Pesämaa et al., 2009). The focus in the rest of this theoretical review is therefore on procurement approaches that can facilitate collaboration among the project participants in construction projects.

3.2 A Change in the Procurement Approach

Procurement does, in general, include all the activities required to get a product or service from a supplier to its final destination (van Weele, 2014). In the context of the construction industry, Naoum and Egbu (2015) emphasised that procurement is a mechanism for linking and coordinating the project participants throughout the whole building process, both contractually and functionally. There are different models developed for the procurement process in the construction industry, where, amongst other, the order and content of the steps varies. One model, illustrated in figure 8, is developed by Johnston and Bonama (1981) and used by other researchers (e.g. Eriksson, 2006; Eriksson & Laan, 2007; Eriksson & Nilsson, 2008).

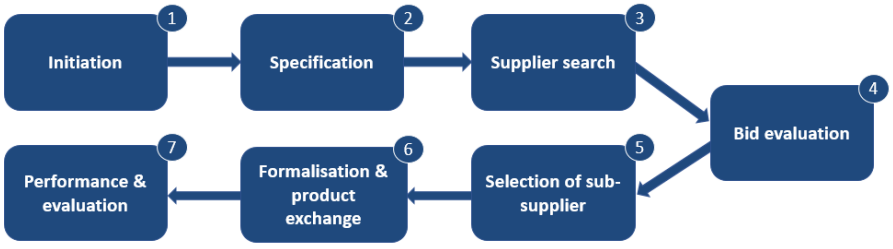


Figure 8: Illustration of the procurement process (Johnston & Bonama, 1981; Eriksson, 2006).

Over the past years, it has in general been a shift away from the transactional role of procurement, primarily making sure the company's operations did not run out of supplied components (van Weele, 2014), to a strategic role focusing on building relationships and lowering total costs (Tassabehji & Moorhouse, 2008). This is supported by a recent survey of chief procurement officers, where Deloitte (2017) found that procurement has a critical role in shaping the companies' overall business model and supporting execution to deliver value. Mature procurement functions are found to reduce costs, enhance quality and contribute to the innovativeness of the products and services of the buying company (Foerstl et al., 2013) if the company acknowledges the importance of the function (Tassabehji & Moorhouse, 2008). The construction industry is, however, lagging behind (Bankvall et al., 2010).

3.2.1. Traditional Procurement

Traditionally, a construction project starts with a client preparing detailed design documents together with its consultants (Eriksson & Laan, 2007), before the client selects the main contractor who is responsible for the construction project (Akintan & Morledge, 2013; Pesämaa et al., 2009). This is known as a design-bid-build contract (Eriksson & Westerberg, 2011), and the main contractor is usually selected based on a competitive tendering process (Pesämaa et al., 2009). From their empirical results, Eriksson and Laan (2007) found that this procurement procedure, done by the client, facilitates a focus on price and authority in all stages of the buying process.

To build the construction project, the main contractor is dependent on subcontractors and suppliers that are specialised in different fields (Bemelmans et al., 2012). With a strong focus on the particular project and its economy, the main contractor tends to have a short-term perspective where the focus lay on maximising its own profit (Akintan & Morledge, 2013; Dubois & Gadde, 2000). As a result, a competitive procurement approach is normally applied to select the subcontractors and suppliers (Akintan & Morledge, 2013; Dubois & Gadde, 2002a). This is done by inviting numerous actors to prepare lump-sum contract proposals, where the actor representing the lowest lump-sum price traditionally is chosen as the

subcontractor (Akintan & Morledge, 2013; Dubois & Gadde, 2000; Pesämaa et al., 2009). Here, a lump-sum contract refers to a contract where the main contractor agrees with the subcontractor to carry out the work for a pre-agreed fixed price, by a predetermined date (MacRoberts, 2015; van Weele, 2014).

The price focus is, however, found to likely prevent the project participants from experimenting with new alternatives as the new alternatives, in the short-term, is both less cost efficient and predictable and provides a greater risk (Bygballe & Ingemansson, 2014; Eriksson et al., 2007). At the same time, the price focus is found to frequently be the reason for poor project performance (Andresen, Landmark, Hajikazemi, Johansen, & Andersen, 2016; Pesämaa et al., 2009), and modifications at the construction site is in many cases so costly that the savings gained from choosing the lowest price more than outweigh the initial cost increase (Dubois & Gadde, 2000).

With a focus on the financial transactions, the two parties traditionally rely on a contractual coordination where formal contracts specify each party's financial- and other rights, responsibilities and duties (Lavikka et al., 2015). Together with the competitive procurement approach, this provides little incentive for collaboration among the parties (Eriksson, 2008; Eriksson et al., 2007). It is, in fact, found to foster adversarial and arms-length relationships which, together with several conflicts, often result in less desirable project results (Dubois & Gadde, 2000; Pesämaa et al., 2009). This can be explained by the finding of Suprapto, Bakker, Mooi, & Hertogh (2016), which is that the quality of the owner-contractor relation has a direct effect on the project performance. It is therefore argued that a fundamental change in the management of the relationships between clients, main contractors and subcontractors is vital to achieve future project objectives (Bygballe & Ingemansson, 2014; Naoum & Egbu, 2015).

3.2.2. A New Procurement Approach

The importance of a well-functioning construction industry is high, as the projects and their outcomes not only affect the many project participants but also heavily affect the society (Egan, 1998; Eriksson & Westerberg, 2011). The mere

transactional relationships, resulting from the traditional procurement approach, are, however, found to repeatedly deliver project results characterised by cost- and time overruns (Akintan & Morledge, 2013; Aloini et al., 2012). What is considered among the most significant developments to improve the project performance is a change towards a collaborative approach of procurement, facilitating an emphasis on trust rather than price and authority (Akintan & Morledge, 2013; Eriksson & Laan, 2007; Eriksson & Nilsson, 2008; Gadde & Dubois, 2010; Pesämaa et al., 2009).

A collaborative procurement approach, often labelled partnering, was suggested already in the 1990s, through governmental reports in the UK which identified a need for change within the construction industry (Egan, 1998; Latham, 1994). Since then, several researchers have researched the field and there has been an interest for implementing the concept in the construction industry (Bygballe et al., 2010; Eriksson & Laan, 2007; Hosseini et al., 2016; Schneider & Wallenburg, 2013). Most of the previous research has, however, focused on the relationship between the client and main contractor, while little attention has been addressed to the main contractor – subcontractor relationship (Bygballe et al., 2010). At the same time, it is questioned to which extent the collaborative approaches have become institutionalised and internalised by construction companies (Bresnen, 2009), which is supported by Hosseini et al. who in 2016 found that the Norwegian construction industry is still characterised by the traditional adversarial mindset. In this research, a main contractor using a collaborative procurement approach to facilitate collaboration among the project participants is therefore viewed as new compared to the traditional approach described in the previous section.

Researchers emphasise several reasons for why a more collaborative procurement approach should be implemented. As the procurement sets the basis for the collaboration between the project actors (Pesämaa et al., 2009), an underlying reason is the improved relationship between the main contractor and its subcontractors. Instead of being adversarial and arms-length is perceived to change to a collaborative relationship (Akintan & Morledge, 2013; Eriksson, 2008; Eriksson et al., 2007; Naoum & Egbu, 2015; Suprapto et al., 2016). Major benefits resulting from the collaborative relationships are greater predictability and

effectiveness, as the project participants are more likely to plan and share resources (Akintan & Morledge, 2013; Eriksson, 2008). Together with an increased constructability, coming from an early involvement of the subcontractor, the project cost and time can be decreased (Akintan & Morledge, 2013; Bresnen & Marshall, 2000).

Improved quality is another reason highlighted (Egan, 1998; Eriksson & Laan, 2007; Eriksson & Pesämaa, 2007; Tam et al., 2011), which can come from an increased incentive to focus on learning and continuous improvement (Bresnen & Marshall, 2000). The improved quality can also result from bottom-layer subcontractors no longer being forced to "cut the corners", due to unreasonably low bids, if the subcontractors continue the same procurement approach in their value chain (Tam et al., 2011).

There are several other benefits highlighted with a collaborative procurement approach (see e.g. Bresnen and Marshall (2000) and Akintan and Morledge (2013)), but the last highlight in this review is increased innovation (Akintan & Morledge, 2013; Eriksson & Laan, 2007; Hartmann & Bresnen, 2011). Traditionally, the risk is transferred from the main contractor to the subcontractors favouring habitual solutions (Eriksson et al., 2007). The demand of clients is, however, shifting from a focus on just price to a focus on criteria like innovation (Bemelmans et al., 2012). To stay competitive, the main contractor must, therefore, work together with its subcontractors to find great, innovative solutions (Eriksson & Westerberg, 2011; Pesämaa et al., 2009).

3.3 Implementation of New, Collaborative, Procurement Approaches

To achieve the benefits of the collaborative procurement approach, highlighted in the previous section, many aspects of the current procurement process must change (Eriksson & Laan, 2007; Eriksson & Pesämaa, 2007). It requires a re-engineering of the elements in the contractual relationship (Eriksson & Nilsson, 2008). Through a literature review, Bygballe et al. (2010) found that formal aspects of partnering, a collaborative procurement approach, have received a lot of attention, while some articles argue that a successful implementation of the concept needs a mix of both

formal and informal aspects. Bresnen and Marshall (2000, 2002) supported the latter and found that to develop an effective partnering approach informal processes are just as important as formal mechanisms. This is also supported by Cicmil and Marshall (2005) who found that following the steps of a new procurement procedure in itself is not sufficient to ensure collaborative work and an achievement of the project objectives. In this setting, formal mechanisms are for instance team building workshops, formal contracts and incentives, and supplier selection procedures, while informal aspects can be project team dynamics and styles of organisation and management. (Bresnen, 2009; Bresnen & Marshall, 2000, 2002).

The rest of this section is structured based on the procurement process developed by Johnston and Bonama (1981), illustrated in figure 8, which also other researchers have used to illustrate different aspects of procurement (e.g. Eriksson, 2006; Eriksson & Laan, 2007; Eriksson & Nilsson, 2008). Their model primarily focuses on the formal aspects of the procurement approach, and the informal aspects are therefore highlighted in the next section (3.4) together with the challenges faced in the implementation.

Before the review continues, we want to emphasise that Bresnen (2009) found it likely with differences in local practices and combinations of the different tools and techniques.

3.3.1 Supplier Selection

Supplier selection relates to all the activities required to select the best possible supplier and is considered one of the most important steps in procurement and in ensuring a good project outcome (de Araújo, Alencar, & de Miranda Mota, 2017; Faes & Matthyssens, 2009; van Weele, 2014). In our research, the focus lay on collaborative procurement approaches which demands more resources of both the main- and subcontractor than a traditional procurement process (van Weele, 2014). It is thus not an approach the main contractor should apply for all its subcontractors, but for those found to have a strategic importance (Dubois & Gadde, 2000; Kraljic, 1983). A common way of identifying those subcontractors, and by that choose the procurement strategy for the given product or service, is through a matrix developed

by Kraljic (1983) where the supply risk is evaluated against the profit impact. At the same time, Eriksson (2010) found that the higher the levels of complexity, customisation, uncertainty and time pressure are in the projects, the more collaboration and less competition is required.

It is emphasised that partnerships are based on several fundamental principles, such as trust, respect, commitment, equality and communication (Eriksson & Laan, 2007). This should be visible throughout the whole procurement process (Eriksson & Nilsson, 2008) as the relationship between the two parties emerge and develop throughout the process (Bresnen, 2009). One way of enhancing commitment and developing trust is to involve the subcontractors early in the process (Eriksson et al., 2007). Eriksson et al., (2007) found that an early involvement is one of the most important techniques to facilitate collaboration in a construction project. It is further emphasised that an early involvement of the subcontractors is important for them to provide the greatest value to the project (Hosseini et al., 2016; Naoum & Egbu, 2015), by for instance increasing the constructability (Bresnen & Marshall, 2000).

After it is initiated that a product or service should be procured the ***specification*** is created. The specification involves the planning and preparation of documents that describe the needs and requirements of the main contractor (Pesämaa et al., 2009). To achieve a collaborative relationship, where innovations are created, Eriksson and Nilsson (2008) found a joint specification to be optimal in the client – main contractor relationship. Eriksson and Laan (2007) did, however, find that it is rarely used and Pesämaa et al. (2009) stated that the client and its consultants normally conduct detailed designs before the main contractor is selected, which makes it challenging for the main contractor to use joint specifications with subcontractors.

Another solution can be functional descriptions, which Hosseini et al. (2016) found important in order to develop innovative solutions with the upcoming partner. A functional specification describes the functionality of the product or service the main contractor is procuring and is an alternative to the technical specifications describing all technical properties and characteristics of the product or service as well as how it should be performed by the subcontractor (van Weele, 2014). If the

specifications are too detailed, only a few subcontractors might be able to deliver the requested product or service (Frödell, Josephson, & Koch, 2013).

When the specifications are ready, the main contractor must send out an ***invitation for bids*** to the potential subcontractors (van Weele, 2014). Instead of the common open bid procedure (Eriksson & Laan, 2007), facilitating a high emphasis on competition (Eriksson, 2008), a limited bid invitation is found as a crucial part of the cooperative procurement approach (Eriksson, 2008; Eriksson & Nilsson, 2008; Pesämaa et al., 2009). Here, the main contractor should invite the subcontractors perceived as trustworthy and competent enough to perform according to the expectations (Pesämaa et al., 2009). This is found to enhance long-term relationships and collaboration, at the same time as it provides a competitive comparison between the subcontractors (Eriksson, 2008; Papadonikolaki, Verbraeck, & Wamelink, 2017; Pesämaa et al., 2009).

After the bids are received, they must be ***evaluated*** and compared in order to find the best subcontractor (van Weele, 2014), and Bresnen (2009) found that spending sufficient time in this step can help to shape and constitute the collaborative model between the two parties. Choosing the evaluation criteria is an important task (de Araújo et al., 2017), and price has traditionally been considered the most important criterion (Aloini et al., 2012; Eriksson & Laan, 2007; Pesämaa et al., 2009).

An underlying idea with the collaborative procurement approach is that it should focus on trust, rather than price (Eriksson & Nilsson, 2008). Eriksson (2008) found that more weight on soft parameters and less weight on price facilitates collaboration. Examples of such soft parameters, which could be used as evaluation criteria, are collaborative ability, reputation, technical competence, reference projects, earlier experience with the subcontractor, staffing and shared values (Andresen et al., 2016; Eriksson, 2006, 2010; Eriksson & Laan, 2007; Eriksson & Nilsson, 2008; Tam et al., 2011). Bresnen (2009) emphasised the importance of finding a subcontractor with an identity that suits the main contractor, as it increases the chances of successfully creating a mutual dependency between the two parties, which he found important to motivate the parties to collaborate. This is supported

by Lehtiranta (2011), who pointed at motivation as a crucial factor for the parties to sustain to the vision and plan throughout the whole project.

When evaluating which criteria to use, and thus what kind of information to collect about the potential subcontractors, Pesämaa et al. (2009) found that the focus should lay on the attributes most important for the task the subcontractor will perform. Through a survey, they found that the task-related attributes have a direct effect on the collaboration between the two parties, as it gives the opportunity to benefit from the contracted party's unique, relevant abilities (Pesämaa et al., 2009).

Based on the evaluation of each bid, it must be decided which subcontractor to pursue a cooperative relationship with (van Weele, 2014). It is found that a high involvement from both the client and main contractor when selecting the subcontractor, namely a joint selection, is ideal (Eriksson & Nilsson, 2008; Eriksson & Westerberg, 2011). Eriksson and Westerberg (2011) found that the joint selection, together with joint efforts in the integration, improves the performance in terms of cost, time, quality, environmental impact, work environment and innovation.

3.3.2 Contracts and Incentives

The separation between researchers who believe partnering can be achieved through formal mechanisms, and those who view partnering as an informal and organic development, is also reflecting their attitude to the importance of contracts and incentives (Pesämaa et al., 2009). Bresnen and Marshall (2000), for instance, emphasised that relying on formal contracts alone is not sufficient to achieve the desired change in the project participants attitudes towards collaboration. On the other hand, Bygballe et al. (2010) also found researchers who argue that the construction industry is characterised by a system-based trust which is facilitated through contracts.

Through a questionnaire, with 113 qualified responses, Suprapto et al. (2016) found that there is not a direct effect between the contract type or incentives and the project success. They did, however, find that the use of a partnering/alliance

contract (instead of lump-sum or reimbursable contract) and proper incentives have an indirect positive effect on the project success, by improving the relational attitudes and quality of the teamwork (Suprapto et al., 2016). Also, Lehtiranta (2011) found that relational contracting improves both the social and overall performance by addressing the collaborative work as a focal priority in project implementation.

The ***contracts*** do, in general, legally distribute the financial incentives, risks and other rights between the parties before the construction starts (Lavikka et al., 2015). Traditionally, the contract terms are so strictly applied that little, or none, consideration is given to sustain long-term relationships (Akintan & Morledge, 2013). The formal and comprehensive contracts facilitate a high emphasis on competition (Eriksson, 2008), yet almost all respondents in the survey of Eriksson and Laan (2007) use those contracts.

The choice of contract should depend on various circumstances, such as the product/process uncertainty, desired allocation of risk, the owners' capabilities and market conditions (Suprapto et al., 2016). If the aim with the relation is to achieve innovations, Eriksson et al. (2007) emphasise that it should be a fair sharing of risks among the parties and minimal contractual constraints. Further, Suprapto et al. (2016) found that a proper contract will encourage the contract parties to work rationally together to achieve the best possible outcomes, in accordance with their common objectives. They concluded that a partnering/alliance contract should be used, if possible, as it enhances the relational attitudes. They did, however, emphasise that it will come with a cost as the parties must translate their shared norms into effective teamwork throughout the project lifecycle.

In a road maintenance project in the Netherlands, Hartmann and Bresnen (2011) saw that the contract between the client and main contractor changed when they aimed at achieving a partnership. Among the reasons for the change were requirements of greater value with fewer resources, a lack of investments in innovative ideas, and an adversarial relationship (Hartmann & Bresnen, 2011). The new contract involved a longer-term agreement with a possibility for extensions, it

had a functional description, and the main contractor was given a much more active role with less direct supervision by the client (Hartmann & Bresnen, 2011).

The contract in the road maintenance project is an example of a dyadic contract between the client and main contractor. Instead of having multiple dyadic contracts in the project, researchers have suggested, and some practitioners have used, multi-party contracts (Lavikka et al., 2015). In the multi-party contracts, risk and rewards are shared between at least the client, designers and main contractor, at the same time as they make collaborative decisions and agree to not sue each other during or after the project (Lavikka et al., 2015). Lavikka et al. (2015) conducted a comparative case study of two complex constriction projects, one using multiple dyadic contracts and the other a multi-party contract. They found that both contract forms can lead to successful results, but that the case with multiple dyadic contracts had to use more procedural coordination mechanisms (see section 3.3.3) to achieve the desired collaboration.

Incentives, in terms of performance-related bonuses, are often included in contracts to motivate the contract parties to reach certain objectives (Eriksson et al., 2007; Osipova & Eriksson, 2013; van Weele, 2014). From their survey, Suprapto et al. (2016) found that if the aim of the incentives is to limit the owners' involvement in the process, incentives should be avoided as it can negatively affect the relational attitudes. On the other hand, if proper incentives are chosen for the right reasons they can have a positive effect on the relational attitudes, which by improving the teamwork can improve the project result (Suprapto et al., 2016).

Hosseini et al. (2016) found target price by sharing bonuses and maluses as the most important interaction element to improve the cost-effectiveness in projects, as it gives strong incentives to save costs and improve the productivity. Further, they found that the architect and subcontractors should be included in the sharing. The latter is in accordance with what researchers (e.g. Eriksson, 2008; Pesämaa et al., 2009) have found as important to facilitate collaboration, namely that incentives should be based on team performance (e.g. total cost) rather than the performance in each specific contract. Eriksson et al. (2007) added an interesting aspect to this topic, as they found that the financial incentives should only be based on the

collective performance if increased collaboration is considered more important for innovation and value creation than individual contributions. At the same time, they emphasise that too much faith should not be placed in such incentives, but that they can serve as an additional basis for motivation and commitment. The collaborative procurement approach should also include "soft" incentives, such as an opportunity for future work and better working environment (Eriksson et al., 2007).

3.3.3 Tools for Collaboration

Lavikka et al. (2015) found that the collaborative work in construction projects must be coordinated, which they defined as integrating the organisations' different parts towards a common objective. The contractual coordination, together with its incentives, is important to define financial and other rights (Lavikka et al., 2015), and in helping reinforce a common understanding (Bresnen, 2009). In the construction industry, much of the production does, however, take place within the buying process since there is no ready-made product to buy (Eriksson, 2008; Eriksson & Laan, 2007). To make sure the contractual mechanisms are implemented in the everyday communication between the project participants, several researchers (e.g. Eriksson & Laan, 2007; Eriksson & Nilsson, 2008; Hosseini et al., 2016; Lavikka et al., 2015) emphasised the need for collaborative tools, or procedural coordination as Lavikka et al. (2015) called it.

Both Lavikka et al. (2015) and Suprapto et al. (2016) found that regardless of the contract type, the project management can achieve improved project results through collaborative relationships. What differs is how much time and effort the management must spend on collaborative tools (Lavikka et al., 2015; Suprapto et al., 2016). Through a longitudinal case study, Eriksson et al. (2007) found that the use of collaborative tools were important in order to change the attitudes of project participants and facilitate a collaborative project climate with shared values and a team spirit.

There are several collaborative tools suggested by researchers for the partnering to be successful. Among the most frequently mentioned is the development of common objectives (Eriksson, 2008; Eriksson et al., 2007; Eriksson & Laan, 2007;

Lavikka et al., 2015; Pesämaa et al., 2009), which can help the parties in their collaborative work by developing trust and encourage information sharing (Lavikka et al., 2015). The development of common objectives is often found during a start-up workshop (Hosseini et al., 2016).

Another frequently suggested tool is a co-location of the project parties (Eriksson, 2008; Eriksson et al., 2007; Eriksson & Laan, 2007; Hosseini et al., 2016; Lavikka et al., 2015). The co-location creates social networks where communication and gathering of information are easier (Lavikka et al., 2015), which highlights the importance of face-to-face communication (Eriksson et al., 2007; Hosseini et al., 2016; Lehtiranta, 2011). Other collaborative tools found through our literature review are performance of teambuilding activities, shared databases, adoption of dispute resolution approaches, regular meetings, visual metrics showing the project progress, IT systems, use of a liaison and an open book economy (Andresen et al., 2016; Eriksson, 2008; Eriksson & Laan, 2007; Hosseini et al., 2016; Lavikka et al., 2015; Pesämaa et al., 2009). Digital tools are in general found helpful for running the projects more smoothly by allowing the different actors to share information and project data, which enhance the productivity in the projects (Sherratt & Kapogiannis, 2018).

3.4 Challenges to Overcome in Implementation

Suggestions for how to implement collaborative procurement approaches were reviewed in the previous section. It is, however, not easy to obtain a radical change within an industry as diverse and complex as the construction industry (Bresnen et al., 2005; Egan, 1998; Hosseini et al., 2016). It is, in general, a mistrust between the main contractors and subcontractors (Akintan & Morledge, 2013), and Dainty, Briscoe, and Millett (2001) found that subcontractors are sceptical to the idea of partnering as they do not believe it will be mutually beneficial. They also found the scepticism and mistrust to be grounded in the ingrained adversarial practices traditionally characterising the industry, and it is perceived as a major barrier to create an understanding of each other's needs (Dainty et al., 2001).

Organisations are, in general, socially complex arrangements consisting of relationships and interactions between individuals and groups with diverse mindsets and interests (Bresnen et al., 2005). A successful implementation of the collaborative procurement approach may thus require more than the formal process described in the previous section (Bresnen & Marshall, 2000; Cicmil & Marshall, 2005). A change of attitudes, improvement of interpersonal relationships and transformation of cultures are therefore essential (Bresnen et al., 2005; Bresnen & Marshall, 2000; Naoum & Egbu, 2015). Bresnen and Marshall (2000) emphasise that even though some basic unity of interest between the parties can be presumed, it does not mean that aligning the attitudes is straightforward – it is highly linked to the organisational culture (Bresnen & Marshall, 2000).

The traditional culture in the industry has been that risks are transferred to other parties, which have created a mistrust between the different parties where each of them focuses on protecting their own profit (Akintan & Morledge, 2013; Lavikka et al., 2015). Changing this culture can be challenging as the deep-rooted attitudes in the industry are found difficult to change (Bresnen & Marshall, 2000; Bygballe & Ingemansson, 2014). It is a tension between the need for developing trust between the project participants and the surrounding economic conditions tempting the participants to act in more traditional, adversarial ways (Bresnen & Marshall, 2000). Changing the culture often requires a long-term perspective (Bresnen et al., 2005; Wood & Ellis, 2005), which is not what traditionally characterises the industry (Aloini et al., 2012; Dubois & Gadde, 2002a, 2000). Bresnen and Marshall (2000) found that whether or not the cultural change will succeed depends on situational factors like; whether there is shared perception of a need for change, whether the climate is “supportive” or not, whether or not powerful and competing subcultures or counter-cultures exist, and whether the existing culture is powerful, well established and mature.

When implementing the new procurement approach, and by that change cultural assumptions built into the organisational structures and practices, psychological processes of identification, alignment and internalisation might create an internal resistance and disagreements (Bresnen et al., 2005). This is especially the case if the change is only imposed by top management (Bresnen & Marshall, 2000) and is

found challenging to manage (Bresnen & Marshall, 2002). Bresnen et al. (2005) found that the implementation is more likely to be accepted if it corresponds sufficiently to existing practices. If that is not the case, they found it useful to have the most experienced or knowledgeable employees to "pilot the new approach". Reason being that it creates a good platform for them to apply their knowledge to refine the new procurement approach, at the same time as it can generate a greater legitimisation of the new approach across the company as a whole (Bresnen et al., 2005). The most experienced and/or knowledgeable employees are also the ones that most likely will resist the new approach, and letting them apply their knowledge in the pilot can create less resistance (Bresnen et al., 2005).

Along with the difficulties found with changing the industry culture, is the persistence of the "old" ways of doing things (Cicmil & Marshall, 2005; Hartmann & Bresnen, 2011). Through a case study, Hartmann and Bresnen (2011) found that the team members of both the client and main contractor became trapped in their established values and beliefs, and ended up relying on their existing habits and routines. This is supported by Eriksson (2008), who found that the clients tend to be prisoners of their past behaviour; unconsciously making decisions against their objective of achieving a partnership. Establishing collaborative relationships in the construction industry is therefore not only a matter of joint knowledge creation on ways of working, but also unlearning of old routines, attitudes and habits are essential for the collaboration to emerge (Bresnen et al., 2005; Hartmann & Bresnen, 2011). Dainty et al. (2001) found that the most important change at an organisational level, to achieve fruitful partnerships, is that the main contractors and clients accept that subcontractors can bring added value to the construction project. Hartmann and Bresnen (2011) suggest that moments of reflection can help to reveal the internalised behaviour and help the parties to rethink the way their practices are carried out.

From a comparative case study, Bresnen and Marshall (2002) found two other notable challenges. There were found difficulties in translating the protocol agreed at a senior level into effective working relationships at an operational level. Formal team-building exercises helped, but ongoing experiences and actual results were found as the most important way of getting the participants into a closer,

collaborative working relationship (Bresnen & Marshall, 2002). The other challenge related to the lack of continuity of relationships within the project team (Bresnen & Marshall, 2002). Together with the importance of individual skills, the lack of continuity made the development of knowledge and experiences with regard to collaborative ways of working challenging (Bresnen & Marshall, 2002).

A frequently mentioned informal mechanism to overcome the challenges is a change toward a long-term perspective, with a focus on continuous improvement of the procurement approach (Eriksson & Nilsson, 2008), which is not what traditionally characterises the industry (Akintan & Morledge, 2013; Bygballe et al., 2010; Dubois & Gadde, 2002a, 2000). Implementing new procedures regarding specification, bid evaluation and new compensation systems require that all the actors develop competence within these areas, which is difficult to master over the duration of a single project (Eriksson et al., 2007). A long-term perspective is also found as an ultimate objective as it provides an increased incentive for collaboration (Eriksson, 2007), and is important in order to find innovative solutions with the subcontractors (Bygballe & Ingemansson, 2014; Dubois & Gadde, 2002a), which are benefits emphasised with a collaborative procurement approach (section 3.2.2.). It is, however, worth noting that long-term relationships with subcontractors often result in indirect benefits such as better communication, team spirit and fewer disputes, but the measurable benefits are not as apparent (Eriksson et al., 2007).

Further, Suprapto et al. (2016) pointed to an ongoing support from senior management, from both sides, throughout the whole project lifecycle as critical for the collaboration to sustain throughout the project, which is supported by findings from Bresnen (2009) and Hartmann and Bresnen (2011). The main contractor should also make sure to have a common understanding of how the new procurement approach is going to be used, and the objectives of it (Bresnen et al., 2005; Eriksson & Westerberg, 2011). A lack of understanding of the concept, and its prerequisites might hinder a successful implementation (Eriksson & Pesämaa, 2007).

The final aspect we want to highlight is that Naoum & Egbu (2015), through their review, found that the change in procurement approach should be a client-driven

process supported by the rest of the construction team. Eriksson et al. (2007) supports this and explained it with two reasons. The first reason is that clients generally appreciate the value creation possible from subcontractor involvement more than the main contractors, to whom the profitability is more directly affected by low costs. While the second reason is that the relationship among the different actors in the project is affected by the relationship between the client and main contractor.

3.5 Theoretical Framework

In this chapter, a wide range of insights from previous research have been compiled to get a better understanding of what new, collaborative, procurement approaches imply and how they can be implemented. Little research was found taking the same focal point as our research; focusing on the relationship between the main contractor and its subcontractors and how main contractors can facilitate collaborative relationships through their procurement approach. Theories from different researchers are therefore combined to create a solid background for the discussion of our research question. Based on the preceding review a theoretical framework for the research has been created, illustrated in figure 9.

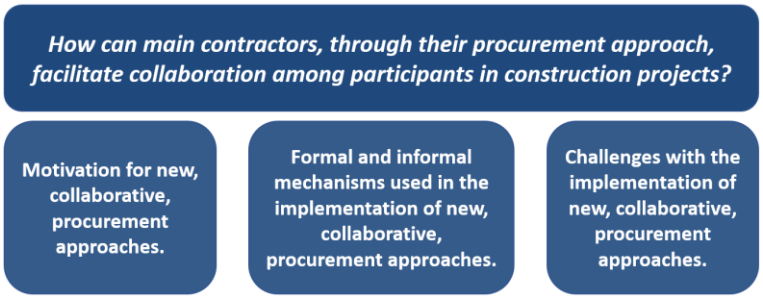


Figure 9: Theoretical framework.

As the theoretical framework shows, several aspects were found important to study in order to answer our research question. Already in the 1990s, it was identified that the construction industry had to change their relational attitudes and that a new procurement approach could be the solution (Egan, 1998). Since then, several researchers have found benefits of increased collaboration in the industry, but the Norwegian construction industry is still characterised by the traditional adversarial mindset (Hosseini et al., 2016). As collaborative procurement approaches performed by main contractors are found as relatively new in the Norwegian

construction industry (section 3.2.2.), and previous initiatives outside Norway have had difficulties with subcontractors being sceptic (Bygballe et al., 2010; Dainty et al., 2001), a better understanding of the motivation behind the change is found essential.

From the theoretical review, it is also identified that there are different views on what is important to focus on when implementing a collaborative procurement approach (e.g. Bresnen and Marshall (2000) compared to Eriksson (2008)), and that there are local differences (Bresnen, 2009). From the existing literature, we have found different aspects with regards to the formal supplier selection procedures, contract models, incentive structures and collaborative tools that researchers emphasise as important for a successful implementation (section 3.3). At the same time, informal mechanisms, like the cultural change, development of trust and unlearning of old habits, is also pointed to as crucial for a successful implementation (section 3.4). Much of the literature reviewed to generate the theoretical background is, however, research on the procurement approach of the client and its relationship with the main contractor and other actors. A further investigation of the formal and informal mechanisms used by main contractors to implement new, collaborative, procurement approaches is therefore found important to be able to answer our research question.

In addition, previous literature has identified different challenges that can arise when implementing a new procurement approach demanding changes in cultural configurations (Bresnen & Marshall, 2000). Additional insight to which challenges main contractors currently implementing new, collaborative, procurement approaches are facing is therefore also found useful to answer the research question.

The theoretical background and framework were used to develop the sub-questions presented in section 1.3 and will further be used to guide the empirical analysis and presentation of findings.

4. Empirical Findings and Analysis

As presented in chapter 2, we have performed a case study to gain an increased understanding of the research question: "*How can main contractors, through their procurement approach, facilitate collaboration among participants in construction projects?"*. The following chapter presents the empirical findings and analysis and follows the main themes that emerged from the theoretical background. We found it useful to combine the presentation of the empirical findings and analysis in one chapter as it reduces the amount of non-value generating repetitions and provides the opportunity of going in-depth of each finding in an orderly manner.

In the first section, we present the case studied to provide an overall understanding of the case and context of the new procurement approach. As researchers have found the procurement approach of the client to affect the level of competition and collaboration in the project (Eriksson, 2008; Eriksson et al., 2007), we start with a thorough description of the client's procurement approach. Then we present aspects of the construction project we find relevant for our research before we look further into the idea behind the new procurement approach of the main contractor. In the second section, we present the different actors' motivation for a change towards a collaborative procurement approach. The third section contains a deeper analysis of how the new, collaborative, procurement approach was implemented by the main contractor and how the different mechanisms were perceived by project participants. To keep the analysis clear, the section is divided into the formal- and informal mechanisms used by the main contractor. Lastly, we present the main challenges faced in the implementation of a new, collaborative, procurement approach.

Before the analysis start, we want to emphasise that the interviews were held in Norwegian and that we have performed a careful translation of the quotations from interviewees.

4.1 Presentation of the Case – The Bispevika Project

When the development of Bispevika (a part of the Bjørvika district in Oslo) started, OSU was faced with the possibility of making a strategic change. They were

established in 2001, with the sole purpose of developing Bjørvika, and had so far constructed Barcode which consisted of primarily office and commercial buildings. Bispevika, on the other hand, will when finalised consist of 1 500 apartments and 30 000 square meters of commercial areas which implies a change from the B2B market to mainly the B2C market for OSU. They were therefore looking for a contract model that could help them develop the most attractive residential and commercial area in Norway. In addition, they saw that their major cost driver was the construction cost. Given the poor productivity in the construction industry, and the results from other industries focusing on productivity, they believed that by doing things radically different it would be possible to achieve a cost reduction of up to 40 per cent.

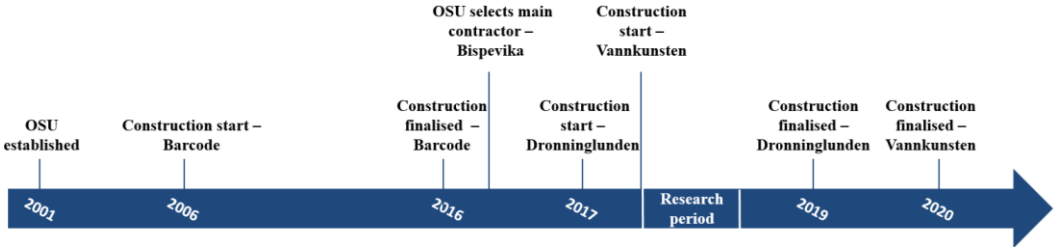


Figure 10: Timeline - Development of Bjørvika.

The development of Bispevika is divided into different phases, and for the construction of Dronninglunden OSU (hereby referred to as the client) decided to implement changes. In 2016, they invited the five largest main contractors to present how they would solve the task of building the most attractive residential and commercial area in Norway and at the same time reduce the construction costs with up to 40 per cent. The client gave the main contractors some clues on what they thought was necessary to reach the ambitions, such as industrialisation, digitalisation, standardisation, new contract models and collaboration patterns, but it was not required that the main contractors included any of it. Based on the solution presented by each main contractor there was selected three main contractors who continued to a second phase. There, each main contractor had to develop their solution into a business model – this time in collaboration with the client through workshop sessions. In the workshop sessions, the client required the presence of the top management of the main contractors and the key personnel that was intended to perform the project. Based on a new assessment, where the

collaboration between the client and main contractor were one of the criteria, two main contractors were left for the final phase.

After depth interviews with central persons from each main contractor, AF Gruppen was selected as the main contractor for the project for reasons such as their risk willingness and somewhat untraditional mindset, which the client found crucial for achieving their ambitious project objectives. Then, it was signed a partnership contract between the client and main contractor, where the focus was to achieve the objectives of Bispevika:

1. … becoming the most attractive residential and commercial area in Norway.
2. … increasing the value creation by 40 per cent compared to traditional construction projects.
3. … having the most satisfied homeowners in the market.
4. … changing the collaboration patterns in the construction industry.

An essential part of the contract is that the main contractor receives a considerable bonus if the Bispevika project achieves the abovementioned objectives. In addition, the intention is that the same main contractor is going to develop the rest of Bispevika with the client, implying working together for approximately seven years and projects worth about 5 billion NOK. The contracts for the remaining projects are, however, signed along the way after each party have evaluated the process.

When our research started, AF Gruppen had also received the contract for the next project, named Vannkunsten. The case studied (hereby referred to as the Bispevika project) have thus been the construction of Dronninglunden and Vannkunsten, with start-up in June and September 2017 and expected finalised in August 2019 and July 2020 respectively. The Bispevika project constitutes a total of 365 apartments, divided between ten buildings, and 8 000 square meters of commercial areas in the first floors. The project has a value of approximately 1,15 billion NOK, and there are several factors that make this project especially complex. The

Figure 11: Illustration of the finalised version of the Bispevika project, retrieved from an internal AF Gruppen presentation.

project is located by the seafront, where five of the buildings are located above the water with subsea foundations. In addition, all the buildings are different (see figure 11) and there is only one access point to the construction site which also is used by other construction projects in the area.

4.1.1 The Procurement Approach of the Main Contractor

One of the preconditions from the client was that the main contractor continued the same procurement approach as the client when procuring subcontractors found strategic important. This was required in order to keep the same mindset and contract regime throughout the whole value chain. The requirement was in accordance with the beliefs of the main contractor who stated in their solution, presented in phase one of the tendering, that changes in their procurement approach were necessary.

The main idea behind the procurement approach in Bispevika is that there are other factors than the direct price that affects the final project outcome. Instead of focusing on direct negotiations it is a focus on creating partnerships, with good collaboration, that will give the best possible results in the long term. Figure 12 illustrates the formal aspects of the procurement approach developed in Bispevika for the products/services defined as strategic, which was the focus of our research. We want to notify that some steps might happen simultaneously, depending on how much time it is between the procurement process start and construction start. At the same time, the procurement approach is subject to continuous improvements and the illustration is created based on observations and information provided in the first quarter of 2018.

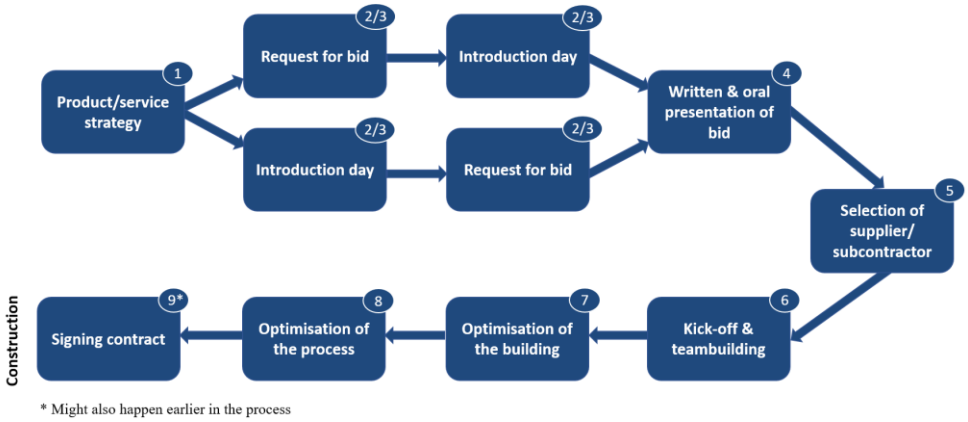


Figure 12: Illustration of the procurement approach for strategic products/services in Bispevika.

In addition to the formal process outlined in figure 12, the main contractor found it necessary to apply several informal mechanisms in their procurement approach to facilitate collaboration.

4.2 Motivation for a New Procurement Approach

When researching the first sub-question; *Why are construction companies currently implementing new, collaborative, procurement approaches?*, we found that the motivation for changing the procurement approach was highly linked to the perceived benefits of increased collaboration. Interviewees from the main contractor explained that procurement was of great importance for the project as it was the entrance for all the actors into the construction project. The procurement was thus found crucial as it was perceived to set the conditions for whether collaboration would emerge or not. This was agreed by interviewees from subcontractors, where it was explained that the traditional procurement approach of main contractors must change if they desire to develop new ideas together in projects.

> *"In the procurement process, you have to facilitate collaboration in completely new ways if you desire innovations and development"* – *Interviewee 9.*

Interviewees from all actor groups interviewed emphasised that the current practices in the industry have led to a poor productivity. Some interviewees explained that while other industries were forced to increase their productivity to avoid international companies taking over their production, the Norwegian construction industry has never been in a situation where they have been forced to change due to market conditions. They were further pointing to the relationship between the different project participants, and how they interact with each other, as a potential reason for the poor productivity. The most advocated reason, among all actor groups, for why the collaboration patterns should change was therefore the potential

> *"If you look to other industries they have had powerful productivity gains the last 20 to 30 years, while in the construction industry we have almost had a productivity decrease"* – *Interviewee 14.*

for a productivity increase**.** Time spent on the construction site was found as the largest cost driver, and a productivity increase would thus have a great effect on the costs of the project. An observation of a process optimisation workshop revealed that by using the knowledge of the different actors and forcing them to collaborate, the project was able to decrease the scheduled amount of days spent on structural work from 34 to 17 days per floor.

Several of the interviewees characterised the construction industry as way too conflict-oriented where each of the project participants tries to move the blame for delays and mistakes to the others to secure themselves, instead of working together to find a good solution. It was a consensus among the interviewees that new and better solutions could be discovered if more collaborative relationships were developed and the knowledge of the different project participants was used. The development of new solutions was therefore identified as another motivational factor for a new procurement approach.

> *"We have already generated savings [in this project], compared to the calculations, because we [subcontractor and main contractor] sat down and discussed what the most optimal solution would be"* – *Interviewee 11.*

Interviewees further explained that the conflict orientation has resulted in an industry where it is challenging to maintain profitability, where some projects can earn 30 per cent while others lose 10 per cent. Interviewees from subcontractors and the consultant emphasised that the projects not going according to the plan can get so tough that their employees quit. Closer collaboration between the project participants was by some interviewees perceived to increase the continuity within the teams working together in the projects. To work long-term with the same teams was further pointed to as a mean of reducing the conflict level between the project participants. A collaborative procurement approach was therefore perceived to lower the number of conflicts, and by that improve the working environment.

Another motivational factor identified for why actors found it necessary to change their practice now was that they believed it would provide a competitive advantage. Both the change itself and the increased collaboration among the project participants was by several interviewees perceived to increase their internal knowledge. The new knowledge combined with the tighter relationships, resulting from a partnership, was emphasised as beneficial as it makes it harder for the main contractor to choose other subcontractors in the future.

> *"This change will happen, and it is better to join now than to start in two years and be behind" – Interviewee 2.*

Much grounded in the poor productivity and tough working conditions, all interviewees agreed that a change in the collaboration patterns in the industry can be beneficial for all project participants. It was, however, unveiled a mixed view among the interviewees on whether the procurement practices of main contractors would change and whether project actors are prepared for changing their practice towards a collaborative one. Several interviewees explicitly stated that they believed in a change in the market and that the change is starting to mature within the companies. To illustrate this, some interviewees referred to a situation with another main contractor, HENT, who had to withdraw from a project as no subcontractors wanted to do their plumbing, much due to their rigid contract models. A positive attitude towards collaborative procurement approaches was, however, not surprising as all the interviewees represented companies participating in the Bispevika project where collaboration was a major focus. What was interesting was that some interviewees referred to a change towards collaborative procurement approaches as risky and that they were profitable by working the way they always have done.

> *"We see a significant change in the industry regarding the size and complexity of the projects, and the need for having closer partnerships" – Interviewee 6.*

4.3 Implementation of the Procurement Approach

In this section, we are presenting what our research unveiled in relation to the second sub-question; *How are main contractors implementing new, collaborative, procurement approaches?*. Through our case study, it was found that the main contractor used several different mechanisms to implement their new procurement approach. Figure 12 illustrates that there were several formal mechanisms used and our research revealed that the formal mechanisms continuously were supplemented with informal mechanisms, such as the development of trust, a common understanding and long-term perspective. In this section, the formal and informal mechanisms are analysed separately to allow an in-depth analysis in an orderly manner. Our research did, however, unveil that the interplay between them was crucial, as for instance trust was found as a foundation in some of the contracts used.

> *"To write the contract in this way works well if it is trust among the parties, and you desire the best for the collaboration. If not, we would never have signed this kind of contract" – Interviewee 10.*

Before a deeper analysis of the formal and informal mechanisms is presented, there are some prerequisites found important for the implementation of a new procurement approach. In Bispevika the client used a collaborative procurement approach when procuring the main contractor and required the main contractor to do the same with strategic subcontractors. Interviewees from both the main contractor and client emphasised that it was essential for the project that the client both had an attitude and ambition that supported the new procurement approach and that the client desired a change. Without a client supporting investments in the new procurement approach, interviewees from the main contractor explained it would have been a giant risk to implement their procurement approach.

> *"It is an important prerequisite that the client actually desires to join this. Because, if you are going to do something completely new you will have to take a greater risk than you normally do, and it is hard to gain acceptance from the client if they are not desiring to do so" – Interviewee 7.*

An internal collaboration between the procurement, design, and operation functions was also found as a prerequisite for the new procurement approach. Our observations revealed that representatives from the three different functions were present in almost all the different procurement steps displayed in figure 12. At the same time, interviewees explained that even though the procurement function was responsible for the procurement, it was through the design and operations the subcontractors could influence the project. It was, however, acknowledged by some interviewees that the structures and internal coordination were not working perfectly in Bispevika. One interviewee emphasised that the procurement process had not been scheduled well enough with regards to the overall progress of the project, resulting in other processes being behind schedule. While another interviewee perceived the design to be too close to the production, leaving too little time for the procurement and for understanding the basis for the construction.

4.3.1 Formal Mechanisms

In this subsection, we present what we found as the most important aspects regarding the implementation of the different steps in the procurement process (figure 12), and some additional formal mechanisms used in Bispevika.

4.3.1.1 Supplier selection

The ***product/service strategy*** was the first step of the selection process and was created through workshop sessions. In the workshops, there was participants present from the client and persons with different knowledge and responsibility from the main contractor, like the procurement manager, site manager, design manager, consulting engineer and calculation manager. The focus here was to use the collective knowledge to create a best possible strategy, suiting the requirements for the given product/strategy. Amongst the topics in focus during the workshops were the internal competence, market analysis, risk analysis and a process description (see appendix 8.3 for further details).

Our research reveals that the strategy was perceived an important parameter to conduct an internal examination of what the important aspects of the given product/service were, at the same time as it created the basis for the objectives and

ambitions with regards to the product/service. This was supported by observations of a strategy meeting which revealed that the combined knowledge of different functions highlighted new aspects of the product/service. The prior experience from one of the participants revealed that a certain group of subcontractors were not able to follow the logic of a digital construction site, leaving the mindset of the subcontractors towards digital tools an important selection criterion. At the same time, discussions among the participants left a flexible specification instead of a specification stating that the dimension of the sill had to be x, to ensure that capable subcontractors were not left out of the process.

One of the outputs of the product/service strategy was a list of potential subcontractors that the main contractor, based on prior experience, assumed to have the required capabilities and that they wanted to collaborate with. A ***bid invitation*** was sent to the list, which in most cases included more than one subcontractor. Several interviewees explained that even though they were searching for a partnership it did not have to exclude a competition element. It was, however, emphasised that it had to be competition on other parameters than just price to achieve the desired collaboration. This was found to be in accordance with what the main contractor described in their offer delivered to the client in 2016. However, in some cases the main contractor only invited one subcontractor. Interviewees representing subcontractors who were one of several invited to deliver a bid described the selection process in Bispevika as rather normal. Interviewees representing subcontractors who were the only one receiving a bid invitation were, on the other hand, describing the selection process as different and that it provided an increased safety and motivation to get the right mindset. This indicates that it is a relationship between the number of subcontractors receiving a bid invitation and the amount of time it takes before the subcontractor develop a trustful relationship with the main contractor.

> *"This procurement process was very different (…). I got to know that we were the chosen partner, that AF Gruppen wanted to hear how we believed the case should be solved, and that they were not going to ask anyone else. It made us feel a security very fast, and that the task is something we are going to manage if we are able to have the right mindset"* – *Interviewee 11.*

In addition to sending a bid invitation to the potential subcontractors, the main contractor arranged ***introduction days***. There, the procurement manager and a business developer introduced the Bispevika project and their ambitions, while the site- and design managers presented the task the subcontractors were to deliver. The presence of not only the procurement- and site manager, but also the design managers was found valuable to lower the barriers of subcontractors to ask questions about the design in an early phase. The main contractor further experienced the introduction days as an effective measure to inform subcontractors about the project and start the development of a common understanding and mindset.

At the end of the introduction day, the subcontractors received a "homework" where they were encouraged to be ambitious when suggesting a partner strategy, what they can develop together with the main contractor (innovations), and how their contribution distinguished them from their competitors. The answer on the homework, together with a price estimate, constituted the bid, which the subcontractors had to present some weeks later. In the ***bid presentation***, it was required that a representative from the top management of the subcontractor and the intended project manager were present. The latter was found important after the main contractor experienced that the project manager might have another mindset than the top management and sales director presenting the bid.

Our research found that the bid presentation was used as a mechanism to secure top management support, continue the development of a common understanding of the task to be delivered, and evaluate whether the subcontractor had the mindset necessary to reach the ambitious project objectives. It was, however, revealed that the bid presentation and "homework" were an unusual task for the subcontractors and that several

> *"We meet the same challenges with several subcontractors. We sell the idea of the project [introduction day] and the participants get enthusiastic. Then comes the presentation of their solution and it is basically a standard solution we have seen plenty of times. So, we then have to restart the process and challenge them again, and the second time they deliver close to a good solution"* – *Interviewee 6.*

subcontractors delivered a more or less traditional bid. As a consequence, the selection process required more resources than expected.

Based on the bid, the subcontractor's presence in the process so far, and the main contractors' previous experience with the subcontractor, the main contractor selected the subcontractor they found most suitable for the project. Our findings reveal that it was not one unique combination of ***evaluation*** criteria that could be used for the selection of all subcontractors. Instead, it should be a focus on the criteria important for the given product/service to be delivered/performed as desired. These criteria were an output from the product/service strategy and was thus found jointly among persons who could affect and be affected by the subcontractor's work.

It was, however, a consensus among the interviewees that price must be one of the evaluation criteria, but that the selection should not be based purely on the lowest price. Interviewees from the subcontractors and consultant emphasised that if they are pressured on price from day one, their focus is not to work towards what is best for the project, but to secure their own profit. At the same time, our research revealed that the subcontractors found it challenging to estimate a price for their tasks in the Bispevika project, as it was a project with several new aspects. Interviewees therefore emphasised that it was especially important to evaluate other criteria than just the price in Bispevika.

> *"You must evaluate more than the price. Because the price is something you can provide for the things you know, but if you are going to do something new it must be room for that within the evaluation criteria"* – *Interviewee 9.*

Further, an evaluation criterion advocated by several interviewees is the team, particularly the project manager, offered for the project; what kind of knowledge, resources, and mindset they possess. Especially the mindset was pointed to as important by the interviewees from the main contractor, which is in accordance with our observations from the bid

> *"For us, it is all about loving the subcontractors that say they are going to do something new"* – *Interviewee 1.*

presentation. Other criteria found important in this case was the collaborative skills and whether it was a good chemistry between the main contractor and potential subcontractor. When discussing the evaluation criteria, interviewees also perceive the technological knowledge, creativity, willingness to change, ability to show efficiency gains and progress plans, and a genuine interest in the project as important evaluation criteria. Their degree of importance was, however, varying among the interviewees and could be seen in relation to the product/service the interviewee worked with.

> *"The procurement manager is clear about one thing; when he works in a project like this, he wants to work together with people he enjoys working with" – Interviewee 11.*

The research reveals interesting findings regarding when the subcontractors should be involved in the project, which was a question found to affect the selection process. When discussing the supplier selection, most of the interviewees highlighted the issue of ***early subcontractor involvement***. It was, in general, a consensus among the interviewees that an early involvement of subcontractors could lead to a more productive construction process and innovative solutions. Some interviewees also emphasised that the main contractor was dependent on involving the subcontractors early to achieve a collaborative climate in the project.

> *"The climate in the project is dependent on how early the actors are involved in the process, how much the actors can affect what is going to be constructed, and how it is going to be constructed" – Interviewee 5.*

All the interviewees representing subcontractors emphasised that they ideally should be involved in projects when the design phase starts to find the optimal solutions together with the main contractor, consultant and architect, which was a belief several interviewees from the main contractor supports. The interviewees from the main contractor did, however, stress that as the situation was at the time, where long-term partnerships or alliances with subcontractors were not created, they found it unreasonable to select the subcontractor for the project without

knowing what was going to be constructed. Amongst the most advocated reasons for why was the fear of the subcontractors increasing their price after they were selected.

> *"It is an inherent fear that when we are going to give the price, they have no other choice than selecting us, and then we can turn up the price and say, sorry, but it cost 3 000 NOK more per square meter" – Interviewee 7.*

In Bispevika, interviewees who performed tasks in an early construction phase stressed that the subcontractors had been involved too late to provide optimal value for the project. The interviewees who were working with later phases of the construction, on the other hand, found the procurement process to facilitate a collaboration where good solutions for both the design and operations were found, due to the early selection of the subcontractors. This indicates that the idea with the procurement approach was to involve the subcontractors at an early stage, but that the main contractor was not able to do so for the first phases of the construction. Our research further revealed that an early involvement of the subcontractor could increase the constructability of the project.

> *"We [subcontractor] were allowed to change a little on the support beam and have a process on it, which was really good. The process made us go from a project which was not buildable economically to be realised" – Interviewee 8.*

4.3.1.2 Contracts and Incentives

Our findings show that it was a consensus among the interviewees that in order to facilitate collaboration among the project participants, a new contract structure was required. The need for a contract model facilitating collaboration was also supported by information retrieved from the seminars attended, where participants constantly emphasised the importance of contacts, and that it did not exist a Norwegian standard (NS) for partnership contacts. Our research

> *"We have to try to get to the point where we have contract models which implies that we all are in the same boat. This is not totally possible, as we are paying, and they are the ones receiving money, (…) but when we get there I believe that we move actions in the right direction" – Interviewee 14.*

further revealed that an aspect the interviewees viewed important for contracts to facilitate collaboration was that it made the two parties move towards the same project objectives. Interviewees, especially from the subcontractor and consultant, also emphasised that collaborative contracts should focus on a fair division of risk and rewards between the parties.

In an attempt to find a proper ***contract model***, facilitating collaboration, the main contractor in Bispevika used different contract models. One of the contracts the main contractor used was outlined as a story about how the relationship will be in 2022, which was found as highly untraditional in the industry. The story was written in a collaboration between the main contractor and subcontractor and emphasised their common objectives. Both parties involved in the contract explained that it so far had been a well-functioning model in the project, but they emphasised that a trust between the parties was essential for the contract to work.

Other contracts were based on the NS-contracts, with some additional "collaboration aspect". From interviews with a subcontractor who received that kind of contract and an employee from the main contractor working with the given subcontractor, our research reveals that this contract model was not optimal. The subcontractor had poor prior experience with add-ons in contracts, where the focus had been to assign as much responsibility as possible to the other party. As a result, the subcontractor had a negative attitude towards the "collaboration aspects" and emphasised that it would be easier if the main contractor just related to the NS contracts without any add-ons. The interviewee from the main contractor further explained that the subcontractor was not able to see the opportunities present in the contract, meaning that the contract did not facilitate collaboration.

When comparing the mindset of interviewees representing subcontractors who received a "story contract" with those who received the NS-contracts with "collaboration aspects", our research reveals a connection. Interviewees representing the "story contract" had, in general, a more untraditional mindset and a positive attitude towards collaboration and the new procurement approach. Interviewees representing the other contract, on the other hand, had a more traditional mindset and indicated a scepticism towards the new approach. These

findings can indicate that not all subcontractors are mature for the new, collaborative, procurement approaches. In Bispevika, the main contractor had to adjust their contract according to the mindset of their subcontractor, and during an introduction day it was stated that only one out of ten subcontractors suits the "Bispevika mindset".

To accomplish the ambitious project objectives in Bispevika, it was found essential to have ***pricing mechanisms*** in the contracts that facilitated collaboration. Our research revealed that interviewees perceived the pricing of new things as challenging and an obstacle to find new solutions. In Bispevika, the standard units and well-known aspects of the task subcontractors were to perform therefore had a given price. While the pricing of new aspects, which could not be compared to previous work, was done in a collaboration between the main contractor and subcontractor. Based on the prices, it was agreed on a target sum for the work the subcontractor was going to perform, as illustrated in figure 13.

In Bispevika, the target sum was used as a tool for sharing maluses and rewards and was meant as an incentive for the subcontractors to find better and cheaper ways of working. Our research did, however, reveal that it was challenging to achieve a successful implementation and that it could take time before the parties readjusted to the model. From interviews, it was found that some subcontractors struggled to reach an arrangement regarding the target sum, whereas other subcontractors had little confidence that they would be able to deliver according to the target sum. Interviewees from the subcontractors and consultant emphasised that it must be realistic to reach the target sum and that it must be a healthy balance between the risk and reward, for the target sum to work as an incentive.

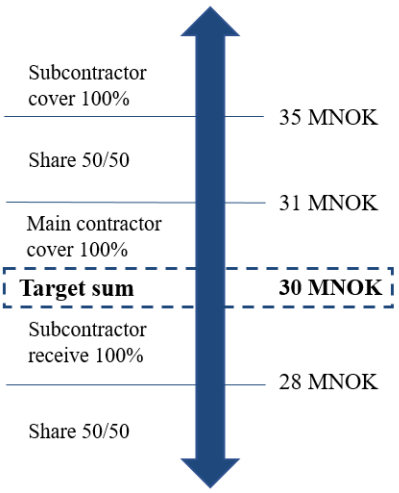


Figure 13: Example of a target sum agreement.

Another financial ***incentive*** used in Bispevika is that the subcontractors receive a bonus if the project achieves its objectives. The bonus is linked to the considerable

bonus the main contractor receives from the client if the project succeeds, which they agreed to share with their partners. The intention with the bonus was to incentivise the subcontractors to collaborate and work towards the project objectives. As the project is still in an early phase, our research was not able to determine whether the incentive works or not. Interviewees did, however, indicate that the bonus was positive for the collaborative work and that it, especially in cases where the target sum was perceived unreachable, made the subcontractors work towards the project objectives.

> *"One thing is that the contract with the subcontractor succeeds, but another thing is if not the whole project succeeds. They will get a piece of the pie if they participate in the success of the whole project"* – *Interviewee 14.*

There were also other incentives used to increase the productivity and performance in Bispevika. The main contractor included incentives for the construction workers, to make them feel like part of the collaboration by rewarding low absence ratios, neatness and efficiency. In Bispevika, the long-term perspective was also emphasised by interviewees as providing a motivation for the subcontractors to invest in the project.

4.3.1.3 Collaborative Tools

In the Bispevika project, it was a focus on measures that could increase the collaboration among the project participants, and investments in different tools were made. Among these measures was the office at the construction site, which had an unusual floor plan. It was an open office, facilitating increased communication, and a "big room" allowing large groups of people to be present at the same time.

The main contractor, consultant, client and several of the subcontractors had representatives ***co-located*** in the construction office, which was found as an important measure to facilitate collaboration among the project participants. Some of the benefits highlighted by interviewees were that relations among the project participants increased, that there were shorter lines of communication, and that it made it possible to register signals from each other, at the same time as the co-

location was found to facilitate the development of trust between the participants. It was in general a consensus among the interviewees that the co-location was a positive contribution to the project, as long as it did not result in too much time spent on the collaboration. Some interviewees from subcontractors did, however, emphasise that it would not be possible for them to have an employee co-located on all the construction sites they had projects.

> *"Trust does not arise if it is a vacuum, and we are sitting in an individual office, far apart from each other"* – *Interviewee 14.*

Before the construction started, it was a collaboration phase which laid the foundation for the value creation the subcontractors provided to the project and the relationship between the actors in the project. It was a ***kick-off*** that could last for one to three days, either in Bispevika or somewhere outside the construction site. In the kick-off, it was a focus on having a honest dialogue on how they were planning to work together, what the different actors found important, what they found as success criteria and worries, and measures to cope with them. They were, in other words, creating the strategy for the collaboration.

No interviewees were specifically asked about the ***workshops***, but through several observations and documents received from the contractor, it was revealed that the widely-used workshops were key to get a common understanding among all project participants. During the procurement process, it was performed a variety of workshops, like the product/service strategy meeting, during the kick-off and in the optimisation of the process, which allowed different actors to combine their knowledge to find optimal solutions. One of the things the participants got involved in through the workshops was planning. One of the facilitators of the workshops explained that the involvement increased the participant's ownership towards the tasks they were going to perform, as they were an active part of planning the task themselves, which was seen as an important factor for increasing the productivity and collaboration.

Several interviewees highlighted the importance of having common ***objectives*** in a construction project like Bispevika. It was further found that the client and main

contractor perceived ambitious objectives as a valuable measure for forcing changes within the project. This was supported by an interviewee from a subcontractor who explained that the ambitious objectives in the project removed traditional boundaries. Interviewees did, however, highlight the importance of the reachability of the objectives, emphasising that the objectives would act against their purpose if they were unrealistically high.

> *"They [the objectives] have to be justified and reasonable, (...) but at the same time, they have to challenge you and make you both irritated and uncomfortable"* – *Interviewee 14.*

Our research provided interesting findings of how the expressed objective of the project varied with whom we talked to. Some of the actors emphasised that the overall project objective was to reduce *costs* by 40 per cent, whereas others said that the objective was to increase *the value creation* by 40 per cent. When confronted with the finding, an interviewee from the main contractor explained that the exact wording was not that important, as long as it created a reaction among project participants.

> *"The objective, and the formulation of it varies. Often in relation to how conscious you are, and how operative it has become (...) From my point of view, it doesn't matter what it is, as long as people react"* – *Interviewee 2.*

From seminars attended, it was found important to have both measurable and visible value creation, and that actors in the industry should facilitate this so project participants can say that: "*I have contributed to increasing the value creation, due to x and y*". This was supported by interviewees who explained that it is natural to focus on the things that get measured. Interviewees did, however, find it difficult to measure the productivity and results in the Bispevika project, and it seemed to be challenges connected to the quantification of results.

> *"I really believe in measurement, and I think that what you don't measure, you don't improve"* – *Interviewee 14.*

Our findings reveal that the interviewees agreed on the importance of ***digital tools*** when trying to improve the collaboration in the projects. One of the digital tools used was the BIM model and working in the model, contrary to traditional drawings, was perceived beneficial among the interviewees. The model made it easier to both work and plan, as all the involved actors could see the same, updated, things. This was further perceived to lower the number of wrongdoings resulting from persons not receiving the correct information or drawings. Another digital tool used in Bispevika was a seven-meter-long touchscreen, where all the operational planning took place, which allowed the site managers and team managers to collaborate on maximising the efficiency and productivity.

Even though there was great enthusiasm concerning the use of digital tools, interviewees emphasised that it was not without costs, both in terms of buying the equipment and acquiring new knowledge. Another issue, highlighted by an interviewee from the main contractor, was that the first subcontractors involved in the project were harmed by the fact that the site managers did not receive the tools in time and that they therefore had to learn to use them after the project started. Lastly, one interviewee also raised concerns regarding the level of detail in the model; whether it was detailed enough to substitute all drawings.

> *"The digital tools used in the project are a heavy investment, but we are sure that it will pay off in the future" – Interviewee 4.*

4.3.2 Informal Mechanisms

Through the interviews and observations, it became evident that informal mechanisms were an important part of the new, collaborative, procurement approach. The rest of this section presents what we found as the most important informal mechanisms used to facilitate collaboration in the project and secure a successful implementation.

4.3.2.1 Top Management Commitment

All interviewees emphasised the importance of top management commitment. It was found important to secure that participants kept the same, positive, mindset towards the new practices throughout the whole project, and did not fall back into the traditional way of doing things in difficult times. This was found crucial for the project to achieve their ambitious objectives. The main contractor tried to secure the involvement and commitment of the subcontractors' top management by demanding their presence during the selection process, and observations revealed that the requirement was met. To emphasise the importance of top management commitment, a top manager from the main contractor was present during an initial meeting, explaining for the subcontractor that the whole board of directors of the main contractor supported the project.

> *"It is important that the subcontractors' top management understand what is happening here, and that they are supporting it. We will face challenges at some time, and then it is easy to go back to the traditional methodology. If we are to avoid that we must have the top management commitment from both the main contractor and the subcontractors"* – *Interviewee 7.*

4.3.2.2 Long-Term Perspective

In the construction industry, which consists of many single projects, it is normally a lack of long-term perspectives. In the Bispevika project, on the other hand, the main contractor had the opportunity of having a longer perspective than usual, as the intention in their agreement with the client was to develop all the buildings in Bispevika. The importance of having a long-term perspective was emphasised by several interviewees, as an objective in Bispevika was to increase the value creation by 40 per cent. It required investments in both knowledge and equipment which would not have paid off in a single project. At the same time, it was found to require a significant amount of time to adapt to the new procedures in the project. The long-term perspective was

> *"The procurement in Bispevika is first and foremost about mapping what kind of road that will take us the longest and provide us with the best results in the long-term"* – *Interviewee 1.*

therefore viewed as important to incentivise the subcontractors to invest in the project.

A long-term perspective also implied that the subcontractor would work with the main contractor in their upcoming projects, which provided an increased predictability in the operations of the subcontractor. This was well illustrated during an introduction day for a subcontractor, where a top manager from the main contractor explained that a commitment to this project would open possibilities for further work for the main contractor. Our research revealed that some of the subcontractors believed in the long-term perspective, as they stated that this project might be less profitable for them, but that it was okay as it might result in better profits in the upcoming 15 projects. This relates to another benefit highlighted with the long-term perspective, which was that it is perceived to provide a competitive advantage in the long term. The long-term perspective allows enough time spent on project optimisation, which was found to facilitate benefits such as cost reductions.

> *"If we can reduce our costs by 20 per cent and "company x" and "company y" can do the same, I believe that we can have a tremendous competing power together which we can carry on and use in other projects"* – *Interviewee 7.*

Lastly, interviewees emphasised that the long-term perspective facilitated time to increase learning, trust, and collaboration. A long-term perspective was thus viewed as important for the new procurement approach to facilitate collaboration among the project participants.

4.3.2.3 Developing Motivation

The motivation for change was mentioned by some interviewees as the operating force in the Bispevika project. To secure that the motivation and willingness to change were consistent throughout the project, the contractor monitored the process step by step. In all the initial meetings, the procurement manager used examples familiar to the subcontractors to illustrate achievements possible if the collaboration patterns change. One example was the increased sales value of the client if they

were able to reduce the thickness of a wall. Another measure the main contractor used to increase the subcontractor's motivation for participating in the project and desire a change was to offer learning and help with business development. This was found as an effective measure, as several of the interviewees referred to the learning opportunities in Bispevika as a reason for participation and that it was perceived to provide a competitive advantage for future projects. Our observations also supported the importance of the learning opportunities, where one of the participants in a kick-off stated: "*I flew in from Denmark this morning, just to learn about how we can continue to develop for this [project], but also for further projects*".

> *"It is challenging but also exciting. You must go outside your daily routines and mindset. You must think in new directions and try to come up with ideas on how to improve. This is a project where we as a company can gain extreme benefits by finding new solutions, and we also have the possibility to test it in the project"* – *Interviewee 8.*

Our observations did, however, reveal that some subcontractors did not get motivated by listening to what a participation in the Bispevika project could provide. This is supported by a statement from the procurement manager during an introduction day, which was that only one out of ten subcontractors in the industry possess the "Bispevika mindset". While some shared the thoughts of interviewee 11 (see textbox), others had a more negative and sceptic attitude towards the collaboration. Our findings do, however, indicate that the attitude and mindset are dependent on persons, and not the companies.

> *"This is something that I have always found very interesting (…) my belief is that at the moment we get to be a partner and get the possibility to contribute on how we can maximise our progression, we can do something to improve profitability"* – *Interviewee 11.*

It is also noteworthy that the main contractor has used more resources than expected on teaching the subcontractors the capabilities found necessary in the project, indicating that it is a time-consuming process. At the same time, some interviewees

from the main contractor were sceptic to whether the motivation of the subcontractors was something else than just receiving a good reference for future projects.

4.3.2.4 Common Understanding

Several of the interviewees and many of the observations shed light on the importance of a common understanding among the project participants. This was also found important among actors outside the Bispevika project, as it was highlighted as a success criterion for achieving project objectives in a LC-NO seminar.

> *"If we can think as one unit, then I believe that we can accomplish a whole lot together" – Subcontractor (observed meeting)*

Like the development of a motivation among the subcontractors, the common understanding was developed throughout the procurement process. One of the objectives of the introduction days, was that the subcontractors developed a good understanding of what the task included and the mindset of the project. While during the kick-off, an open dialogue, questions and discussions laid the foundation for the common understanding among the participants. It was also found important that the workers on the construction site understood the importance of the collaboration and why it was initiated. It was important for the main contractor to be close to the team leader from each subcontractor to secure the transfer of the understanding from the offices and out to the construction site.

4.3.2.5 Culture

During a workshop in a LC-NO seminar, all the groups agreed that creating a strong business culture within the project was a success criterion to achieve collaboration between the project participants. In the Bispevika project, it was found crucial that the subcontractors and the main contractor had a culture concerned with helping each other. It was also found important

> *"It shall not happen that one is struggling alone, without others noticing and help one another out, even if they are representing different companies. This is because the economic conditions in this project mean just as much for both parties" – Interviewee 12.*

to develop a culture for trying and failing, for reasons well illustrated by interviewee 14 who explained: "*When we are trying to discover new land, and trying to go new ways, you have to dare to make mistakes. If not, we will never try to go new ways anyways*". To develop the desired business culture, our research revealed four aspects that were found especially important; the right mindset, trust, openness and good relations.

Several interviewees emphasised the importance of persons having the right ***mindset*** for the Bispevika project to succeed. This was supported by observations of the procurement process in Bispevika, where the main contractor, through their selection of subcontractors, focused on selecting the right people rather than just the right companies. They sought, in other words, to find people who had the right mindset from the beginning. Interestingly, one of the interviewees from a subcontractor explained that it was not everybody internally within the main contractor company who had the right mindset. The interviewee explained that at the beginning of the project it was only the procurement manager and a few others who had adopted the idea of only focusing 50 per cent on price. Some improvements were experienced at the time of the interview, but it illustrates an interesting aspect, which is that it is not only among the subcontractors it can be hard to find or develop the right mindset, but also internally.

> *"We need more of the "we" mindset – I am certain that this is the right way to go. In earlier projects I've been involved in, where myself and the site manager from the subcontractor thought "we" and then took the bill afterwards, we experienced that the outcome was cheaper at the end"* – *Interviewee 4.*

Several interviewees emphasised that ***trust*** was a crucial mechanism for implementing the new procurement approach. Trust played a central part in many of the aspects of the procurement approach, and interviewee 1 explained that it had been a strong focus, already before the presentation of the bid, on establishing a trusting relationship between the main contractor and potential subcontractors. One of the places the trust was found to play a crucial role was in the contracts, where an interviewee explained it as one of the foundations in the contractual relationship.

Interviews with subcontractors revealed that letting the subcontractors play a part in the decision making in the project was one way main contractors could prove that they had trust in the subcontractor.

> *"To write the contract in this way works well if it is trust among the parties, and you desire the best for the collaboration. If not, we would never have signed this kind of contract"* – *Interviewee 10.*

Another aspect all actor groups emphasised as important in our research was ***openness***, and the interviewee from the client explained that an open book with the project participants was the most important measure the main contractor could use to facilitate collaboration. It was observed that the main contractor was open with the subcontractors about the long-term perspective of the project, where the profits from actions were not necessarily detectable in the first project. Further, an interviewee from a subcontractor explained that they had an open book philosophy with the main contractor, with full transparency, that they discussed how things were going, and that they in collaboration looked at different solutions to solve potential issues. Interestingly, our research reveals that even though subcontractors had full transparency with the main contractor the same did not necessarily count the other way around. One interviewee (13) explained that: *"I feel that the contractor keeps the cards close to their chest when we ask about how it is going [regarding the potential bonus in the contract*]".

Lastly, our research reveals that several interviewees emphasised the ***relation*** between the project participants as important. Interviewees highlighted that getting to know each other on a personal level, by talking with each other, was key to achieve good relations. This was further perceived to lead to closer relationships and make it easier to make interdisciplinary teams in upcoming projects. In addition, the close relations were viewed to cause less arguing among the subcontractors, not only among the construction workers but also between the top management.

4.4 Challenges Faced in Implementation

Even though it was put a lot of effort into the implementation of the new procurement approach in Bispevika, it was revealed several challenges. The following subsection presents our empirical findings and analysis regarding what we found as the most prominent challenges, and serves to answer our last sub-question; *What are the perceived challenges for successfully implementing new, collaborative, procurement approaches?*.

4.4.1 Attitudes Towards the New Procurement Approach

Our research reveals that the interviewees' views on the new procurement approach were mostly positive, where one of the carpenters, present at the introduction day, stated that: "*This seems to be too good to be true*". It was, however, identified an underlying scepticism towards aspects of the new procurement approach, both internally within the main contractor and among the subcontractors and consultant.

The scepticism among the subcontractors mainly revolved the economy in the project; whether it would be economically beneficial in the end. Interviewees from the subcontractor expressed concerns regarding the achievability of the objectives, both the target sum and project objectives, which would have a direct effect on their profitability in the project. Interviewees from the main contractor shared different concerns about the new procurement approach. An interviewee involved in one of the first phases of the construction thought the procurement approach was subject to big words without anything specific happening and without measurable result. Another interviewee, who had a poor prior experience with collaborative procurement approaches, were concerned about the intentions of the subcontractors. The interviewee worried that the subcontractors were only interested in participating in the project and becoming a partner because they would face less competition in future project, and that they believed they could use that as an advantage in the negotiations and turn up their prices.

> *"We are very unsure about the economy in the project, whether or not we are able to meet the objectives. We do of course work all we can to reach them"* – *Interviewee 8.*

4.4.2. Attitudes Towards the Collaboration

In Bispevika, a collaboration between the project participants was found crucial to reach the objective of increasing the value creation by 40 per cent. In the procurement approach, a significant amount of time was therefore spent on explaining the importance of collaboration for subcontractors (through initial meetings) and on creating connections among the subcontractors. Our research showed that all the interviewees acknowledged that increasing the collaboration was the way to go in the industry, where several interviewees believed that collaboration among project participants could facilitate better project outcomes. Interestingly, also an interviewee from the main contractor, who were sceptic towards the new procurement approach, showed enthusiasm when speaking about collaboration. Our research did, however, reveal that some of the interviewees had concerns regarding the ratio between the money and time spent on collaboration and the effect it had on the project result.

> *"I believe that collaboration is the way to go! But, you shouldn't work your socks off to earn less money"* – *Interviewee 5.*

Another concern was related to the arguing characterising the industry, where notices of changes were sent between the actors, blaming each other for delays and mistakes, and where each actor only was concerned with their own tasks. An objective with the collaboration was to avoid the arguing, by having good relations and communication lines. An interviewee did, however, express a belief that the arguing would never end, even when it was a focus on collaboration, as it always would be one actor who starts off by sending in notices regarding another actors' involvement. The same interviewee expressed a hope that the arguing would stop one day, and the finding can thus indicate that not all subcontractors are mature for a collaborative, trustful project environment yet. This relates to another concern raised by an interviewee from the main contractor, who expressed a feeling of the subcontractors not being in the same boat and that the subcontractors exploited the freedom given by the main contractor. The same interviewee explained that the subcontractors found the collaboration aspect appealing and very interesting, but that the road to achieve the collaboration was challenging for many of the subcontractors.

4.4.3 Lack of Competence

Implementing something new requires that new competence is developed, which takes time. Our research showed that this was also the case with the new procurement approach in Bispevika, where they faced challenges regarding the capabilities and competencies of both the subcontractors and main contractor. One of the challenges expressed by several interviewees was the cost calculations of the subcontractors, which traditionally had been price estimates based on experience from similar projects. One of the major focus areas in Bispevika was to improve the productivity, and interviewees from the main contractor explained that it was essential that the subcontractors were able to calculate their costs in order to track the effects of the productivity increases. This was, however, not the case for all subcontractors who, for instance, provided the total price of constructing a wall instead of calculating the cost based on material cost and hours spent. That was, by interviewees from the main contractor, perceived to make it difficult for the subcontractors to detect the benefits of participating in the project. On the other hand, an interviewee from a subcontractor explained that they found it difficult to price the project due to the unclear orders from the main contractor and that an improvement of the level of detail in the orderings would be helpful. This illustrates another challenge in Bispevika, which was that some subcontractors had a traditional mindset, where they desired detailed specifications to find a price, while the main contractor found it beneficial with functional descriptions to allow innovations from the subcontractor.

Another challenge acknowledged by interviewees was that some subcontractors lacked competence regarding the use of the digital tools, which was crucial for facilitating collaboration in Bispevika. This was acknowledged by the main contractor before the project started, who therefore offered the subcontractors training in the digital tools. Our research did, however, reveal that it was used more time than expected on the

> *"We see that there are some areas that we haven't been perfect on. We talk a lot about the increase in productivity, but suddenly we have discovered that we are not good at all to know how to actually manage the productivity increase… I am worried that we don't have the necessary competence within our organisation to manage it either"* – *Interviewee 1.*

training of the subcontractors. Also, within the main contractor company it was revealed challenges with regard to the new competence required. One of the areas highlighted by an interviewee was the management of the productivity increase, which was a new focus area for the main contractor.

4.4.4 Adaptation of Change

Most of the challenges outlined in this section can be related to the challenge of adapting a change. The way the Bispevika project was organised, with a new procurement approach and new collaboration patterns, required that the project participants radically changed their traditional practices.

> *"We have to radically change, (...) this is a totally different mindset, as we shall not think about what is best for us, but about what that is best for the project. This isn't something that you can do over a week. We need the whole project to get this into our blood"* – *Interviewee 11.*

One of the challenges emphasised by interviewees was the uncertainty regarding the outcome of the change. There were huge investments involved with the adaptation, where some subcontractors hired new workers and invested in new equipment for the project. The cost was by most of the subcontractors perceived as the greatest challenge associated with the change. This is highly linked to a challenge emphasised by several interviewees, especially from the main contractor, which was to show the results of the changes implemented as the construction project progressed. As previously mentioned, measurable results were found as an important measure for successfully implementing the new procurement approach, and the challenge of continuously measuring the results was therefore found critical.

> *"To prove it out on the construction site and to get the economic numbers or the hours saved, to actually show the subcontractor that they have spent 15 per cent less time than they normally do, is a challenge"* – *Interviewee 7.*

Our research further revealed that a major part of the challenge with adapting the change was related to the process of doing familiar things in a new way, referred to as ***unlearning***. This was found as a challenge for all the project participants, ranging from the client to the subcontractors. It was found particularly challenging it the cases where the current way of working was delivering profitable projects, resulting in an underlying resistance towards changing the practice.

> *"The change is at least as big for us [client] as for the main contractor (…). The traditional design and build contracts is in our blood, just as much as for the contractor, so to actually be independent of it, is a challenge for us as well" – Interviewee 14.*

One of the challenges identified was that the subcontractors now were expected to provide input in the design-meetings before the construction started instead of sending a notice of change during the construction. An interviewee from the main contractor explained that training the subcontractors in this new setting was very important, as some of the subcontractors had not managed to adapt this change yet. Another challenge emphasised by some interviewees was to change the mindset of the subcontractors and consultant from being: "*We should try to invoice as many hours as possible*", to: "*We should work on spending as few hours as possible, because it is good for the project, which in the end is good for me*".

A major part of the philosophy in Bispevika was that the project should be free of paper drawings and use models instead. During a preparation meeting, before the carpenter's introduction day, it was planned that employees of the main contractor should show how easy the model worked. During the introduction day, the model was used, but the discussions during the meeting were, however, based on drawings. This illustrates that it is not only the subcontractors who have an issue with the unlearning, but also the main contractor.

To mitigate problems with unlearning, the main contractor focused on selecting people who were perceived to be able to unlearn present practices. In addition, the project had a steering committee that was responsible for securing the execution of the project and infer with the operations if the workers went back to acting

traditional. One of the interviewees from the main contractor also emphasised that they received good advice from the client on how to maintain a focus on innovations and how to work differently. Another measure done to mitigate the challenge of unlearning was to assign the Bispevika project to AF Byggfornyelse instead of AF Bygg Oslo. What was found interesting about this choice was that AF Bygg Oslo is the department normally constructing new buildings, while AF Byggfornyelse normally renovate existing buildings. This was done as the main contractor perceived it more challenging to unlearn AF Bygg Oslo from their current construction practices than to learn AF Byggfornyelse how to construct new buildings. These findings indicate that a lot of resources was spent on adapting the changes required in the Bispevika project.

> *"If you have been in the industry for 40 years, you will continue with the way it has been the last 40 years, but if you have been in the industry for only the 5-10 last years, you have already seen big changes in the industry and you will be more open to learning new things"* – *Interviewee 3.*

5. Discussion

In a study of how construction clients deal with procurement, Eriksson and Laan (2007) found that there, in general, can be significant differences between theoretical prescriptions and empirical behaviours. Our research of main contractors' procurement approach confirms this finding. In this chapter, we are therefore discussing our empirical findings from chapter 4 in relation to the theoretical background developed in chapter 3. The aim of the chapter is to unveil the aspects found important for answering our fundamental research question; "*How can main contractors, through their procurement approach, facilitate collaboration among participants in construction projects?*". As the empirical findings and theoretical background address several interesting findings, we have chosen to extract what we consider the most significant and relevant findings to answer our research question, which relates to the theoretical framework in figure 9.

This chapter is structured according to the three main topics of the theoretical framework and will thus first unveil what we have found as the main motivation for the changed procurement approach. Further, we are discussing the main findings regarding how formal and informal mechanisms are used in the implementation of the new, collaborative, procurement approach. Lastly, we discuss what we have found as the major challenges for a successful implementation.

5.1 Motivation for a New Procurement Approach

Our research shows that procurement is perceived crucial for whether the collaboration will emerge in construction projects, or not, as it is the entrance of the different actors into the project. Bispevika is a complex construction project, which, at the same time, has an objective of drastically reducing the construction cost. As up to 90 per cent of the operational work was performed by subcontractors, the client and main contractor found it necessary with a collaboration among the project participants, where knowledge and objectives were shared, to achieve the cost reductions. The motivation for the new procurement approach was therefore highly linked to the perceived benefits of increased collaboration. This is in line with previous research that found the improved relationship between project participants

as an underlying reason for using a collaborative procurement approach (Akintan & Morledge, 2013; Naoum & Egbu, 2015; Suprapto et al., 2016).

Our findings indicate that the greatest motivational factor, among all actor groups, for an increased collaboration is the potential productivity increase. Time spent on the construction site was by the interviewees perceived as the greatest cost driver and it was emphasised that a productivity increase thus would have a direct effect on the bottom line of the companies, which is supported by previous research (Akintan & Morledge, 2013; Eriksson, 2008). Our research revealed that by combining the knowledge of different actors, available when the project participants work together, it was possible to decrease the scheduled amount of days spent on structural work from 34 to 17 days per floor.

The opportunity of combining the knowledge of the project participants is highly linked to what we found as another motivational factor, which is the increased opportunity for developing new and better solutions. We were not able to observe any new solutions, but previous research supports the finding (Akintan & Morledge, 2013; Hartmann & Bresnen, 2011). An increased collaboration was by the interviewees further perceived to lower the number of conflicts in the construction project, which traditionally can get so tough that employees quit, as it facilitates better personal relationships, improved communication lines and trust. Especially the consultant and subcontractors emphasised an improved working environment as a motivational factor. Whether the collaboration actually improved the working environment is yet to be determined, as the construction continues and notices of change traditionally would appear. Previous research has, however, found a positive relationship between the collaboration and working environment (Eriksson & Westerberg, 2011), which supports the finding.

It is, in other words, found several reasons for why the project actors are motivated for a new, collaborative, procurement approach, and a great number of additional motivational factors, such as improved customer satisfaction and predictability of work, were found by other researchers (e.g. Bresnen and Marshall (2000) and Akintan and Morledge (2013)). Yet, previous research has questioned to what extent the collaborative approaches have become institutionalised and internalised

by construction companies (Bresnen, 2009; Hosseini et al., 2016), and Hosseini et al. (2016) found that the Norwegian construction industry is characterised by the traditional adversarial mindset. This is supported by our research, where the empirical findings indicate that the traditional mindset is present within the Norwegian construction companies and that the interviewees refer to the procurement approach in Bispevika as new. During observations, the procurement manager stated that only one out of ten subcontractors had the mindset demanded in Bispevika, and some subcontractors were sceptical towards aspects of the procurement approach as they did not see the economy in it.

Our research does, however, reveal that some of the actors in the industry believe that the market is starting to change and that the idea of a new, collaborative, procurement approach is starting to mature within the companies. The same actors therefore found it necessary to change their practice now to achieve a competitive advantage in upcoming projects. This can be seen in relation to the trend in the industry, outlined section 1.1, where also OBOS was implementing more collaborative procurement approaches. It is, therefore, found reasonable to assume that a development of the capabilities and knowledge required in collaborative oriented projects can provide a competitive advantage in a wider range of projects than the one run by OSU and/or AF Gruppen. Some actors were, on the other hand, much more pessimistic about the development of collaborative procurement approaches and emphasised that they were earning money on the "old way of working" and that a change came with a risk. These were all actors participating in the Bispevika project, and it could thus be questioned whether the industry really is maturing and believe in the motivational factors outlined in this section.

5.2 How a New, Collaborative, Procurement Approach Can be Implemented

Some researchers have repeatedly emphasised that following a formal procurement process in itself is not sufficient to ensure collaboration among the project participants (Bresnen & Marshall, 2002; Cicmil & Marshall, 2005). Instead, it requires the use of both formal (e.g. financial incentives and supplier selection procedures) and informal mechanisms (e.g. cultural aspects and social dynamics), to develop an effective partnering approach (Bresnen & Marshall, 2000, 2002;

Cicmil & Marshall, 2005). This is in line with our findings where the interviewees recognised the importance of both the formal and informal mechanism and the interplay between them. The formal process displayed in figure 12 was continuously supplemented with informal mechanisms, such as the development of trust, a common understanding and openness. This discussion indicates that a continuous focus on developing solid relationships is crucial for implementing a procurement approach facilitating collaboration. In this section, the discussion of the formal and informal mechanisms is therefore combined to further elaborate how main contractors can implement a new, collaborative, procurement approach.

Our research shows that it was essential that the client required a change for the main contractor to implement a new, collaborative, procurement approach. This supports other researchers, who found that a change in the procurement approach in the construction industry should be a client-driven process (Eriksson et al., 2007; Naoum & Egbu, 2015). The research does, however, show that the requirement in itself is not sufficient. In addition to receiving the requirement of changing their procurement practice, the main contractor advocated that they were dependent on a client who supported investments in the procurement approach, in terms of having the patience for when the investments would return profits. The implementation of the procurement approach demanded a lot of resources, more than initially expected, and if the client did not support the change, the project team would not have been allowed to use the same amount of resources. The project team was also dependent on the commitment from the top management of the main contractor, for the same reasons as the clients' support. This is in accordance with the research of Bresnen and Marshall (2000), where they found that top management commitment is necessary to implement a new, collaborative, procurement approach.

In Bispevika, both the client and top management commitment was present, and our research revealed that an important reason for why they allowed a great amount of resources to be invested in the procurement approach was their long-term perspective. Interviewees from the main contractor did, for instance, explain that the long-term perspective made it justifiable to invest in the training of subcontractors in their first project as it could facilitate increased productivity in the upcoming projects. Previous research has found the change from a traditional

short-term perspective, where the focus lays on single projects, to a long-term perspective as an important aspect when implementing new, collaborative, procurement approaches (Eriksson & Nilsson, 2008). Implementing all the new procedures requires that all actors develop competence within the area, which is difficult to master over the duration of a single project (Eriksson et al., 2007). Our research thereby confirms previous findings, and a long-term perspective is suggested as a prerequisite for the development and implementation of a *new*, collaborative, procurement approach. Whether it is a prerequisite for the implementation of collaborative procurement approaches when they are no longer new for the main contractor or when they are the common procurement practice in the whole industry, is, on the other hand, an interesting question this research is not able to answer. Our research does, however, reveal that the long-term perspective is viewed as an important mechanism for developing trust and incentivise the different actors to invest in the relationship and project. Even though the long-term perspective might not be a prerequisite for the implementation of collaborative procurement approaches when they are more "common", it is therefore still suggested as an important aspect of collaborative procurement approaches, which is supported by previous research (Akintan & Morledge, 2013; Dubois & Gadde, 2002a; Eriksson, 2007; Eriksson & Nilsson, 2008).

A final prerequisite found essential for successfully implementing a procurement approach facilitating collaboration is that the main contractor is involved early enough in the construction project. In Bispevika, the main contractor was selected after the initial design phase and relatively close to the construction start, which according to Pesämaa et al. (2009) is normal in the construction industry. This does, however, contradict the partnering idea, where it is emphasised that each participant's resources should be maximised (CII, 1991). The late involvement of the main contractor implied that they had to procure the subcontractors for the first phases of the construction in a more traditional manner and were not able to fully utilise the value creation subcontractors can contribute with. This might explain why actors from the early phase of the construction were more pessimistic about the collaborative procurement approach than the actors in later phases of the construction.

5.2.1 Supplier Selection

Previous research has found supplier selection as one of the most important steps of a procurement approach (de Araújo et al., 2017; Faes & Matthyssens, 2009; Pesämaa et al., 2009; van Weele, 2014). This is supported by our research where it was found that a vast amount of time was spent on the selection process. Some interviewees did, however, express a concern regarding the amount of time spent on the selection and how it influenced their progression on other tasks. Whether the concern implied that it actually should be spent less time on the selection, if it was a result of the late selection of the main contractor, or if the interviewees had too many tasks in addition to the procurement was not revealed by our research. It does, however, illustrate that implementing a new procurement approach and finding subcontractors that meet the demand of the project is a time-consuming process.

One of the steps requiring more resources than usual was the specification phase, where the product/service strategy was developed. Eriksson and Nilsson (2008) suggested a joint specification among the client and main contractor as the optimal for the client – main contractor relationships. In Bispevika, the specification was developed through workshops where participants with different knowledge from the main contractor and a representative from the client were present. By combining their knowledge it was found new input to the procurement that, for instance, lead to a functional description instead of a technical description leaving too few subcontractors able to deliver the requested product/service (Frödell et al., 2013). Whether this joint specification influenced the main contractor – subcontractor relationship is not revealed in our research, but it is perceived essential for finding a subcontractor matching the need of the project.

Our research confirms previous research stating that a limited bid invitation should be applied in a collaborative procurement approach, as it enhances collaboration and long-term relationships (Eriksson, 2008; Eriksson & Nilsson, 2008; Pesämaa et al., 2009). In Bispevika, the limited bid invitation allowed a thorough selection process, where all invited subcontractors were at an introduction day and performed an oral presentation of their bid, which was crucial for the main contractor to evaluate the chemistry with- and mindset of the subcontractor. Most of the bid invitations were sent to more than one subcontractor, as it provided a competitive

comparison between the subcontractors (Eriksson, 2008; Papadonikolaki et al., 2017; Pesämaa et al., 2009). Our research did, however, reveal that only inviting one subcontractor can facilitate a faster development of trust and provide an increased motivation for the subcontractor to get the right mindset. If this is desired, our findings therefore suggest that it should be applied a single bid invitation. For a successful implementation of the single bid invitation, it was, however, found that the main contractor should have prior experience with the subcontractor as interviewees emphasised an initial trust as important.

Previous research has found that subcontractors might be sceptical to the idea of partnering as they do not understand its implications (Bygballe et al., 2010; Dainty et al., 2001). At the same time, research has found that if project participants do not have a common understanding of how the procurement approach is going to be used, it might hinder a successful implementation (Eriksson & Pesämaa, 2007). To overcome this challenge and motivate the subcontractors to participate in the project, with the right mindset, the main contractor performed introduction days as a part of their supplier selection. During the introduction day the philosophy of the Bispevika project was explained and throughout the presentation it was used examples of what a collaboration could result in, which the potential subcontractors could relate to. Observations and interviews revealed that the introduction days created an enthusiasm among the potential subcontractors. The practice is supported by researchers, who emphasise that it is important to get a common set of objectives and procedures in the initiation of the project and that it has a great impact on the efficiency in projects (Hosseini et al., 2016). Based on the theoretical and empirical findings, the introduction day is found as an essential part of the collaborative procurement approach.

For the evaluation of the subcontractors it was a consensus among the actors in the project that it should be based on more than just the price, which is in line with suggestions from previous research (Andresen et al., 2016; Eriksson, 2008; Eriksson & Nilsson, 2008; Tam et al., 2011). Several evaluation criteria were mentioned during the interviews, where their degree of importance varied, and our research reveals that it does not exist one unique combination of criteria. Instead, our findings support Pesämaa et al. (2009) who found that the criteria should be

task related, as it has a direct effect on the collaboration between the two parties if the subcontractors are able to benefit from their unique, relevant abilities.

One criterion, which also can be viewed as a demand from the main contractor, was that the top management of the subcontractor supported the Bispevika project. This was found highly important by the main contractor, who therefore demanded the presence of the top management at the subcontractors' bid presentation. The importance of the top management support has been highlighted by previous research as well, who found it critical for the collaboration to sustain throughout the project (Bresnen, 2009; Hartmann & Bresnen, 2011; Suprapto et al., 2016).

Other criteria found important in Bispevika were the mindset, collaborative skills and chemistry of the intended project team. Finding a subcontractor with an identity suiting the main contractor was by Bresnen (2009) found important as it increases the chances of creating a mutual dependency between the two parties. The evaluation of such soft parameters is more challenging than for instance price, and to evaluate the criteria the main contractor required the subcontractors to have an oral presentation of their bid, allowing a dialogue between the two parties. Our research revealed that a major challenge with the soft parameters is that they relate to individual persons. One of the subcontractors was selected based on the chemistry and mindset of the sales director and other personnel presenting their bid. It did, however, turn out that the project manager of the subcontractor had a completely different mindset, making the collaboration difficult. After this incident, the main contractor required the presence of the potential project manager at the bid presentation. This discussion indicates that an evaluation based on soft parameters can make the main contractor more vulnerable for internal substitutions of personnel working in the project.

5.2.2 Contracting and Incentives

Using a partnering contract, with proper incentives, is by other researchers found to improve the relational attitudes and quality of the teamwork, if it addresses the collaborative work as a focal priority in the project implementation (Lehtiranta, 2011; Suprapto et al., 2016). Our research reveals that the main contractor used

different kinds of partnering contracts in the project, in the search for an optimal partnering contract. What is interesting is that our research unveiled a relationship between the mindset of the interviewees and the contract model their company had received. The "story based" contracts (see section 4.3.1.2) were founded on trust and focused on the collaborative work and common objectives, and interviewees representing subcontractors with the given contract had an untraditional mindset and positive attitude towards collaboration and the new procurement approach. The contracts with just a "collaborative aspect" were much more traditional, which also reflected the mindset of the interviewee. As several of the subcontractors just had signed the contract, our research cannot conclude whether the contract model affects the mindset of the subcontractor or not. It does, however, indicate that for the main contractor to sign a flexible contract with collaboration as the focal priority, the subcontractor must have the right mindset. Given the traditional, adversarial, mindset characterising the Norwegian construction industry (Hosseini et al., 2016) it can be questioned to what extent the industry is mature enough for one standard partnering contract. Maybe it should be developed one for the mature partnerships and another suiting the current mindset of the industry.

A common factor in all the partnering contracts was the use of a target sum. There, the rewards and maluses were shared between the two parties to incentivise the subcontractors to find better and cheaper ways of working, which is in line with the findings of Hosseini et al. (2016). Our research is, however, indicating that the effectiveness of the target sum as an incentive largely depended on how realistic the subcontractor felt it was to achieve the target sum and the probability for them to end up with rewards instead of maluses. Some of the subcontractors were sceptical to whether they will be able to reach the target sum, and several subcontractors emphasised that they found it difficult to calculate the price when they, in this project, were going to try new things. Our findings thereby unveil that a successful implementation of the target sum is not easy, especially not the first times the subcontractors are faced with the phenomena.

Another aspect found in the partnering contracts, to motivate the subcontractors to work together towards the project objectives, is that they will receive a share of the bonus the main contractor receives from the client if the objectives are achieved.

This is in accordance with the findings of other researchers, namely that there should be given incentives based on team performance (e.g. total cost) rather than the performance in each specific contract (Eriksson, 2008; Hosseini et al., 2016; Pesämaa et al., 2009).

In addition to the financial incentives, Eriksson et al. (2007) found that other incentives, such as the opportunity for future work and better working environment, should be a part of the procurement approach. This is supported by our research, where the main contractor emphasised for the subcontractors in the initial meetings that the long-term perspective implies that successful partnerships will result in future work for the main contractor, which made the subcontractors enthusiastic. An interesting question regarding the use of long-term partnerships as incentives is what kind of effect it will have on the motivation of the subcontractors if they start doubting whether the main contractor will stick to the long-term relationship. This is a question our research is not able to answer, but the importance of having a target sum that feels realistic can indicate that a doubt will lower the motivation of the subcontractors, and thereby work against the intention.

5.2.3 Collaborative Tools

The construction literature has repeatedly emphasised the need for collaborative tools to make sure the contractual mechanisms are implemented in the everyday communication between the project participants (Eriksson & Laan, 2007; Eriksson & Nilsson, 2008; Hosseini et al., 2016; Lavikka et al., 2015). The importance of collaborative tools is confirmed through the Bispevika project, where several collaborative tools were used. The tools found most prominent were the use of co-location, common objectives, digital tools and a common culture.

Our research shows that the co-location is an important measure for the collaboration to emerge, amongst other by allowing face-to-face communication and for the trust between the parties to develop, which is in line with suggestions in previous research (Eriksson, 2008; Eriksson & Laan, 2007; Hosseini et al., 2016; Lavikka et al., 2015). The co-location was, however, found as a resource demanding measure for some subcontractors, who emphasised that they did not have enough resources to locate a person in all their construction projects. Based on this

discussion, and that collaboration is found especially important in large and complex projects, it is suggested that co-location of the project participants is a measure suitable for large and/or complex projects. In smaller construction projects it is, however, found unrealistic that all project participants have an employee located at the construction site due to limited resources.

Our findings show that the common objectives developed in the project had an important role in driving the change. In Bispevika, it was a focus on creating ambitious objectives, requiring a radical change for achievement, but that they at the same time had some realism. These findings can be seen in relation to the findings of other researchers, who emphasise that the common objectives can help the parties in their collaborative work (Eriksson, 2008; Eriksson & Laan, 2007; Lavikka et al., 2015; Pesämaa et al., 2009).

Our research also showed that great investments were made in digital tools that assisted the collaboration among the project participants in the everyday life by, amongst other, ensuring an up-to-date sharing of information. This finding supports the research conducted by Sherratt and Kapogiannis (2018), which found that digital tools help running projects more smoothly and allow stakeholders to improve sharing of information and project data, resulting in enhanced productivity. As the digital tools were new to several of the actors in the industry, the main contractor offered training of the subcontractors. This was done both to make sure the subcontractors developed the skillset required for an effective usage of the digital tools and to lower the scepticism towards a digital construction site. Our research did, however, reveal that the main contractor had to spend a greater amount of resources than anticipated in training of their subcontractors, indicating that the implementation of a digital construction site is not an easy job in the current construction industry.

Further, our findings indicate that the creation of a strong business culture within the project is a success criterion to achieve collaboration among the project participants and achieve a successful implementation of the procurement approach. The traditional culture in the industry has been that the risks are transferred to other parties in the project and that each project actor focuses on their own objectives

(Akintan & Morledge, 2013; Lavikka et al., 2015). In Bispevika, they were striving to create a "we"–feeling, where all actors worked together towards a common objective, helping each other out. Interviewees also emphasised the importance of creating a culture of trying and failing, in order to achieve the project objectives. The development of the desired culture was done through several workshops with project participants in the initial face of the project, where it was a focus on being honest and open about individual concerns and success criteria. This corresponds to findings of Cicmil and Marshall (2005), which was that an openness is essential for a successful implementation of new procurement approaches. Another aspect of the openness in Bispevika was the open book philosophy practised by subcontractors, where it was full transparency with regard to costs and issues arising. This allowed the main contractor and subcontractor to collaborate on finding the best possible solutions. Our findings suggest that this transparency should be present for both the subcontractors and main contractor, but our research revealed that not all subcontractors were satisfied with the transparency of the main contractor, indicating that achieving a full transparency is easier said than done.

Lastly, our research revealed that an important aspect of the procurement approach is the point in time the subcontractors are involved in the project. Interviewees emphasised that an early involvement of subcontractors can lead to a more productive construction process, innovative solutions and that it generally affects the climate in the project. Our research was not able to reveal whether an early involvement provides these outputs, but it is supported by previous research suggesting that the subcontractors should be involved in the project as early as possible for them to provide the greatest value to the project (Hosseini et al., 2016; Naoum & Egbu, 2015). At the same time, our research showed that subcontractors performing tasks in an early construction phase expressed that they were involved too late to provide real value. The subcontractors in later phases, on the other hand, expressed that they had time to contribute to the process optimisation and were, in general, more satisfied with the procurement approach. Since the subcontractors in the first phases were involved close to construction start, this discussion indicates that an early involvement of subcontractors is important for creating a collaborative environment where the capabilities of the subcontractors can be utilised.

In addition to confirming the importance of early involvement, our research shows that an early involvement of the subcontractors is not straightforward for the main contractor of particularly two reasons. The ideal time for involving the subcontractor was found to be in the design phase, but the case revealed that the main contractor was selected after the initial design was decided, which previous research has found as rather normal in the industry (Pesämaa et al., 2009). If the main contractor selects the subcontractor before the design starts, the selection must be made on a vaguer basis and our research found that the main contractor fears the subcontractor will demand a high price after the selection. When confronted with the issue, some interviewees from the main contractor suggested they could ask subcontractors for input in the design phase, and pay for the hours spent, some suggested to sign an intention agreement with the subcontractor providing input in the design phase, while others were unsure about how to solve the issue. This discussion indicates that an early involvement of subcontractors is a relatively new phenomenon, which the main contractor is not sure how to successfully implement, but that there are potential solutions.

5.3 Challenges with the Implementation

Previous research emphasise that a change of attitudes, improvement of relationships and transformation of cultures are essential to secure the implementation of a collaborative procurement approach (Bresnen et al., 2005; Bresnen & Marshall, 2000; Naoum & Egbu, 2015). This is supported by our research, where the main contractor spent a vast amount of time on the development of solid relationships and ensuring that the project participates had the right mindset and developed the desired project culture. Still, our research shows that it was some scepticism among project actors towards aspects of the procurement approach. Among the subcontractors, the scepticism was found to mainly revolve the economy in the project, where it was expressed concerns regarding the ratio between the money and time spent on the project and the effect it had on the project result. As previously argued, the possibilities of productivity increases were a major motivational factor for increasing the collaboration and invest time in the project. Our research did, however, reveal that some subcontractors struggled to measure the productivity increases and that the main contractor thus found it challenging to

prove the effects of the subcontractor's investments in the project. To overcome the scepticism of subcontractors, and keep their motivation, our research indicates that the project actors must increase their capabilities of continuously measuring results achieved in the project. Since the project is dependent on motivated project participants, we believe the continuous measurement is crucial for whether the project reaches their ambitious objectives.

Our research also revealed some internal scepticism towards aspects of the new procurement approach, within the main contractor company, much linked to the intentions of the subcontractors. This is in line with previous research, where Bresnen & Marshall (2000) emphasised that aligning attitudes in an organisation is not straightforward. It is, however, worth mentioning that a potential reason for the scepticism towards the intentions of the subcontractors was poor prior experience, where one interviewee explained that a similar initiative had failed because the subcontractors in the project exploited the trust given from the main contractor when they were to price the project.

Researchers, such as Eriksson (2008), Cicmil and Marshall (2005) and Hartmann and Bresnen (2011), have found that the adaptation of a change often faces difficulties in implementation. Bresnen and Marshall (2002) found that the difficulties to a large extent relates to the lack of continuity in project teams, which is in line with our findings. In Bispevika, the client and main contractor both tried to increase the continuity by including an intention of continuing the working relationship in future projects. Interviewees were, however, expressing concerns regarding the fact that the roles within companies in the industry still change, implying that even though the relationship between the companies remains it might be changes in the personnel involved in the project teams. This discussion indicates that the lack of continuity therefore still might be a problem in upcoming projects, even though long-term relationships are present, especially when collaborative procurement approaches are new. It is, however, found reasonable to assume that if collaborative procurement approaches become the common standard in the industry, the substitution of personnel will result in less deviation as the whole industry has changed the mindset and is practising similar approaches.

Further, our research found that a major challenge when implementing a new procurement approach, and by that change the working practice of project participants, was the process of unlearning. This is in line with previous research, which found a persistence towards the "old" way of doing things in the construction industry (Cicmil & Marshall, 2005; Hartmann & Bresnen, 2011). Interviewees emphasised that the industry consists of a large share of experienced workforce, who is happy with the current situation, and in Bispevika it was therefore used much resources on finding persons willing to unlearn their existing practice. Our research further revealed that the younger generation, with less experience, was more open towards new ideas and concepts. These findings indicate that it is challenging to implement a new, collaborative, procurement approach in the construction industry today, due to the persistence towards the "old" way of working. We do, however, find it likely that as the current workforce is replaced with a younger generation it might become easier to implement new procurement approaches.

According to Bresnen et al. (2005), the implementation of a new procurement approach is more likely to be accepted by the rest of the organisation if the most experienced and knowledgeable employees "pilot the new approach". Interestingly, our findings show that this both corresponds with the practices in Bispevika, and at the same time it is a contradiction. The workforce in Bispevika included handpicked employees who had the right experience and the right mindset. On the other hand, the department within the main contractor chosen for the project (AF Byggfornyelse) had limited prior experience with construction of new buildings. The reasoning for the choice contradicts the suggestions from Bresnen et al. (2005) as the main contractor wanted a department not trapped in their "old" way of doing things to avoid the unlearning and instead focus on learning and implementing the new approach. Since it demands an investment of both time and resources to provide the department with the skillset necessary to construct new buildings, this finding shows the great challenge of unlearning an experienced workforce their practice and make them use the collaborative approaches.

Lastly, our research reveals that an internal collaboration within the main contractor company was necessary for the implementation of the new, collaborative, procurement approach. In Bispevika, representatives from the design-, operations-

and procurement functions worked in close collaboration with the subcontractors to secure the implementation of the processes in the project. It was, however, emphasised that the procurement function had not scheduled their process well enough with regards to the overall progress in the project, resulting in other processes being behind schedule. On the other hand, interviewees also emphasised that the design in the early phase of the construction were too close to the production, leaving too little time for the procurement and for understanding the basis for the construction. This discussion illustrates the importance of the three functions; design, operations and procurement, working together and have schedules matching each other, for the procurement approach to be successfully implemented.

To sum up our discussion, there are found several aspects main contractors should take into account to facilitate collaboration among project participants through their procurement approach. The aspects range from a continuous focus on developing solid relationships to formal contracts incentivising the subcontractors to work towards the project objectives. As the Norwegian construction industry is found to still be characterised by a traditional, adversarial, mindset, where a large share of the workforce shows persistence towards the "old" way of doing things, the implementation of collaborative procurement approaches is challenging and demands investments in terms of both time and money. With a commitment from the top management of the client, main contractor and subcontractors to focus on the long-term perspective, an early involvement of the different actor groups to fully utilise each other's knowledge, a continuous measurement of the productivity increases and a development of a common business culture within the project, we do, however, perceive the implementation as doable.

6. Conclusion

In this research, we set out to unveil how main contractors can facilitate collaboration with- and among subcontractors through their procurement approach. To reach the objective and answer our primary research question, we found it necessary to research how new, collaborative, procurement approaches can be implemented and the challenges faced in the implementation. In addition, it was found essential to get a better understanding of what different actors found as motivation for implementing collaborative procurement approaches, as previous research had identified a scepticism among subcontractors (Bygballe et al., 2010; Dainty et al., 2001).

To conduct the research, it was performed an in-depth case study of a construction project in Bispevika where both the client and main contractor were implementing a new, collaborative, procurement approach. Here, we chose to focus on the latter, given the low attention this has gained, relative to clients' initiatives (Bygballe et al., 2010). Previous research has identified that it can be significant differences between the theoretical perceptions and empirical behaviours with regard to procurement practices (Eriksson & Laan, 2007). We therefore found it crucial with an in-depth case study allowing a detailed examination of how main contractors use their procurement approach to facilitate collaboration in practice. The empirical findings were then discussed and compared with the findings from previous research which allowed us to put our findings in a broader industry context and seek additional explanations for the concepts that emerged. In the end, our research contributes to the theory development and practical implications in the following areas:

Most of the previous literature has focused on the relationship between the client and main contractor (Bygballe et al., 2010), which also reflects the literature used as a theoretical basis for our research. Several of our findings are in accordance with the literature, and the findings are thereby indicating that many of the same principles found essential for the client–main contractor relationship also apply for the main contractor–subcontractor relationship. There are, however, two main distinctions found between the procurement approach of the client and main contractor. The first are the restrictions indirectly imposed on the main contractor

by the client. If the main contractor is not involved early enough in the project by the client, they are not able to utilise the opportunities arising from an early involvement of subcontractors. Also, if the client is not supporting the implementation of a new procurement approach, which is found to require the use of more resources than normal, the research revealed that the main contractor would not have implemented the same, collaborative, procurement approach. The second is the increased complexity the main contractor face relative to the client. In addition to facilitate a collaboration with the subcontractors, the main contractor must facilitate a collaboration among the subcontractors.

Previous research (e.g. Bygballe et al., 2010 and Cicmil and Marshall, 2005) has found a successful implementation of collaborative procurement approaches challenging in the construction industry. Our research contributes to enriching the knowledge of how collaborative procurement approaches can be implemented. It is found that the Norwegian construction industry is still characterised by a traditional, adversarial, mindset, generally not applying collaborative procurement approaches. Even though productivity increases, a development of new and better solutions, an improved working environment, and a competitive advantage in upcoming projects were found as motivational factors for implementing collaborative procurement approaches, some actors were still sceptic to whether the industry is mature for its implementation. As a result, it is suggested that main contractors should spend a significant amount of time in their selection process on informing potential subcontractors about the implications of their procurement approach, to create a motivation for change and participation in the project.

In their selection process, it is also suggested that main contractors should arrange arenas where they can meet the intended project team and top management, like the bid presentations in Bispevika, to be able to evaluate criteria like collaborative skills, chemistry, mindset and top management commitment. Selecting subcontractors rating high on these criteria, in addition to presenting a justifiable price, was found crucial for facilitating collaboration. Creating meeting arenas throughout the selection process is further found important for the main contractor to start developing a good and trustful relationship with the subcontractors. Whether a trustful relationship is developed at the time the contractual agreement is signed,

and whether the subcontractor has a mindset encouraging collaboration, seemed to set the conditions for how rigid the partnering contract should be. As collaborative procurement approaches, performed by main contractors, are new in the Norwegian construction industry, it is found challenging to create a contract model suiting all subcontractor partnerships. A single contract model is thus not suggested, but it is suggested that main contractors focus on including incentives, such as target sums or bonuses, that the subcontractors find realistic to achieve.

As a large share of the workforce in the Norwegian construction industry shows a persistence towards the "old" way of doing things, the implementation of new, collaborative, procurement approaches is challenging. It demands the investment in learning internal employees and subcontractors the skillset necessary for implementing the new approach, but subcontractors were sceptical to the ratio between resources spent and the effect it had on the project result. It is therefore suggested that main contractors should focus on developing the skills required to continuously measure the effects of the productivity increases the collaboration can result in. Another measure found crucial, and thus suggested, for both the main contractor and subcontractors to invest in the project is a long-term perspective. It takes time to fully implement a new approach, and it is therefore unlikely to achieve the full effect of a new, collaborative, procurement approach in a single project.

The importance of the long-term perspective and provision of information about the implication of a collaborative procurement approach to subcontractors might, however, decrease if/when the collaborative procurement approaches become the "common practice" in the industry.

6.1 Limitations and Recommendations for Future Research

There are some limitations to this research that should be acknowledged, which to a large extent can be seen in relation to the limited time and capacity of a master thesis. We have not been able to follow the entire procurement process of one subcontractor, and we have thus not been able to observe how the relationship has developed as time passed and the different mechanisms were used. At the same time, most of the subcontractors have not completed their task and some have not

yet started. Some information about this is retrieved from interviewees who have been a part of the procurement process, and by performing single observations of the different steps. It would, however, be interesting to get a better understanding of how the relationship emerges as time passes. If the subcontractors and main contractor are able to follow the objectives agreed upon in the initial workshops, or if they, despite the new procurement approach, fall back to the traditional mindset.

To get interviews with representatives from subcontractors who had been a part of the new procurement approach, we used the network of our contact person in AF Gruppen and told the potential interviewees that we collaborated with the main contractor. As a result, our interviewees might have been more enthusiastic about the new procurement approach than the average representative from subcontractors. We, therefore, found it necessary to interview interviewees from several subcontractors to try to lower the chances of biased results. It would, however, be interesting for further research to compare the findings of this research with other case studies, to see if the findings apply to a broader part of the industry.

Lastly, our research revealed that both the client and main contractor were searching for the optimal partnership contract, but we found it outside the scope of this research to further investigate what kind of contract that would be optimal for collaboration to emerge. Further research should look closer into suitable contract models, and especially what kind of contract that should be used if the subcontractors are involved in the project before the design phase starts. That is an issue emphasised by several of the interviewees, but that no interviewee had a good answer to.

7. References

AF Gruppen. (2018). Boligutvikling i Bjørvika. Retrieved January 9, 2018, from https://afgruppen.no/prosjekter/bygg/bispevika/

Akintan, O. A., & Morledge, R. (2013). Improving the Collaboration between Main Contractors and Subcontractors within Traditional Construction Procurement. *Journal of Construction Engineering*, *2013*, 1–11.

Aloini, D., Dulmin, R., Mininno, V., & Ponticelli, S. (2012). Supply chain management: a review of implementation risks in the construction industry. *Business Process Management Journal*, *18*(5), 735–761.

Andresen, P. E., Landmark, A. D., Hajikazemi, S., Johansen, A., & Andersen, B. (2016). Remedies for Managing Bottlenecks and Time Thieves in Norwegian Construction Projects – Public vs Private Sector. *Procedia - Social and Behavioral Sciences*, *226*(C), 343–350.

Appannaiah, P. H. R., Reddy, D. P. N., & Ramanath, H. R. (2010). *Business Research Methods*. New Delhi: Himalaya Publishing House.

Araujo, L., & Dubois, A. (2007). Case research in purchasing and supply management: Opportunities and challenges. *Journal of Purchasing and Supply Management*, *13*(3), 170–181.

Arditi, D., & Chotibhongs, R. (2005). Issues in Subcontracting Practice. *Journal of Construction Engineering and Management*, *131*(8), 866–876.

Bankvall, L., Bygballe, L. E., Dubois, A., & Jahre, M. (2010). Interdependence in supply chains and projects in construction. *Supply Chain Management: An International Journal*, *15*(5), 385–393.

Bemelmans, J., Voordijk, H., & Vos, B. (2012). Supplier-contractor collaboration in the construction industry: A taxonomic approach to the literature of the

2000-2009 decade. *Engineering, Construction and Architectural Management*, *19*(4), 342–368.

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

Bresnen, M., Goussevskaia, A., & Swan, J. (2005). Implementing change in construction project organizations: exploring the interplay between structure and agency. *Building Research & Information*, *33*(6), 547–560.

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 co-operation? A tale of two partnering projects. *International Journal of Project Management*, *20*(7), 497–505.

Bryman, A., & Bell, E. (2015). *Business research methods* (4th ed.). Oxford: Oxford University Press.

Bygballe, L. E., & Ingemansson, M. (2014). The logic of innovation in construction. *Industrial Marketing Management*, *43*(3), 512–524.

Bygballe, L. E., Jahre, M., & Swärd, A. (2010). Partnering relationships in construction: A literature review. *Journal of Purchasing and Supply Management*, *16*(4), 239–253.

Cicmil, S., & Marshall, D. (2005). Insights into collaboration at the project level: complexity, social interaction and procurement mechanisms. *Building Research & Information*, *33*(6), 523–535.

CII. (1991). *In Search of Partnering Excellence*. Austin, Texas: Construction Industry Institute, University of Texas at Austin.

Dainty, A. R. J., Briscoe, G. H., & Millett, S. J. (2001). Subcontractor perspectives on supply chain alliances. *Construction Management and Economics*, *19*(8), 841–848.

de Araújo, M. C. B., Alencar, L. H., & de Miranda Mota, C. M. (2017). Project procurement management: A structured literature review. *International Journal of Project Management*, *35*(3), 353–377.

Deloitte. (2017). *The Deloitte Global CPO Survey 2017 - Growth: the cost and digital imperative*. London, UK.

Dubois, A., & Gadde, L.-E. (2002b). Systematic combining: an abductive approach to case research. *Journal of Business Research*, *55*(7), 553–560.

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

Dubois, A., & Gadde, L.-E. (2000). Supply strategy and network effects — purchasing behaviour in the construction industry. *European Journal of Purchasing & Supply Management*, *6*(3), 207–215.

Egan, J. (1998). *Rethinking Construction - The report of the construction task force.Department of the Environment Transport and Region, London: HMSO*. HMSO.

Ellram, L. (1996). The use of the case study method in logistics research. *Journal of Business Logistics*, *17*(2), 93–138.

Eriksson, P. E. (2006). Procurement and Governance Management - Development of a Conceptual Procurement Model Based on Different Types of Control. *Management Revue*, *17*(1), 30–49.

Eriksson, P. E. (2007). Cooperation and partnering in facilities construction – empirical application of prisoner's dilemma. *Facilities*, *25*(1/2), 7–19.

Eriksson, P. E. (2008). Procurement Effects on Coopetition in Client-Contractor Relationships. *Journal of Construction Engineering and Management*, *134*(2), 103–111.

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., Dickinson, M., & Khalfan, M. M. A. (2007). The influence of partnering and procurement on subcontractor involvement and innovation. *Facilities*, *25*(5/6), 203–214.

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., & Nilsson, T. (2008). Partnering the Construction of a Swedish Pharmaceutical Plant: Case Study. *Journal of Management in Engineering*, *24*(4), 227–233.

Eriksson, P. E., & Pesämaa, O. (2007). Modelling procurement effects on cooperation. *Construction Management and Economics*, *25*(8), 893–901.

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.

Faes, W., & Matthyssens, P. (2009). Insights into the process of changing sourcing strategies. *Journal of Business & Industrial Marketing*, *24*(3/4), 245–255.

Foerstl, K., Hartmann, E., Wynstra, F., & Moser, R. (2013). Cross-functional integration and functional coordination in purchasing and supply management: Antecedents and effects on purchasing and firm performance.

International Journal of Operations & Production Management, *33*(6), 689–721.

Frödell, M., Josephson, P.-E., & Koch, C. (2013). Integration barriers for purchasing organisation in a large construction company: towards requisite disintegration. *The IMP Journal*, *7*(1), 46–58.

Gadde, L.-E., & Dubois, A. (2010). Partnering in the construction industry—Problems and opportunities. *Journal of Purchasing and Supply Management*, *16*(4), 254–263.

Geraint, J. (2014). *The project supply chain: Doing big things right*. SCM World.

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

Hartmann, A., & Caerteling, J. (2010). Subcontractor procurement in construction: the interplay of price and trust. *Supply Chain Management: An International Journal*, *15*(5), 354–362.

Hosseini, A., Wondimu, P. A., Bellini, A., Tune, H., Haugseth, N., Andersen, B., & Lædre, O. (2016). Project Partnering in Norwegian Construction Industry. *Energy Procedia*, *96*(Supplement C), 241–252.

Johnston, W. J., & Bonama, T. V. (1981). Purchase process for capital equipment and services. *Industrial Marketing Management*, *10*(4), 253–264.

Kraljic, P. (1983). Purchasing must become supply management. *Harvard Business Review, September-October*, 109–117.

Kvale, S. (2007). *Doing interviews* (2nd ed.). London: SAGE.

Kvale, S., & Brinkmann, S. (2009). *Det kvalitative forskningsintervju* (2nd ed.). Oslo: Gyldendal akademisk.

Latham, M. (1994). *Constructing the Team - Final report of the joint Government/industry review of procurement and contractual arrangements in the UK Construction Industry* (pp. 1–130). HMSO.

Lavikka, R. H., Smeds, R., & Jaatinen, M. (2015). Coordinating collaboration in contractually different complex construction projects. *Supply Chain Management: An International Journal*, *20*(2), 205–217.

Lehtiranta, L. (2011). Relational Risk Management in Construction Projects: Modeling the Complexity. *Leadership and Management in Engineering*, *11*(2), 141–154.

Lehtiranta, L. (2014). Risk perceptions and approaches in multi-organizations: A research review 2000–2012. *International Journal of Project Management*, *32*(4), 640–653.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic Inquiry*. Beverly Hills, CA: SAGE.

MacRoberts. (2015). *MacRoberts on Scottish construction contracts* (3rd ed.). John Wiley & Sons, Inc.

May, T. (2002). *Qualitative research in action*. London, UK: SAGE.

Naoum, S., & Egbu, C. (2015). Critical Review of Procurement Method Research in Construction Journals. *Procedia Economics and Finance*, *21*(C), 6–13.

OBOS. (2018). Innovasjonskonkurranse for Ulven. Retrieved January 9, 2018, from https://www.obos.no/privat/ny-bolig/boligprosjekter/oslo/ulven/innovasjonskonkurranse

Osipova, E., & Eriksson, P. E. (2013). Balancing control and flexibility in joint risk management: Lessons learned from two construction projects. *International Journal of Project Management*, *31*(3), 391–399.

Papadonikolaki, E., Verbraeck, A., & Wamelink, H. (2017). Formal and informal relations within BIM-enabled supply chain partnerships. *Construction Management and Economics*, *35*(8–9), 531–552.

Pesämaa, O., Eriksson, P. E., & Hair, J. F. (2009). Validating a model of cooperative procurement in the construction industry. *International Journal of Project Management*, *27*(6), 552–559.

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2016). *Research Methods for Business Students* (7th ed.). Harlow: Pearson.

Schneider, L., & Wallenburg, C. M. (2013). 50 Years of research on organizing the purchasing function: Do we need any more? *Journal of Purchasing and Supply Management*, *19*(3), 144–164.

Sherratt, F., & Kapogiannis, G. (2018). Impact of integrated collaborative technologies to form a collaborative culture in construction projects. *Built Environment Project and Asset Management*, *8*(1), 24–38.

SSB. (2018a). Bygge- og anleggsvirksomhet, strukturstatistikk. Retrieved June 18, 2018, from https://www.ssb.no/bygg-bolig-og-eiendom/statistikker/stbygganl/aar/2018-05-04

SSB. (2018b). Norsk Næringsliv. Retrieved June 27, 2018, from https://www.ssb.no/nasjonalregnskap-og-konjunkturer/faktaside/norsk-naeringsliv

Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, Calif: Sage.

Suprapto, M., Bakker, H. L. M., Mooi, H. G., & Hertogh, M. J. C. M. (2016). How do contract types and incentives matter to project performance? *International Journal of Project Management*, *34*(6), 1071–1087.

Tam, V. W. Y., Shen, L. Y., & Kong, J. S. Y. (2011). Impacts of multi-layer chain subcontracting on project management performance. *International Journal of Project Management*, *29*(1), 108–116.

Tassabehji, R., & Moorhouse, A. (2008). The changing role of procurement: Developing professional effectiveness. *Journal of Purchasing and Supply Management*, *14*(1), 55–68.

van Weele, A. J. (2014). *Purchasing and Supply Chain Management* (6th ed.). United Kingdom: Cengage Learning Textbook.

Veidekke. (2017). Veidekke vant OBOS' innovasjonskonkurranse for Ulven. Retrieved January 9, 2018, from http://veidekke.no/om-oss/nyheter-og-media/pressemeldinger/article24745.ece

Wood, G. D., & Ellis, R. C. T. (2005). Main contractor experiences of partnering relationships on UK construction projects. *Construction Management and Economics*, *23*(3), 317–325.

Yeung, H. W.-C. (1995). Qualitative personal interviews in international business research: Some lessons from a study of Hong Kong Transnational Corporations. *International Business Review*, *4*(3), 313–339.

Yin. (2014). *Case Study Research: Design and Methods* (5th ed.). Los Angeles, Calif: SAGE.

Yin, R. K. (2009). *Case Study Research: Design and Methods* (5th ed.). Los Angeles: SAGE.

8. Appendix

8.1 Data Collection Protocol

Date	Location	Type of Meeting/Observation
07.06.17	Helsfyr	Introduction meeting
05.09.17	Bispevika	Information meeting about the procurement approach
29.09.17	BI - Nydalen	Clarification meeting with contact person from main contractor
09.01.18	Bispevika	Preliminary presentation
30.01.18	Bispevika	Observation – Kick-off
12.02.18	Bispevika	Student meeting
20.02.18	Bispevika	Information meeting about the operational organisation
01.03.18	Bispevika	Observations – Four different operational meetings
06.03.18	Bispevika	Observation – Bid presentation
07.03.18	Bispevika	Interview – Main contractor
09.03.18	BI - Nydalen	LC-NO seminar: Workshop about the life science centre; How to achieve lean extreme?
16.03.18	Bispevika	Observation – Product/Service strategy meeting
19.03.18	Bispevika	LC-NO seminar: Lean design and project development in Bispevika.
20.03.18	Alna	Interview – Subcontractor
21.03.18	BI - Nydalen	Seminar: Quality of collaboration in road-work projects
23.03.18	Lysaker	Interview – Subcontractor
11.04.18	Telephone	Interview – Subcontractor
12.04.18	Bispevika	Interview – Main contractor
12.04.18	Brynseng	Interview – Subcontractor
13.04.18	Bispevika	Interview – Main contractor
13.04.18	Bispevika	Observation – Planning of the introduction day
17.04.18	Bispevika	Observation – Introduction day
18.04.18	Alna	Interview – Subcontractor
19.04.18	Sandvika	Interview – Consultant

25.04.18	Bispevika	Interview – Main contractor
02.05.18	Bispevika	Interview – Main contractor
02.05.18	Bjørvika	Interview – Client
04.05.18	Bispevika	Interview – Main contractor
07.05.18	Bispevika	Interview – Main contractor
09.01.18 – 07.05.18	Bispevika	General presence at the construction office in Bispevika

8.2 Interview Guides

This section contains three of the interview guides developed, which contains the main questions asked to the interviewees. Questions with a number is questions asked, while the letters indicate possible follow up questions.

In the beginning of each interview we provided the following information:
Vi jobber med en masteroppgave på Handelshøyskolen BI, hvor Bispevikaprosjektet brukes som case for å forstå hvordan innkjøp og samhandling kan forbedres i byggebransjen. Vi har da et samarbeid med AF Gruppen, hvor et av målene er å forankre innkjøpspraksisen og den resulterende samhandlingen i prosjektet med teori og hva aktører i prosjektet utenfor AF tenker rundt praksisen. Så vi setter stor pris på at du tok deg tid til å møte oss, og har ingen forventninger til dette utover at du svarer så godt du kan på spørsmålene vi stiller.

Før vi starter lurer vi på om det er greit for deg at vi tar opp intervjuet, så vi får med oss alle detaljene du sier. Det som brukes inn i oppgaven blir anonymisert, og opptaket blir slettet idet oppgaven er ferdigstilt.

Interview guide – Procurement Manager

1. Hvilken rolle har du i Bispevika-prosjektet?

Innkjøpsstrategien i Bispevika

1. Før vi går inn på detaljene rundt de forskjellige delene av innkjøpet, kan du forklare i relativt korte trekk hva innkjøpsstrategien i Bispevika er, og går ut på?

2. Hvilke kontraster finnes det i denne metoden kontra hva som tradisjonelt gjøres i bransjen?
3. Hva er hovedgrunnene til at AF Gruppen ønsker å endre innkjøpspraksisen, å ta i bruk denne filosofien?
    a. Hvem har vært initiativtakerne?

Valg av leverandør/UE

Sånn vi har forstått det er det forsatt en del fag som kjøpes inn tradisjonelt, som man har funnet ut bassert på innkjøpsmatrisen, mens man for andre fag ønsker å danne et partnerskap.

1. Hvis vi da fokuserer på partnerskapene, kan du forklare prosessen dere har lagt opp når det kommer til valget av UE/leverandør? Og da tenker jeg helt fra spesifiseringen av oppgaven eller faget.
    a. Spesifisering
    b. Tilbudsinvitasjon
    c. Evaluering av tilbudene
2. Er dette nytt for Bispevika-prosjektet?

Kontraktsmodeller, prisings- og incentiv mekanismer

1. Hva slags kontraktsmodell benyttes, og er det samme modell for hvert fag og byggetrinn?
    a. Er det nytt for dette prosjektet?
2. Hva slags prisingsmodel er det som benyttes i Bispevika, og er den felles for alle fag og bygetrinn?
    a. Er det nytt for dette prosjektet?
3. Er det noen andre insentiver som legges inn i kontraktene enn hva som ligger inne i målprisen, eventuelt som kommuniseres muntlig men som ikke er nedfelt i en kontrakt?
    a. Er det nytt for dette prosjektet?

Skape samspill med partner

1. Hva føler du, som innkjøper, er viktige punkter å fokusere på for å tilrettelegge for godt samspill mellom prosjektaktørene?

Avslutning

1. Gitt at målet vårt for dette intervjuet var å få en god forståelse av innkjøpsstrategien i Bispevika, og hva den har å si for selve prosjektet og målene dere har satt, er det noe vi burde ha spurt om som vi ikke har nevnt?

Interview guide – Site Managers

1. Hvilken rolle har du i AF Gruppen generelt, og Bispevikaprosjektet spesielt?
    a. Har du jobbet lenge med denne type arbeidsoppgaver?
2. Hvis du skulle nevnt én ting du tenker byggebransjen burde forbedre, hva ville det vært?
3. Før Bispevika-prosjektet kom på banen, hadde du gjort deg opp noen tanker rundt hvorvidt innkjøpspraksisen til AF Gruppen, eller entreprenører generelt, fungerer godt eller burde endres?
    a. Hva kommer det av?
4. Hvordan ville du beskrevet innkjøpsfilosofien eller praksisen i Bispevika?
5. Hvilke steg i innkjøpsprosessen er det du er med på, og kan du fortelle kort om dem?
    a. Er det noen av disse stegene du ser har vært mer utfordrende enn andre?
        i. Hva kommer det av?
    b. Er dette noe en anleggsleder tradisjonelt ville gjort?
6. Hvordan opplever du UEne/leverandørenes respons på den nye praksisen de må gjennom? (hvor man skal komme opp med målpris, fortelle om suksesskriterier og bekymringer etc.)
    a. Er det forskjeller fra UE til UE?
7. Føler du partnerne følger godt opp på det man blir enige om i innledningsfasen eller opplever du at mindsettet blir noe annet når de skal i gang å bygge?
    a. Hva tror du dette kommer av?
8. Ett av fokusområdene i dette prosjektet har vært å øke samhandlingen mellom aktørene. Føler du dere har lykkes med det så langt?
    a. Hva tror du det kommer av?
        i. Er det noen tiltak du tenker er mer effektive enn andre?
    b. Tenker du at økt samhandling er positivt for prosjektet, eller kan det føre med seg noe negativt?
9. Har du jobbet med noen leverandører dere har kontrahert på «tradisjonelt vis», gjennom konkurranse?

    a. Hvis ja; Ser du noe forskjell på deres holdninger til prosjektet enn partnernes?
        i. Er det vanskeligere å samhandle med dem?
    b. Er de også med på faseplan, ukeplan og morgenmøtene?
10. Tror du det ville vært mulig å oppnå en god samhandling dersom valget av UE/leverandør baserte seg på en ren konkurranse, hvor evalueringen kun var basert på pris, gitt en god kvalitet?
11. Gitt at målet vårt for dette intervjuet var å få en god forståelse for innkjøpspraksisen i Bispevika og hva den har å si for samhandlingen i prosjektet; er det noe vi burde ha spurt om som vi ikke har nevnt?

Interview guide – Subcontractor

1. Hva er din rolle i *bedriftsnavn*, og hva er din rolle inn mot Bispevikaprosjektet?
2. Hvis du skulle nevnt én ting du tenker bygg- og anleggsbransjen burde forbedre, hva ville det vært?
3. Hva er det dere, generelt sett, vektlegger når dere vurderer om dere skal legge inn et tilbud på et prosjekt eller ikke?
    a. Bispevika-prosjektet er et litt annerledes prosjekt, hvor man har et ønske om å endre bransjen. Hva er det som gjorde at dere ville være med på dette prosjektet?
4. Hvordan opplevde du prosessen fra dere fikk høre om Bispevika-prosjektet til dere fikk tildelt kontrakten?
    a. Var det noe som skilte seg ut fra de tradisjonelle prosessene?
    b. Har du noen tanker rundt hva denne prosessen har hatt å si for den videre samhandlingen i prosjektet?
    c. Har du noen tanker rundt forbedringspotensial?
    d. Hva tenker du burde være kriteriene en entreprenør bruker for å evaluere tilbudene, om de ønsker en partner som kan være med å forbedre prosjektet?
5. Når det kommer til selve kontrakten, hva er i dine øyne de viktigste faktorene som må være med, eller eventuelt ikke være med, om *bedriftsnavn* skal kunne levere et best mulig resultat?
    a. Er det noen incentiver du opplever som mer effektive enn andre?

6. Har du noen tanker rundt fordeler og/eller utfordringer for *bedriftsnavn* når det kommer til innkjøpspraksisen utøvd i Bispevika?
    a. Har du forslag til noe AF Gruppen, eller andre i prosjektet, kunne gjort annerledes for å lette på utfordringene?
7. Om du skulle sammenlignet Bispevika-prosjektet med andre bygge-prosjekter dere er en del av; Hva vil du si er de største forskjellene for deres del, om det er noen?
8. Et av fokusområdene i Bispevika-prosjektet er at man skal ha en samhandling med de forskjellige aktørene i prosjektet. Hva har det hatt å si for *bedriftsnavn*?
    a. Har dere måtte bruke mer ressurser enn tidligere, fordi noe gjøres annerledes?
    b. Ser du noen positive resultater av samhandlingen?
    c. Ser du noen utfordringer med denne type samhandling?
    d. Hvilke tiltak, eller fokusområder, tenker du er nødvendige for å skape en god samhandling mellom aktører i byggeprosjekter?
9. Gitt at målet vårt for dette intervjuet var å få en forståelse for hvordan innkjøpsmetodene til en entreprenør, i dette tilfellet AF, oppleves av *bedriftsnavn*, om det er noe forbedringspotensial, og også hva samhandling på byggeplassen har å si for dere. Er det noe vi burde spurt om som vi ikke har nevnt

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8.3 Product/Service Strategy Form

This is a direct copy of the form developed by Marius Winger in AF Gruppen, who can be contacted at +47 488 65 507 for questions.

Bispevika Fagstrategi

Fag: _____ Dato utarbeidet: _____

AF Gruppen ved prosjekt 2711 B2 + 2712 B6a vil i dette dokument beskrive vår strategi for nevnte fag.

Dette inkluderer markedsanalyse, prosessbeskrivelse, beslutningstakere, roller og forventninger internt og eksternt.

Dersom ikke annet er avtalt, ledes alle innkjøpsprosessene av AF Gruppen, Ved Marius Winger, innkjøpssjef Bispevika.

Prosjekt Direktør Lars Petter Fritzsønn, skal skriftlig godkjenne strategien før igangsettelse.

1. **Leverandøranalyser - et viktig bidrag til prosjektets innkjøpstrategi**

   Analyser, prosjektvisjon og målsetninger, vil danner grunnlag for hvilken innkjøpsstrategi som skal velges for de ulike faggruppene.

   Samarbeid eller konkurranse?

   For det innkjøp som vi kategoriserer som Samarbeid strategi, eller valg av strategiske samarbeidspartnere, herunder rådgivere, vil det legges til grunn at leverandørene inkluderes i tidligfase. Dette er nødvendig for å sikre at riktig kompetanse er tilgjengelig tidlig nok, i et prosjekts kanskje viktigste fase, Planleggingsfase og beslutningsfase. Det legges også til som forutsetning at leverandører/leveranser som omtales som et strategisk samarbeide skal kunne være aktive i innovasjon og utvikling.

Executive Summary:

Faget besluttes gjennomført som Konkurranseutsatt innkjøp, eller Strategisk innkjøp:

Konkurranse/Strategisk samarbeide (Stryk over det det ikke er)

Følgende spørsmål skal være retningsgivende og besvart:

- **Hvilken kompetanse har egen organisasjon for å gjennomføre det fag aktuelle innkjøpet? Bør eventuelt ressurser fra andre prosjekter eller forretningsenheter i AF involveres?**

  Svar:

- **Kjenner vi, og har god erfaring med? (om ja, anfør svaret i pkt 6)**

  Svar:

- **Er lokal kunnskap og erfaring viktig for gjennomføringen?**

  Svar:

- **Hvordan er konkurransesituasjonen for det aktuelle faget nå? Bør vi eventuelt spille på internasjonale aktører eller gode aktører med andre kjerneområder enn Oslo?**

  Svar:

- **Kan innkjøpet la seg beskrive slik at oppgaven og omfanget forstås likt av tilbyderne/markedet?**

  Svar:

Bispevika Fagstrategi

- **Er det knyttet stor risiko for oss eller UE til innkjøpet? Hvordan håndteres slik risiko mest optimalt totalt sett for prosjektet?**

Svar:

- **Hvor kritisk er leveransen? Kan leverandøren erstattes underveis?**

Svar:

- **Hva koster det å ikke få leveransen i tide eller på kvalitet?**

Svar:

- **Kan man forvente at resultatet blir bedre ved konkurranse, enn det resultat man oppnår gjennom samarbeid?**

Svar:

- **Kan faget innoveres? (om ja, anfør på hva i pkt 5)**

Svar:

- **Påvirker faget kundetilfredsheten direkte/indirekte**

Svar:

2. **Selvkost tabell:**

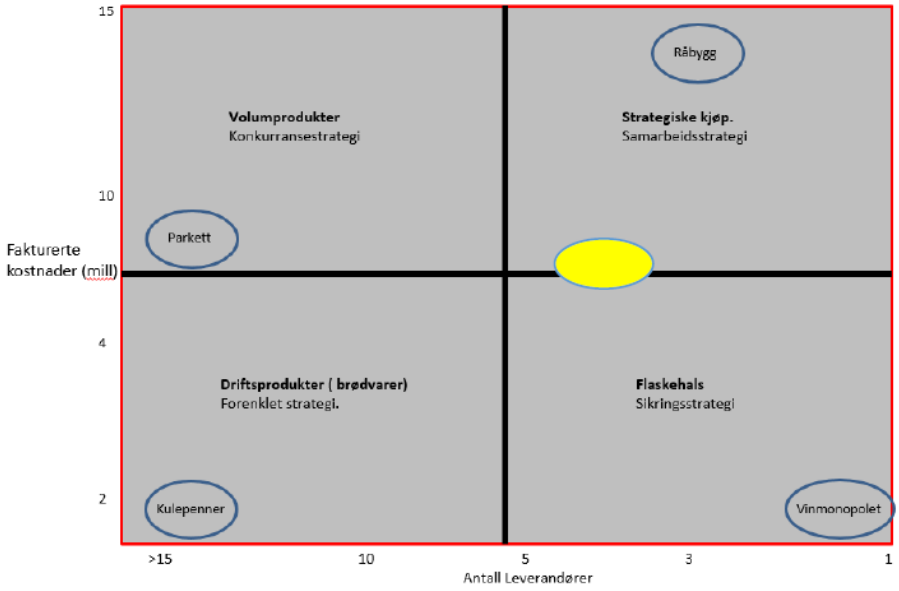
AF risikojustert selvkost kr:	
Avtalte evt tillegg Byggherre (Endringer/kvalitetssøkninger o.l)	Avtalte endringer?
Sum AF Selvkost (ex påslag)	
Mottatte tilbud pt	
Laveste tilbudssum pt	
Målkost kontrakt: (Hva vi har lyst å bruke av penger?)	(minimum15% under selvkost)

Bispevika Fagstrategi

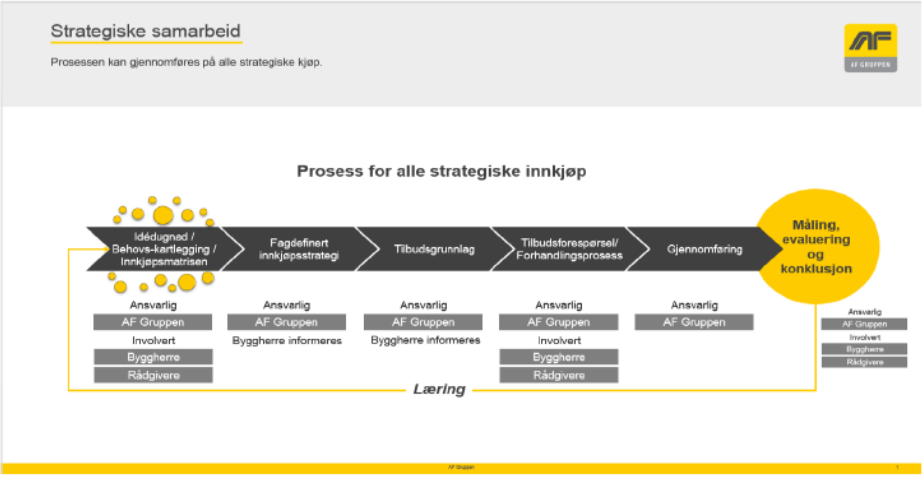
Plasser faget i matrisen:

Avstemmes først med innkjøpsplanen kolonne G
(Oppstart fysisk levering ihht fremdriftsplan)

Markedsanalyse. Innkjøpsmatrise.



3. Prosesskjede:



Bispevika Fagstrategi

4. **Hvilke deltakere skal involveres i prosessen pkt 3:**

   Idedugnad:

Oppgave	Hvem deltar	Frist for gjennomført	Ansvarlig

5. **Utarbeidelse av tilbudsgrunnlag:**

Oppgave	Hvem deltar	Frist for gjennomført	Ansvarlig

6. **Beskriv tilbudsgrunnlaget forventet for innkjøpet:**

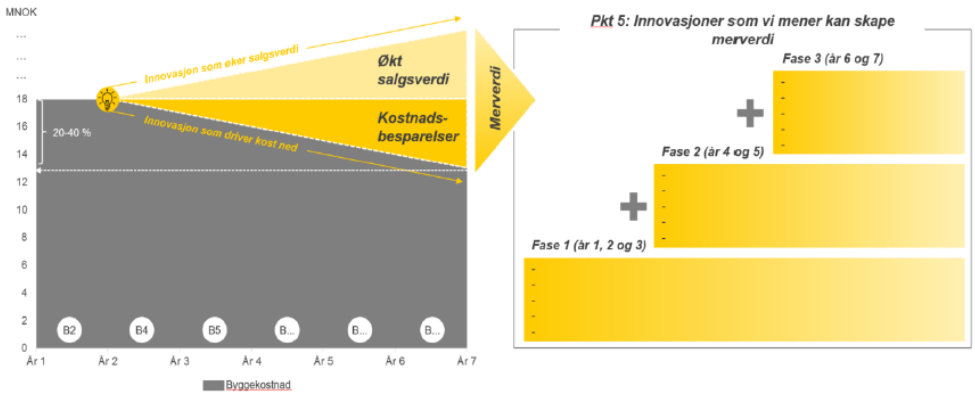
Bispevika Fagstrategi

7. **Deltakere forhandlingsprosess leverandører:**

Oppgave/rolle	Hvem deltar	Frist for gjennomført	Ansvarlig

8. **Målsetninger:**

– Utvikling i bygge kostnad og salgsverdi



Bruk grafen mot tabellen under:

Definer fagets målsetninger/ambisjoner/innovasjoner:

Mål	Hvem deltar		Dato for gjennomført	Ansvarlig
1				
2				
3				
5				
6				

Bispevika Fagstrategi

9. **Aktuelle leverandører:**

Oppgave/rolle	Hvem deltar	Frist for gjennomført	Ansvarlig