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Preliminary Thesis Report

New Procurement Strategies in the Construction Industry

Experiences from a large construction project

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## Preliminary Thesis Report

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## Experiences from a large construction project

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## Abstract

In this preliminary thesis report we are presenting what we are going to study, why we are studying it, and how we are planning to study it. That is done through an introduction, a presentation of our planned research method, the theory we are planning to use in the research, and our project plan.

Both in the literature and from watching the Norwegian news, we have seen that the demand of clients is shifting from a focus on just the price to a focus on criteria like sustainability, digitalisation and innovation when they are selecting their main contractor. The main contractor is, however, dependent on its subcontractors and suppliers to meet the clients' demand, and the existing procurement system in the industry is found as an obstacle for, amongst other, the innovation desired by the client. Since the need for a change in the construction industry was reported in the 1990s, different approaches to procurement in construction projects have been suggested, and tried, but the partnering concept for instance has still not yield the same positive effects as in other industries.

It is found there is a general lack in enthusiasm between the contractor and subcontractors to adopt collaborative processes largely due to the mistrust between them, and that the scepticism towards for instance partnering among subcontractors and suppliers exists due to a lack of understanding. To meet the new demand of the clients, some main contractors are, however, trying to adopt new procurement strategies. In this research, we therefore want to enlighten why a main contractor is adopting new procurement strategies – to increase the understanding of its implication for the different actors, and how the procurement strategies are adopted – to show other contractors how they can overcome the scepticism and adopt new procurement strategies.

This will be done through a qualitative research, where we are systematically combining the theoretical and empirical domains. The research is designed as a case study, where the case is a construction project in Bispevika. There we are, through interviews and observations, going to study their new procurement strategies, with a focus on the supplier selection, contracting, and modes of collaboration.

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## 1. Introduction

In an article from 2012, Bemelmans et al. state that the demand of clients in the construction industry is starting to shift from a focus on just price to a focus on criteria like sustainability, speed, and innovations. This is witnessed in Norway, where OBOS (a housing company) in 2016 held an innovation competition to find the right actors for their new major housing project at Ulven, requiring a cooperation between the contractor, architect and consultants (OBOS, 2018; Veidekke, 2017). Likewise, OSU (a real estate and development company) invited the largest and most reputable contractors to suggest how they can develop Bispevika to become the most attractive residential area in Oslo, through, amongst other, digitalisation, collaboration, and industrialisation (AF Gruppen, 2018). OSU chose to sign a partnership contract with the contractor AF Gruppen with, amongst other, an ambition of large reductions in the construction cost (AF Gruppen, 2018).

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, the main contractor has to purchase the capabilities and knowledge outside their 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 and suppliers to achieve the new project objectives from the client (Bemelmans et al., 2012). The existing procurement system in the construction industry is, however, found as an obstacle for the innovation desired by the clients, reason being the traditional lump-sum contracts that trigger a price competition rather than an interaction (Bygballe & Ingemansson, 2014).

The selection of an appropriate procurement method can in other words shape success of the project (Naoum & Egbu, 2015), as it forms the basis for the cooperation between the different actors in the construction project (Pesämaa, et al., 2009). In this thesis we are therefore striving to provide insight to the new procurement strategies adopted by construction companies today.

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### ***1.1 Research Area***

In general, procurement is of importance for a company. Deloitte (2017) does for example state 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 cooperative alliances, strategic partnerships and supply network management (Tassabehji & Moorhouse, 2008). Foerstl et al. (2013) found evidence that more mature purchasing functions can 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 construction industry it has, however, been a strong focus on the project and its economy entailing a rather short-term perspective emphasising competitive bidding as the main tool in supplier evaluations (Dubois & Gadde, 2000). The competitive bidding and price focus have given 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 a lack of trust as the main barrier to collaboration among the different actors in the construction projects.

Already in the 1990s it was identified a pressing need for change in the construction industry (Egan, 1998; Latham, 1994), and different approaches to the procurement in construction projects have been suggested (Wood & Ellis, 2005). Techniques that have improved the performance in other industries, such as just-in-time, total quality management and partnering, have therefore been introduced to the construction industry (Dubois & Gadde, 2002a) in addition to management contracting and design and build contracts (Naoum & Egbu, 2015). However, the great interest of implementing for instance the partnering concept to the construction industry has still not yield the same positive effects as in other industries (Bygballe et al., 2010).

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The change from traditional procurement to a more collaborative partnership is, however, considered to be the most significant development in order to improve the performance of the construction projects (Gadde & Dubois, 2010). With the shifting demand of clients, the disadvantages of the traditional procurement practices, and the challenge of successfully adapting new practices in mind, we therefore find it interesting to study the new procurement strategies contractors are starting to adopt.

### ***1.2 Objective of the Research***

With a basis in the issues written above, the objective of this research is two folded. It is found that the scepticism towards for instance partnering among suppliers and subcontractors may relate to the lack of understanding of the implication for the different actors and for the effectiveness of the overall project (Bygballe et al., 2010). We want to study why a contractor is adopting the new procurement strategies; which benefits and challenges that is experienced and/or expected, and how the new strategy is perceived by subcontractors and supplier. The objective of this part is to provide evidence for why (or why not) the new procurement strategies should be implemented in the rest of the industry. In other words, to increase the understanding of its implication for the different actors and for the effectiveness of the project.

Secondly, Akintan and Morledge (2013) found that there is a general lack in enthusiasm between the contractor and subcontractors to adopt collaborative processes largely due to the mistrust between them. We therefore find it interesting to study how a contractor is adopting the new procurement strategies, when the subcontractor and/or supplier might be unenthusiastic about the idea. The objective with this is to provide transferable documentation of the experiences and knowledge of one contractor to the rest of the industry, so it can be used by other companies that are considering adapting a new procurement strategy.

### ***1.3 Research Question***

Based on the objective of our master thesis, we have formulated the following research question:

*Why and how are construction companies currently adopting new procurement strategies?*

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To answer the research question, we have derived the following sub-questions:

- *What does the new procurement strategies consist of?*
- *What are perceived benefits and challenges of the new procurement strategies?*
- *How is the new strategies implemented?*

How we are planning to answer the research- and sub-questions will be explained in section 2. We do, however, find it necessary to limit the scope of the thesis. The questions will therefore mainly be studied from the perspective of a Norwegian main contractor, AF Gruppen, which will be presented in more detail in section 2.2.1. In addition, a procurement strategy consists of several different components, but the focus in this research will be limited to the supplier selection, contracting and modes of collaboration, which will be further elaborated in section 3.

#### ***1.4 Importance of the Research***

The conclusions developed in this research can benefit several parties. We have received information from our contact person in AF Gruppen that a theoretical anchoring of their new procurement strategy in Bispevika is valuable for them. If the theory supports the new strategy the procurement manager is adopting, it increases the credibility of the strategy and thereby the chances of AF Gruppen continuing using the procurement strategy in upcoming projects. Further, a theoretical anchoring of the procurement strategy, and a further elaboration on benefits and challenges of it, can increase the competitiveness of AF Gruppen in upcoming tendering processes.

Providing evidence for why the new procurement strategies are implemented, and the benefits and challenges of them, can contribute to lowering the suppliers' and subcontractors' scepticism of the new procurement strategies, as mentioned in section 1.2. Further, the findings regarding how AF Gruppen is adopting their new procurement strategy will be specifically directed towards contractors who want to adopt a similar strategy. The findings may therefore provide project managers and/or purchasers with a basis for deciding how to proceed to implement similar strategies.



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Lastly, most of the previous research has focused on the relationship between the client and main contractor (Bygballe et al., 2010). The procurement strategy of a main contractor forms the basis for the relationship between the main contractor and the subcontractor or supplier (Pesämaa, et al., 2009). By focusing on the procurement strategy of the main contractor, we therefore believe we can contribute with additional insights to the literature.

### ***1.5 Planned Thesis Structure***

The structure of the proposed master thesis will be logically ordered to present the essential parts of our research. Initially we will present the research methodology, where also an introduction to the Bispevika case will find place. Then we will present the theoretical framework, which will constitute a comprehensive literature review and support the upcoming analysis and discussion. Section four will be the case analysis, before section five will present the most significant findings. The findings will be combined with the theoretical framework to answer our research question. In the last section we will conclude the master thesis with the implication of the research, addressing its limitations and suggest topics for further research.

This preliminary thesis report does, on the other hand, only contain the proposed research methodology, a theoretical background for our upcoming research, and our project plan.

## **2. Research Methodology**

This section will provide a summary of the chosen research methodology, with a justification of the choices made. The section consists of six different parts; the research strategy, research design, data collection, data analysis, how we secure the quality of the research, and lastly some considerations and limitations with the proposed 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 the author(s) will implement their study (Bryman & Bell, 2015). Within the research strategy, there are two different directions, namely qualitative- and quantitative research.

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Qualitative research is defined as a research strategy that emphasizes words instead of quantification in both collection and analysis of data, whereas the quantitative research is in contrast defined as a direction emphasising the quantification in the process of collecting and analysing data (Bryman & Bell, 2015). It is also possible to combine the qualitative- and quantitative research, which is called a mixed research strategy (Bryman & Bell, 2015).

The objective of our research is to provide evidence for why a contractor is adopting new procurement strategies and a description of how the adaptation is done. To reach the objective and answer our research question, we are dependent on getting an in-depth understanding of the research area. To get the in-depth understanding we are going to conduct both interviews and observations (see section 2.3) where the focus will lay on why, what, and how questions; Why are the procurement practice changed? What are perceived benefits and challenges? How are the procurement strategy implemented? In the analysis of the collected data the measures, such as types of challenges and benefits and obstacles in the implementation, will therefore be qualitative in nature. Hence, a qualitative research strategy is chosen. We do, however, want to emphasise that the final thesis will also include numerical data, to illustrate the effect of the new purchasing strategy. This is, however, collected by AF Gruppen for their own purpose, and will thus not affect our research strategy (Bryman & Bell, 2015).

In the research we find it necessary to have a continuous movement back and forth between the theoretical and empirical domains. We are starting of by determining the theoretical scope of the research, but as the data collection proceeds we expect new and highly relevant information or issues to be discovered. If this occur, we will go back to the theory, read about the new information or issues, and expand our theoretical framework, before we move back to the empirical domain. This process is according to Dubois and Gadde (2002b) defined as a systematic combining, which is illustrated in figure 1. Here the evolving framework is the cornerstone, and Dubois and Gadde (2002b) emphasises that the approach allows for possibilities of capturing and taking advantage of both systematic characters of

in the empirical world and the theoretical models. It is also emphasised that the matching of theory can lead the research in new directions (Dubois & Gadde, 2002b), which we find important as we on beforehand do not know all the aspects of the

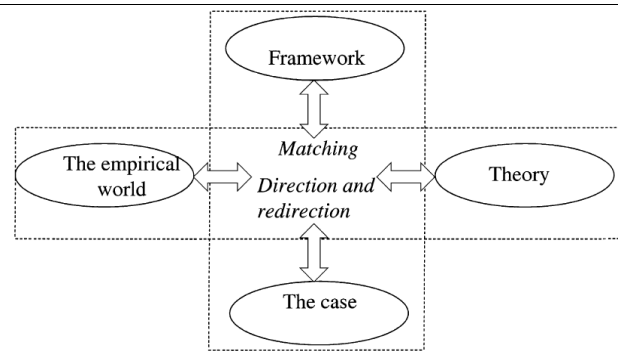


Figure 1: Illustration of the systematic combining, from Dubois & Gadde (2002)

procurement strategies in Bispevika, making the theoretical framework hard to predetermine.

## 2.2 Research design

The research design provides the researchers with a framework for both collecting and analysing the data, and the choice of design should reflect the different dimensions in the research process (Bryman & Bell, 2015). Five different research designs have been identified by Bryman and Bell (2015); cross-sectional-, experimental-, longitudinal-, case study-, and comparative design. Our research question concerns the words “why” and “how”, which, according to Yin (2009), favours the use of a single case study. Further, we find it necessary to conduct a detailed and intensive analysis of a real-life example of a construction company adopting new procurement strategies, which is consistent with the characteristics of a case study (Bryman & Bell, 2015). Also, the real-time case study can employ a longitudinal collection of data (Eisenhardt & Graebner, 2007), allowing us to conduct both observations and interviews with multiple participants in the case. We therefore find the single case study as an appropriate design for our research.

The selection of a case should be made on the basis of where the researchers expect to learn the most (Stake, 1995). We were therefore searching for a case adopting new procurement strategies, and where the participants in the case were willing to provide data. Hence, the case chosen for this research is a construction project in Bispevika, Oslo, where AF Gruppen is the main contractor. We find it particularly relevant for our research as OSU (the client) want to use new and untraditional measures to reach their project goals (AF Gruppen, 2018).

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### *2.2.1 Case Description*

Bispevika has over the last decade developed to be one of the most high-end building sites in the country, located close to the central station and the seaside in Oslo. OSUs vision is to make Bispevika the most attractive residential and business area in Oslo, through, amongst other, the use of digitalisation, collaboration, and industrialisation in the construction process (AF Gruppen, 2018). OSU chose to sign a design and build contract with the contractor AF Gruppen, with ambitions of large reductions in the construction cost as well as quality improvements (AF Gruppen, 2016, 2018).

AF Gruppen is known for their entrepreneurial spirit, curiosity and the ability to finish what they have started. The culture has formed AF Gruppen to be a company always looking for opportunities for further development, which their initials represent: “Addressing Future” (AF Gruppen, 2016). AF Gruppen looks at the Bispevika project as their chance to develop and accomplish new implementation models within the construction industry, where one of the focus areas is a new procurement strategy. They are confident that changing how the value chain cooperate, and by developing an environment that allows for both innovation and change, they will be able both reduce costs dramatically as well as significantly improve the quality of the products they deliver (AF Gruppen, 2016).

### *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 which has been collected by someone else for another purpose (Appannaiah et al., 2010), which in our research will be found through academic articles, books, information received from AF Gruppen, and literature reviews. The secondary data will, amongst other, be used to lay the foundation for the theoretical framework of our research.

To optimise the search for relevant literature, the search strategy in “attachment 1” have been developed (Bryman & Bell, 2015; Saunders et al., 2016). We are mainly

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reviewing literature present in the databases of Oria, Google Scholar, Web of Science and Business Source Complete. To cover the geographical area in the literature, the language the articles are written on is mainly UK- and US English. However, as our case is located in Norway, literature written on Norwegian will also be explored to determine conditions in the Norwegian construction industry.

*Primary data* is data collected by the researchers for the purpose of the research specifically (Appannaiah et al., 2010). As we want to conduct an intense and detailed examination of the case Bryman and Bell (2015) suggests that semi-structured interviews and observations are appropriate sources for data collection. Participant observation and semi-structured interviews will allow us to keep an open mind about the things we already know, and hence theories and concepts can emerge out of the data collected (Bryman & Bell, 2015). By using multiple reference points (observations and interviews) we get an increased understanding of the research area. At the same time, the use of more than one source of data to cross-check the findings is known as triangulation, which increases the validity and reliability of our findings (Bryman & Bell, 2015).

### 2.3.1 Interviews

Eisenhardt and Graebner (2007) state that interviews are “*a highly efficient way to gather rich, empirical data, especially when the phenomenon of interest is highly episodic and infrequent*” (p. 28). It is identified several forms of interviews, such as unstructured, structured, in-depth and semi-structured (Bryman & Bell, 2015). In our research will use the semi-structured interviews, as it allows us to make a list of questions based on information we have gathered. At the same time, we have the flexibility to change the order of the questions during the interviews, and to give follow-up questions to make the interviewee elaborate if found necessary (Bryman & Bell, 2015). We find this convenient as it ensures that we will receive the desired information from each of the interviewees.

An important criterion for successful interviews is careful preparation (Saunders et al., 2016) and we will therefore finalise an interview guide consisting of the questions that will be asked during the interview. Prior to the interviews, we will also develop and distribute a list of topics based on the interview guide to the

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interviewees. This will increase credibility and reliability of our research, as it allows the interviewees to prepare, and thus provide reflected answers (Saunders et al., 2016). Even though a list of topics is distributed, we will emphasize that we face risk that the interviewees do not have available time to read through the document before the interview. For the interviews, we will strive to use locations that is comfortable, and without disturbance, as such factors might influence the answers (Bryman & Bell, 2015). Eisenhardt and Graebner (2007) emphasize that the researcher should be aware of the chance that the answers of the interviewees might be subject to biases. To mitigate the chance of severe biases, we will interview a numerous and knowledgeable object that is involved in the project at different levels, which allows for different views and opinions on the phenomena.

To ensure that the answers of the interviewees' are captured authentically, we will, if accepted by the interviewee, record the interviews. After the interview, we will carefully listen to the recorded tapes and transcribe the most essential parts, that can be used further in our research. This is due to the time restriction for our thesis, and is also recommended by Bryman and Bell (2015) if the researcher has limited time, as transcribing the whole interview is a very time-consuming process.

To ensure informed consent, we will provide potential respondents in our interviews with an explanation of what kind of information they will be needed to provide during their interview. This will allow the participants to make an informed decision regarding their participation in the research. If they consent they acknowledge that their right to privacy is surrendered for the research (Bryman and Bell, 2015). Bryman and Bell (2015) emphasize that the lack of confidentiality can harm the respondents. However, we will in our research have a focus on gathering information that is not confidential as it is important for us that the research is available for others after completion. We will respect participants who wish to maintain anonymous and have a general policy throughout the whole research that sources will be kept anonymous, and ensure a safe storage for both transcripts and recordings.

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### *2.3.2 Observations*

Participant observation allows a researcher that is immersed in a social setting over time to, through observing and listening, gain insight into the culture of the social group (Bryman & Bell, 2015). Throughout the research, we are therefore going to perform two kinds of observations. In the first type, we will observe meetings held between AF Gruppen and their subcontractors and suppliers. This allows for a further insight to how enthusiastic the actors involved with the project is, and for discovery of potential relational obstacles and benefits related to the new procurement practices.

In the second type of observation we will spend time at the residence of AF Gruppen, blending in among the co-workers. This is done to get further insight into how the new initiatives are working, such like the co-location, beside what is said in the interviews.

### *2.4 Data analysis*

Data analysis is the process of cleaning, inspecting, modelling and transforming data with the goal of highlighting relevant and useful information. As well as suggesting conclusions and supporting the decision making (Bihani & Patil, 2014). Fundamentally it concerns reducing the amount of data and then use the information left for interpretation (Bryman & Bell, 2015).

A thematic analysis of the data obtained through the interviews will be conducted, meaning that the key themes of the data is extracted (Bryman & Bell, 2015). The initial themes will be based on our theoretical framework, but we recognise that new themes might emerge during the process. Looking for repetitions in the data is by Bryman and Bell (2015) identified as the most common way to establish new themes. It is important to remember that if a new theme is included one must go back to the already analysed interviews and look for the new theme, to make sure that the data is analysed based on the same themes. This is called for a constant comparison, and is done to ensure consistency in the way the data is analysed (Saunders et al., 2016).

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## **2.5 Quality of the research**

A primary criterion for assessing a qualitative study is trustworthiness, which concerns the four criteria; credibility, transferability, dependability, and confirmability (Bryman & Bell, 2015; Halldórsson & Aastrup, 2003).

*Credibility* revolves the degree of “match” between the respondents’ constructions and the researchers’ representation of these (Halldórsson & Aastrup, 2003). We are trying to improve the credibility by sending the list of topics (see section 2.3.1) to the respondents before the interview, so they have the chance to prepare, and by recording and transcribing the interviews (Saunders et al., 2016).

The *transferability* of the study, consider to which extent the research is generalisable into claims about the world (Halldórsson & Aastrup, 2003). We might face an obstacle concerning the generalisability of the research, as one should avoid generalisation of the findings in a single case study (Bryman & Bell, 2015). We are, however, going to compare our findings with existing literature, and if similar findings are found by other researchers it increases the chances of our findings to be transferable (Bryman & Bell, 2015).

The *dependability* of the research considers the stability of the data over time (Halldórsson & Aastrup, 2003). To ensure a dependable research, will throughout the research secure the data through thorough storage of relevant documentation of the whole process which is kept safe, but easily accessible.

*Confirmability* concerns how the findings represent the result of our research, and not the biases of the researchers (Halldórsson & Aastrup, 2003). As Bryman and Bell (2015) state; complete objectivity is impossible in business research, but by being two researchers at each interview and having a transparent data collection and analysis process we try to ensure a high confirmability.

## **2.6 Considerations and limitations**

A factor we have to consider in this research, is the risk of not getting access to the relevant people in the case, and the risk of not being included by AF Gruppen to the planned observations due to for instance limited time or changes in the project. This can result in a struggle to gather data, leaving it difficult to conduct the planned research and thus impose new limitations to the study.



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Time restriction is another important consideration in this research, as the deadline for the thesis is set. We have therefore tried to limit this research to a research doable within the timeframe of a master thesis.

Lastly, the project in Bispevika is a long-term project, and will be finalised many years after our research is completed, meaning that we will not see the initiatives concluded. This implies that our findings will be not based on the result of the project, and that for instance benefits and challenges might be subject to change after our research is finalised.

### **3. Theoretical Background**

In the following section we will present theory that can help answering our research question. We want to emphasise that in this preliminary thesis, we have focused on providing an understanding of what the construction industry is characterised by, and what procurement and the major steps in the procurement process includes as this will be the backbone of our theoretical framework. For the master thesis we are going review additional literature, amongst other, to present which strategies that are suggested for the construction industry within each of the subtitles, and combine the theoretical findings in to a theoretical framework which will serve as a basis for our data collection, analysis, and discussion.

#### ***3.1 Characteristics of the Construction Industry***

There are several characteristics of the construction industry we find important to enlighten, as they effect the procurement strategies (Bemelmans et al., 2012). The most 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 emphasising competitive bidding as the main tool in supplier evaluations (Dubois & Gadde, 2000).

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 project related tasks itself (Akintan & Morledge, 2013). The main contractor therefore purchase 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 (Arditi & Chotibhongs, 2005; Hartmann & Caerteling, 2010).

What makes the construction industry highly complex is that each of the suppliers the main contractor use, normally use their own network of subcontractors again (Geraint, 2014), as illustrated in figure 2. This results in a whole set of different supply chains serving the construction project, where each chain is also subject to other interdependencies outside the given

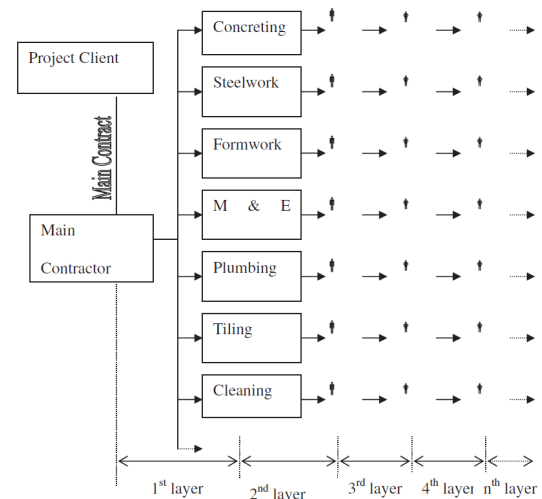


Figure 2: An illustration of a multilayer subcontracting system in the construction industry (Tam et al., 2011)

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). Tam et al. (2011) also found that the multiple layers of subcontractors often results in bottom-layer subcontractors being contracted for unreasonably low bids, which forces them to “cut the corners” and by that reduce the quality of the service or product they provide. This complexity, emanating from the uncertainties and interdependencies, sets the conditions for the behaviour of the firms in the construction industry (Dubois & Gadde, 2002; Lavikka et al., 2015).

Further, the construction industry is characterised by a high fragmentation, low productivity, cost and time overruns, and conflicts (Aloini et al., 2012). Naoum and Egbu (2015) found that the problems facing the industry can be considered in relation to seven different factors, namely; a separation of design from construction, lack of integration, lack of effective communication, uncertainty, a changing environment, changing clients’ priorities and expectations, and increasing project complexity. Different measures have been taken to overcome the challenges, and

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there is a consensus that changes are needed to improve the construction performance (Akintan & Morledge, 2013; Bygballe & Ingemansson, 2014; Naoum & Egbu, 2015). Hosseini et al. (2016) did, however, find that the construction industry in Norway still is characterised by the traditional adversarial mindset, hindering the development of for instance partnering.

### **3.2 Procurement**

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, p. 7) defines the procurement as *“a mechanism for linking and coordinating members of the building team throughout the building process in a unique systematic structure, both functionally and contractually. Functionally via roles, authority and power, contractually via responsibilities and risks. The main aim is to deliver a project that meets its objectives and fulfil the client criteria and expectations.”*

Over the past years, it has been a shift away from the transactional role of procurement, where the primary task were to make sure the company's operations did not run out of supplied components (van Weele, 2014), to a role gaining strategic importance for the company (Tassabehji & Moorhouse, 2008). Mature purchasing functions can significantly reduce costs, enhance quality and contribute to the innovativeness of the products and services of the buying company (Foerstl et al., 2013). The construction industry is, however, lagging behind (Bankvall et al., 2010).

According to van Weele (2014) the procurement process consists of a series of sequential steps, where the output of the of the preceding steps to a large extent determines the quality of the output of the subsequent step. The process consists of: a supplier selection, contracting, ordering, expediting, follow up and evaluation. In this research we are particularly focusing on the first two steps, namely the supplier selection and contracting. What is important to keep in mind is that the business needs and requirements are the input to the procurement process, and the specifications can be formed in a technical- or a more functional way (van Weele, 2014).

### 3.2.1 Supplier Selection

The supplier selection relates to all the activities required to select the best possible supplier, and it is one of the most important steps in procurement (van Weele, 2014). The supplier selection can be seen as a process consisting of different steps, but the phrasing of the steps differs somewhat between researchers (de Boer et al., 2001; van Weele, 2014). In this section we will present the steps suggested by van Weele (2014).

The first step is that the purchaser must *determine the method of subcontracting*. Here a core issue is whether to opt for a turnkey- or partial subcontracting, meaning whether the execution of the entire assignment is placed with the supplier, or divided into parts that are contracted out separately (van Weele, 2014). It should also be decided whether to use a single- or multiple source for the procured service or product (Faes & Matthyssens, 2009). To guide the decision of what kind of purchasing strategy the company should have for an item, Kraljic (1983) developed

a matrix matching the economic importance of the purchase with the complexity of the supply market. The output of the model is summarised in figure 3.

High Importance of purchasing	<b>Leverage items</b> 1. Materials management 2. Cost/price and materials flow management 3. Typically 12-24 months 4. Multiple suppliers, chiefly local 5. Mainly decentralized	<b>Strategic items</b> 1. Supply management 2. Long-term availability 3. Up to ten years 4. Established global suppliers 5. Centralized
	<b>Noncritical items</b> 1. Purchasing management 2. Functional efficiency 3. Normally 12 months or less 4. Established local suppliers 5. Decentralized	<b>Bottleneck items</b> 1. Sourcing management 2. Cost management and reliable short-term sourcing 3. Depending on availability vs. short-term flexibility 4. Global, predominantly new suppliers with new technology 5. Decentralized, but centrally coordinated
	Low	High

Figure 3: Characteristics of the strategy for the different items; (1) procurement focus, (2) key performance criteria, (3) time horizon, (4) typical sources and (5) decision authority, based on Kraljic (1983).

When the determination of the subcontracting is decided, a *preliminary qualification of suppliers and drawing the bidders list* must be done. This step involve the planning and preparation of documents that describe the needs and requirements of the buying company (Pesämaa et al., 2009). Then an initial bidders’ list, also called bidders long list, is created, representing those suppliers that will receive a request for information (RFI), about for instance references from prior projects (van Weele, 2014). Based on the RFI, the qualified suppliers are invited to submit a first proposal which meets the requirements of the buyer. From the documents received, it is common to identify three to five potential suppliers which encompasses the bidders’ short list.

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The third part of the supplier selection involves *a preparation of the request for quotation and an analysis of the bids received*. In the preparation of the request for quotation (RFQ), which is a detailed bid, it is important for the buyer to consider that the RFQ should make it possible to compare the submitted bids (van Weele, 2014). An important aspect of the bid is the price, but Tam et al. (2011) stress the fact that also the technical performance should be included. In the Hong Kong construction industry, measures such as experience, past performance, technical resources, and technical content of the proposal are increasingly evaluated (Tam et al., 2011). In addition to the technical performance, an evaluation of the collaborative abilities were found to be valuable in a Swedish construction project (Osipova & Eriksson, 2013). When the detailed bids, quotations, are received, it should therefore be the total cost of ownership that is analysed and compared (van Weele, 2014).

The last step of the supplier selection is *the selection of the supplier*. The selection is based on the previous steps, and usually ends with a supplier selection proposal consisting of; a decision to select a certain supplier, the underlying ranking schemes, and the underlying quotations which have been considered (van Weele, 2014). In addition, the suppliers who are not selected should be informed about the reasons for why their proposal is rejected (van Weele, 2014).

### 3.2.2 Contracting

After a supplier is selected a contract must be drawn up, and depending on the industry the contract might refer to specific terms and conditions (van Weele, 2014). Different standard contracts are for example developed for the Norwegian construction industry, where NS 8401 and NS 8402 are amongst the most central (Standard, 2017). There are, however, two things we want to emphasise with regard to contracting in this preliminary, which is the pricing mechanism differentiating contracts and the agency problem the contracts need to overcome.

There are different pricing arrangements used in purchasing agreements. In a *fixed price contract*, also known as a *lump-sum contract*, the buyer agrees with the supplier to carry out the work for a pre-agreed price, by a predetermined date (MacRoberts, 2015; van Weele, 2014). MacRoberts (2015) emphasises that the

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price it subject to adjustments only in certain limited circumstances specified in the contract. Van Weele (2014) explains that advantages with this pricing method is that it is in the best interest of the supplier to execute the work as efficiently as possible, and the buyer knows exactly where they stand financially. Further, he mentions disadvantages to be that the fixed price makes it difficult to gain insight into the suppliers cost breakdown if the buyer lacks experience, and that it requires a thorough preparation, and therefore also a lot of time, to prepare detailed enough specifications to settle the fixed price. In general, for smaller and less complex jobs, the buyer should insist on fixed price contracts as it is preferred from the perspective of cost control and budget management (van Weele, 2014).

There are different types of the *cost-reimbursable contracts*, but the common feature is that the sum the buyer pays the supplier is not a pre-agreed sum, but a sum calculated based on the actual cost of the work carried out (MacRoberts, 2015). The calculation is usually based at a predetermined hourly rate in combination with an agreed upon percentage to cover the overhead costs (van Weele, 2014). Van Weele (2014) points to the advantages that the activities to be performed do not exactly have to be known, the work can start immediately, and the buyer obtain an exact picture of the cost structure of the work. Disadvantages he mentions is that the buyer is not sure about the financial outcomes resulting in higher risk, the buyer needs to follow up on the quantity and quality reports of the supplier, and there is no incentives for the supplier to work efficient. Many contracts with this price arrangement therefore contain incentives for safe, accurate and speedy work (van Weele, 2014). All in all, the cost-reimbursable contract can be a good solution for complex jobs which allows for a lot of interaction between the buyer and supplier, if it is properly incentivized (van Weele, 2014).

In *target cost contracts*, it is specified a best estimate of the cost of the work to be carried out and any savings or overruns between the target cost and actual cost at completion will be shared between the buyer and supplier according to predetermined ratios (Chan et al., 2011). Chan et al. (2010) further explains that if there are any changes to the original specifications the initial target cost will be adjusted by agreement between the buyer and supplier. Perceived advantages with

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the target cost contracts are an enhanced cost- and time control, and improved working relationships (Chan et al., 2011).

Lastly, we want to mention that a major challenge, underlying the contract management, is how to transform a conflicting system to a cooperative one (Turner & Simister, 2001). Usually in commercial deals, the main interest of the buyer is to pay as little as possible for the job done, while the main interest of the supplier is to gain as much as possible (van Weele, 2014). This is often referred to as the agency problem (Boatright, 2011). The problem is that the buyer cannot verify that the supplier (agent) will behave, or has behaved, properly (van Weele, 2014). In this context, it is often differentiated between two types of contracts; the behaviour-oriented and the outcome-oriented. In the behaviour-oriented contracts it is specified how the supplier should act to deliver the work he is contracted for, while in the outcome-oriented tasks (or performance-based contracts) it is specified the desired outcome of the suppliers work (van Weele, 2014).

### ***3.3 Modes of Collaboration***

It is found that the relationship with the suppliers will be a main source of competitive advantage in the future (Sheth & Sharma, 1997), and managers now start acknowledging the importance of the suppliers to achieve the company's strategic goals (Bygballe & Persson, 2015). The literature emphasize different views of how dependent businesses should be on their suppliers (Persson & Håkansson, 2007). Classical economic theory implies that the market is an economical system that works for itself, with supply adjusted to demand, and production adjusted to the competition (Bygballe et al., 2013). In addition, a case study conducted in 1999 show that the suppliers did act in rather isolated manners, and they did only consider their relationship to their largest subcontractors (Håkansson et al., 1999). According to Persson and Håkansson (2007) is collaboration relevant for all types of product categories, and proposed a model, including three different modes of collaboration, which is based on utilizing interdependencies between the actors:

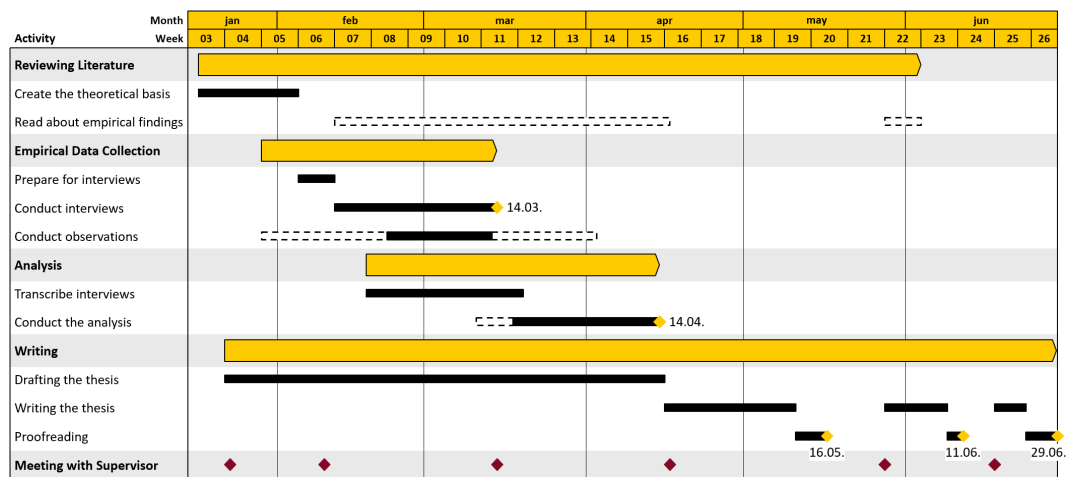
- i) Distributive collaboration* relates to shared utilizing to gain economies of scale and scope.

- ii) *Functional collaboration* which relates to utilizing serial interdependencies to increase economies by integration and coordination.
- iii) *Systematic collaboration* which consider utilizing reciprocal interdependencies, which allows opportunities agility and innovation.

Persson and Håkansson (2007) that the supply side has increasingly importance with regards to maintain or obtain their competitiveness, and that it is necessary to establish collaboration in business relationships to achieve long-term competitive advantage. This statement is supported by Bygballe and Persson (2015) who propose that collaboration with suppliers is “key means to achieve economies of scale, and product and process improvements“ (p. 67). However, Bygballe & Person (2015) also emphasize that many initiatives fail, and that there must be “an alignment between long-term strategic processes and short-term operational processes “ (p. 67) for the collaboration to be successful.

#### 4. Project Plan

Bryman and Bell (2015) emphasize the importance of using a timetable when scheduling the research to better plan, coordinate, and track the progression and specific tasks in a project. We plan to organise our research project according to the Gantt chart below, and we believe that by working hard toward each of the milestones our final thesis will be handed in the 29<sup>th</sup> of June 2018.



Throughout the research project, we are going to work from Bispevika at least one day a week. We find this useful, as it increases the chances of being included as observants to unexpected meetings occurring due to unforeseen events, at the same time as we easier can access relevant participants in the case.



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## 6. Attachments

### *Attachment 1 – Search Strategy*

<b>Parameters</b>	<b>Choices</b>	
<b><i>Language</i></b>	English (UK and USA), Norwegian	
<b><i>Subject/ Keywords</i></b>	Innovati* Innovati* procurement Construction industry* Acquir* Contract model Specificati*	Partnering collaborat* Procure* Measure* Suppler selection
<b><i>Business sector</i></b>	Construction industry, Logistics, Procurement	
<b><i>Geographical area</i></b>	Worldwide	
<b><i>Publication period*</i></b>	From 2010 - today	No specific time-period
<b><i>Literature type</i></b>	Academic articles Literature reviews	News articles Books

\* The publication period is divided due to the need of reviewing literature that has been published decades ago to find the best definitions of terms and concepts. In general, literature reviewed will mainly be from 2010 until today's date as the

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industry is in constantly change, and newer literature is assumed to provide more accurate information on how the industry and procurement is today.