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Collaboration in a Best Value Project

- A case study of Best Value Approach (BVA) in the Norwegian Construction Industry

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Abstract

The procurement of construction services is a large part of the investments in the public sector, and therefore affects both the society and project participants within the construction industry. Despite that, construction projects in Norway tend to be delayed and go over budget, especially in the public sector. The industry has been characterised with a traditional adversarial behaviour but has the last two decades headed towards a more collaborative and integrated path. However, achieving collaborative relationships in the construction industry are challenging, as the industry is characterised by one-off contracts and short-term gains. Therefore, there is a need for a project management and procurement method that enables collaboration in the construction industry.

A project management and procurement method that might enable collaboration, is Best Value Approach (BVA). The methodology aims to select contractors based on their capabilities, experiences, and qualifications, in addition to price. The objective of this research is therefore to examine if and how BVA enables collaboration, operationalised through its two facets, coordination and cooperation. Hence, our research question is "*How might BVA enable collaboration between the client and the main-contractor in a construction project?"*

We have chosen to conduct a case study with embedded subunits, as the selected case is within a single organization but includes several units. The single case is Omsorgsbygg, and the embedded subunits of analysis are the construction of Vollebekk and Munkerud kindergartens. The primary data were collected through semi-structured interviews.

We based our research on the work of Gulati et al., (2012), which indicates that by properly utilising coordination and cooperation in a project, it is possible to achieve collaboration. Our study shows that there needs to be a high level of coordination and cooperation in a BV project. Through the two projects we have seen the possibility of achieving both coordination and cooperation if the method is used correctly. The findings reveal that what the parties do in the early phases, in terms of coordination and cooperation, facilitated collaboration in the execution phase.

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List of Abbreviations

BVA – Best Value Approach

BVP – Best Value Procurement

Difi – Agency for Public Management and eGovernment

WWR – Weekly Risk Report

Chapter 1 - Introduction

This thesis aims to investigate if and how the Best Value Approach enables collaboration between the client and the main- contractor in two pilot projects in Norway. As for now, many researchers point out that in order to overcome challenges in the construction industry and contribute to more collaboration between the parties, there is a need to change the way the parties procure and implement the projects (Akintan & Morledge, 2013; Eriksson, Lingegård, Borg & Nyström, 2017; Naoum & Egbu, 2015, Pryke, Badi & Bygballe, 2017). BVA is such a new model and is based on many of the same principles and objectives as typical collaborative models (Kashiwagi, 2017), such as Lean construction and Partnering (Kashiwagi, Sullivan, Greenwood, Kovell & Egbu, 2005). However, as research to date has not found a connection between BVA and collaboration (Joudi, Breivik, Wondimu & Houck, 2018; Rivera & Kashiwagi, 2016), there is a need to look at collaboration from a different angle. Therefore, in this research we will use Gulati, Wohlgezogen & Zhelyazkov, (2012) perception of collaboration, which concerns collaboration operationalised through coordination and cooperation.

By conducting a case study, we will find if and how BVA enable collaboration. We have chosen to place emphasis on the earlier phases of the BVA, namely, pre-qualification phase, selection phase and clarification phase, and how these influence the collaborative relationship between the client and main-contractor in the last phase, execution phase. In this chapter, we will start by explaining the background of the thesis and the research area, followed by the problem statement and the empirical setting. This chapter will end with the outline of the thesis.

1.1 Background

Over time, the construction industry has been experiencing problems such as overruns, conflicts, delays, reworks, instance litigations, and not delivering expected quality on construction projects (Ball, 2014; Mosland, 2016; Singh & Tiong, 2005). These problems are among others due to poor planning, failure when approaching the market, lack of coordination and communication between the design and construction process as well as among the concerned parties, and

absence of customer-supplier focus (Cooper, Bruce, Wootton, Hands, & Daly, 2003; Love, Irani & Edwards, 2004; Naoum & Egbu, 2015; Sjøli & Aaby, 2015). These issues can in worst case stop the entire project process and therefore result in increased costs or delays for the builder (Sjøli & Aaby, 2015). According to Dubois & Gadde (2002a), the construction industry is characterised by competitive bidding, adversarial relationship and industry-specific uncertainty and interdependencies, which generate complexity in the industry and inefficient operations (Dubois and Gadde, 2002a). Naoum & Egbu (2015) states that these problems are highly associated with the procurement method for construction. To fulfill the criteria regarding delivery within time, budget and quality standards a procurement model that facilitates integration, effective communication, uncertainty and complexity is needed, as this will shape the success of the project (Naoum & Egbu, 2015).

In Norway, the public sector invests NOK 520 billion annually, and procurement of construction services is a large part of this (Regjeringen, 2018). As the public investment in the industry is a significant share of taxpayers` money, the government is expected to carry out projects of high quality and protect the interests of the public, by ensuring efficiency and high standards of coordination when carrying out the public procurement (Organisation for Economic Co-operation and Development, 2018). Hence, the involved parties, such as the government, client and contractor need to address the current issues and future demands in the Norwegians construction industry. The Public Procurement Act facilitate competitive bidding, which allows all interested contractors to submit bids, where the goal is to increase transparency and competition among contractors (Eriksson & Westerberg, 2011). However, one of the negative outcomes using competitive bidding is that the client often emphasise price due to many similar offers (Kadefors, 2005). When the client is selecting contractor based on price, it does not recognise the differences in quality, performance and value among the contractors. Instead, it gives the contractors incentives to be reactive, offer lower quality, or not utilizing their expertise (Kashiwagi, 2011). As a result, the contractors compete exclusively on price, which might encourage the contractors to decrease the quality of their services. When the quality and price decrease, the client has to increase the control and direction of the contractor (Mosland, 2016). Potential outcomes are

increased conflicts and transaction costs, risks, and damage to long-term value (Kadefors, 2005; Ahola, Laitinen, Kujala & Wikström, 2008).

There is a consensus that the construction industry will change a lot in the future in terms of an increased use of digital tools and a greater focus on reusing materials. Therefore, the industry has to meet new demands and current challenges (Asplan Viak, 2017). Furthermore, construction projects in Norway tend to be delayed and go over budget, especially in the public sector (Welde, Samset, Andersen, & Austeng, 2014). Naoum & Egbu (2015) argue that there is a need for new procurement models to decrease the issues in the industry. Haugseth, Lohne, Jensen & Lædre, (2014) states that by developing collaborative relationships, the parties in a project can experience less conflict, increased productivity, shorter execution time, more innovation, improved cost efficiency, increased flexibility, improved work environment and continuous improvement of quality in both results and services. Furthermore, researchers argue that placing emphasis on collaboration in a project rather than transactional agreements is necessary, as the transactional approach has not proved to be successful (Akintan & Morledge, 2013; Eriksson et al., 2017; Pryke et al., 2017). There is therefore a need for new procurement models that facilitates collaboration between the client and the contractor (Bygballe, Jahre, & Swärd, 2010; Eriksson et al., 2017)

1.2 Research area

As the construction industry is still primarily characterised by competitive bidding and the stated corresponding problems, there is a need for a change in the industry. To avoid competitive bidding, researchers argue that the client needs to select contractors not merely based on price, but also based on their capabilities, experiences, and qualifications, which are some of the main characteristics of Best Value Approach (BVA) (Kashiwagi, 2011; Palaneeswaran & Kumaraswamy, 2000). BVA is a concept introduced in the US by Dean Kashiwagi in 1991 and has had significant effects on quality and efficiency in terms of finalizing the project within time and budget, and meeting quality expectations, or even exceeding these (Kashiwagi & Byfield, 2002). BVA includes three different models, namely a project management model, a risk management model and a procurement model. The latter is specifically referred to as Best Value Procurement (BVP) (Verweij &

Kashiwagi, 2016). We will in this research place emphasis on BVA, as we will look at the entire project execution, including the three models. The BVA consists of four phases: pre-qualification, selection, clarification, and execution. Each phase narrows down the number of possible contractors until the most qualified one is selected (Palaneeswaran & Kumaraswamy, 2000; Corea, Kashiwagi, Gajjar & Romero, 2016). The significant effects on efficiency and quality are among others because the client consider the contractor to be the specialist. The client determines the desired result, but it is the contractor who decides on how to reach the requested result within the demanded terms (Kashiwagi, 2011; Kashiwagi & Byfield, 2002).

Previous literature identify collaboration to be an important driver in construction projects (Akintoye, McIntosh & Fitzgerald, 2000; Fulford & Standing, 2014; Haugseth et al., 2014). Collaboration allows the parties to share expertise, knowledge, ideas, innovation, best practicing, which leads to improved decision making, improved efficiency and increased profits (Hansen and Nohria 2004). In the traditional procurement approach, there is limited room for sustaining relationships, as the terms of the contract tend to be rigorous and contentious (Akintan & Morledge, 2013). Therefore, project participants lack the willingness to seek long-term benefits (Akintan & Morledge, 2013). The long-term benefits are fewer conflicts, increased cooperation, less issues in the procurement process, relationship based on trust, and the achievement of overall value for money (Eriksson, 2010).

Increased involvement and knowledge are needed to change the construction environment from a culture characterised of adversarial relationships to a more cooperative culture (Eriksson, 2010). However, it is difficult to achieve effective cooperation in construction projects, due to the barriers and challenges in the implementation of collaborative relationships. The cooperative environment requires great preparation and commitment from all the participants, which is not included in the traditional mindset (Eriksson, 2010). The benefits of a cooperative approach can be trust and commitment-induced efficiency and an improved allocation and utilization of resources, which again can result in enhanced performance in the industry (Lumineau & Malhotra, 2011).

Coordination is also considered as an important element in project management and is essential for the project to achieve improved efficiency, experience increased value and meet the objectives of the project (Alaloul, Liew & Zawawi, 2016). Additionally, coordination is crucial to achieve success in the implementation of all the phases in a project, as well as an overall success. Despite these benefits, there is a lack of proper coordination in the construction industry. Proper coordination is demanding to initiate, as the industry is known to be fragmented, complex, has inadequate coordination processes, and is experiencing interdependencies between project tasks and parties (Alaloul, Liew & Zawawi, 2016). Poor coordination between the owner and the contractor and vice versa can among other things, result in project delay (Assaf & Al-Hejji, 2006).

Gulati et al., (2012) point out that collaboration is dependent on cooperation and coordination, and how ignoring these will lead to poor collaboration. However, it lacks research regarding how BVA enable coordination and cooperation, and previous literature indicate that there is absence of collaboration in a BVA project (Joudi, Breivik, Wondimu & Houck, 2018; Rivera & Kashiwagi, 2016). Given that BVA enable coordination and cooperation in a project, the objective of this research is to examine if and how BVA enable collaboration. We will refer to coordination and cooperation as the two facets of collaboration in this research.

1.3 Problem statement

Considering the challenges in the construction industry, there is a need to change the mindset of the construction industry by implementing a new project and procurement method that enables collaboration (Bygballe et al., 2010; Eriksson et al., 2017). A project and procurement method newly introduced in Norway by Rådgivende Ingeniørers Forening (RIF), is Best Value Approach (RIF, 2018). Compared to other project management methodologies, which emphasises collaboration, like agile methods and lean management, the BVA instead place emphasis on utilising the expertise of the contractor (Rivera & Kashiwagi, 2016). As research to date has not found a connection between BVA and collaboration (Joudi, Breivik, Wondimu & Houck, 2018; Rivera & Kashiwagi, 2016), we aiming to further investigate the research area of BVA and examine how BVA might enable

collaboration operationalised through coordination and cooperation in two Norwegian construction projects. The following research question is chosen:

> ***How might BVA enable collaboration between the client and the main contractor in a construction project?***

As previous literature has shown a positive connection between collaboration and its two facets, coordination and cooperation (Gulati et al., 2012), we aiming to conduct a research on collaboration, where collaboration is achieved through its two facets in the project. The study will further examine how the stated connection can contribute to improve the production of the project by implementing BVA. Since the stated research question is quite broad, we sat a limit on the research scope, and will only look at the collaborative relationship between the client and the main contractor.

In order to address the problem statement, and receive an overview of the whole process, we have in the first sub-question focused on the three first phases, pre-qualification, selection and clarification phase, specifically, the education of BVA, the selection of contractor and the the planning, design and clarification of the project. While in the second sub-question placed emphasis on the production of the project.

Firstly, we need to examine if and how the BVA enable cooperation and coordination in the early phases of BVA, as these phases lay the foundation for the production of the project. Therefore, our first sub-question is:

- *How does BVA enable coordination and cooperation in the early phases?*

The second sub-question concerns the physical production of the project. We will therefore examine if the elements of coordination and cooperation identified in the first-sub question contributes to improved collaboration in the execution phase. Therefore, the second sub-question is:

- *How does BVA in the early phases enable collaboration in the production of the project?*

1.4 Empirical setting

We have in our master thesis collaborated with the Agency for Public Management and eGovernment (Difi) which has developed guidance on BVA with input from representatives from Norwegian clients and contractors, as well as Dutch advisors who have more than 10 years of experience using the BVA model (Difi, 2019a). Difi´s goal is to enlarge the government work in terms of renewing the Norwegian public sector and enhance the organization and efficiency of government administration (Difi, 2019b).

We have conducted a case study on Omsorgsbygg, which has recently implemented two BVA projects, Vollebekk and Munkerud kindergarten. Omsorgsbygg is a municipal enterprise, which operates under the Bureaucracy for Nutrition and Ownership. Their main goal is to be the leader in the development, construction and management of environmentally friendly and energy-efficient buildings. Their vision is "Better Building - Better Life". Omsorgsbygg oversees the development, construction and management of over 900,000 square meters of kindergartens, nursing homes, fire stations, dental care homes and other municipal properties (Difi, 2018). BVA has been used in the process of building Munkerud and Vollebekk Kindergarten, which will be the main units of analysis in this research.

1.5 Outline of the thesis

This study is divided into six chapters, where the first chapter is this introduction to the current challenges in the construction industry as well as our motivation to the chosen topic. The second chapter regards the methodology of the research and justifies our decisions regarding the selected case study. In chapter three, the theoretical background is represented, where previous literature is thoroughly reviewed. Chapter four consists of the empirical findings and analysis. The empirical findings and analysis are discussed and compared with the theoretical background in detail in chapter five. Lastly, in chapter six, we will conclude the study as well as suggest recommendations for future research.

Chapter 2 - Research Methodology

This chapter provides a detailed description of the research methodology we will use in order to answer our research question and sub-questions. Firstly, we will present the research strategy and research design, including a discussion of why the qualitative method was chosen, and the reasoning behind the selected case study. Secondly, we will present some of the available data collection methods, and a discussion on how our primary and secondary data was utilised. We will also present the analytical process of the research, including a review on the project scope, time restriction, and available resources. Lastly, we will end this chapter with a discussion on how we have secured the quality of our research.

2.1 Research strategy

A research strategy is defined as "a plan of how a researcher will go about answering his or her research question" (Saunders, Lewis & Thornhill, 2012, p. 173). Bryman & Bell (2015) separate between two types of research strategies, namely qualitative and quantitative. The selection between a qualitative or quantitative approach will influence the decisions regarding research design, data collection, and analysis (Håkansson, 2013). Quantitative research is "a research strategy that emphasizes quantification in the collection and analysis of data". While the qualitative research strategy is defined as "a research strategy that usually emphasizes words rather than quantification" (Bryman & Bell, 2015, p. 37-38). The quantitative research strategy is characterised by experiments and testing to measure variables to verify or falsify the hypothesis and theories (Håkansson, 2013). It requires an extensive data set and the use of statistics to test the hypothesis and ensure validity (Håkansson, 2013).

The qualitative research strategy is intended to provide in-depth knowledge of a context and generate rich, detailed, and valid data for the researchers (Bryman & Bell, 2015). According to Håkansson (2013), this strategy intends to reach tentative hypotheses and theories by understanding the meaning, opinions and behaviour of the data. Researchers applying a qualitative strategy, often use smaller datasets, which will be sufficient to achieve reliable findings (Håkansson, 2013). This

strategy is used to approach the reality, and the data are often characterised as describing people's statements or written words, or observations of those people's behaviour (Askheim & Grenness, 2008). A significant difference between the two research strategies is when using a quantitative strategy, the theory precedes the research, and the theory emerges out of it when applying qualitative strategy (Bryman & Bell, 2015). By using both qualitative and quantitative research strategies, also called triangulation, the researcher can provide an overview of the situation and research area. Furthermore, it might improve the validity and credibility of the results (Håkansson, 2013).

Another significant difference between quantitative and qualitative research strategies is that the latter is characterized as an inductive research approach, while the former has the characteristics of a deductive approach. A research approach is applied in order to draw conclusions and determine what is true or false (Håkansson, 2013). The inductive approach is defined as "an approach to the relationship between theory and research in which the former is generated out of the latter" (Bryman & Bell, 2015, p. 724). This approach emphasises the aspect of generating theory, which allows the researcher to derive and develop acknowledgments, opinions, and understanding from patterns in the collected data material (Askheim & Grenness, 2008). The deductive approach is defined as "an approach to the relationship between theory and research in which the latter is conducted with references to hypothesis and ideas inferred from the former" and is applied when the researchers are testing the theory (Bryman & Bell, 2015, p. 723).

The combination of the inductive and deductive approach is referred to as an abductive approach. Dubois and Gadde (2002b) explain that the abductive approach, which they also refer to as systematic combining, is to a greater extent related to the inductive approach than the deductive approach. The systematic combined approach is concerning the simultaneous evolvement of the theoretical framework, empirical fieldwork and case analysis. It is specifically appropriate for the development of new theories. An essential feature of systematic combining is that the researcher can match theory and reality, which allows them to go back and forth between framework, data sources, and analysis (Dubois & Gadde, 2002b). These categories should preferably be developed from the data. Similarly, Strauss

and Corbin (1990) state that literature can be helpful when identifying previous research in a particular area, as well as uncover missing areas in the literature. The authors also assert that the already conducted research can help researchers to define important variables, identify relationships among them, and lead the interpretation of findings.

The literature states that the BVA methodology does not place emphasis on collaboration (Joudi et al., 2018; Rivera & Kashiwagi, 2016). Despite this, based on the research conducted by Gulati et al., (2012), which reveals that collaboration is obtained by coordination and cooperation, allowed us to identify a potential relationship between the two facets of collaboration and BVA. In other words, by using an abductive approach, we have examined if there is a relationship between BVA and collaboration operationalised through the two facets, cooperation and coordination. Our research includes an examination of Omsorgsbygg's implementation of two BVA projects, namely Munkerud and Vollebekk kindergartens. Therefore, the study has matched the experienced obtained in the two projects with already conducted literature. In other words, the abductive approach has led to the interpretation of our findings.

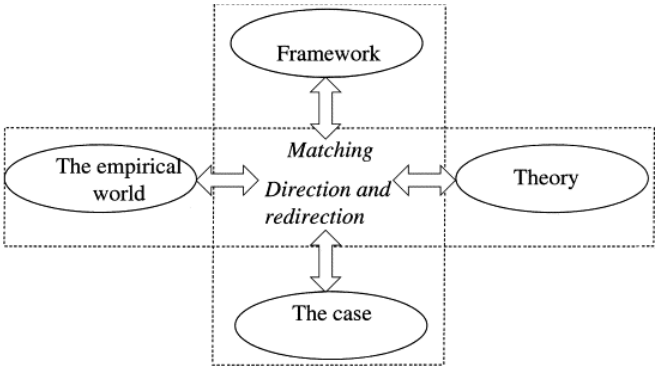

Figure1: Systematic combining (Dubois & Gadde, 2002b, p. 555)

To answer our research question, a qualitative research strategy was considered to be most suitable, as quantitative research will not provide us with the appropriate information to draw a valid conclusion. A quantitative strategy requires a large sample size, the project must be completed before collecting the data, and the strategy emphasises quantification in the collection and analysis of the data (Bryman & Bell, 2015).

Firstly, our primary data was collected from "Omsorgsbygg," specifically from the construction process of Munkerud and Vollebekk kindergarten. We also received information regarding BVA from two external BVA experts to get an outside perspective. Considering the number of available BVA projects within Omsorgsbygg, the sample will be quite small. They have so far only applied BVA in the two stated projects. Furthermore, Munkerud and Vollebekk kindergartens were completed in May 2019, and the data from both Vollebekk and Munkerud was collected before the finalisation of the kindergartens. Therefore, the information we received regarding these kindergartens was mostly relevant for the three first phases and almost the entire execution phase. The last reason for not using a quantitative research strategy is because coordination and cooperation cannot be measured to the same extent using numbers, as with words.

As the theory emerged out of the research, it seemed more appropriate to apply a qualitative strategy, which allowed us as researchers to derive and develop acknowledgments, opinions and understandings from patterns in the collected data. Furthermore, a qualitative research strategy gave us a broader and more in-depth understanding of the topic considering the facets coordination and cooperation and how these influences collaboration. Hence, we believed that examine how BVA might enable collaboration can be explained better through words than quantification.

We used a systematic combined approach (see figure 1), which increased our understanding of the researched phenomena within both the empirical world and theory, as it allowed us to "constantly going 'back and forth' from one type of research activity to another and between empirical observations and theory" (Dubois and Gadde, 2002b, p. 555). We have combined theory with empirical observations, as the empirical observations cannot be understood without the theory, and conversely (Dubois and Gadde, 2002b). Our research started with a literature review before we collected the data to the analysis. After the analysis, we integrated the theory with the analysis, which resulted in the discussion of the paper. During this process, we saw the necessity to look at the theory continuously as we proceed with the research. By this, we got more information from the analysis and a deeper understanding of the industry, the facets, and the BV methodology. This

will be described in more detail in the section of the analytical process of the research methodology.

2.2 Research Design

A research design is defined by Bryman and Bell to be a "framework or structure within which the collection and analysis of data take place" (Bryman & Bell, 2015 p. 727). Strictly speaking, the research design contributes to a plan or a framework for data collection and analysis (Ghauri &Grønhaug, 2010). The decision of a research design is affected by the research question, and it explains the researcher's priorities and the research process (Bryman & Bell, 2015; Ghauri & Grønhaug, 2010). The research design should, according to Ghauri & Grønhaug (2010), provide the desired information effectively and within a constraint set by the researcher, such as time, budget and skills. The choice of research design can be understood as the overall strategy for obtaining the information required, and how it affects the following research activities, such as what kind of data and how the data should be collected (Ghauri &Grønhaug, 2010). In this research, we have chosen to use a case study as the research design. A case study is, according to Ellram (1996), used when the researcher inquires how a single context of a phenomenon of interest influences the outcomes, which is in line with our research question.

Similarly, Abercrombie, Hill & Turner (1994, p. 46), define a case study to be a "detailed examination of a single example of a class of phenomena." Hence, when applying a case study, we as researchers aim to receive an in-depth explanation of the chosen case. Our research is aligned with the definitions of a case study, as we have chosen to receive an in-depth explanation of the two facets of collaboration, coordination and cooperation, by investigating if and how BVA enable these. We believed that this research could be better analysed using a case study, as we had the opportunity to further examine the experiences gained by Omsorgsbygg during the two projects. We chose these two projects as the construction of the projects had started when we conducted our research. This allowed us to gain information from all four phases. In addition, the interviewees had the experiences and knowledge fresh in their mind. In this research, we have limited the research scope

by only examine the relationship between the client and the main contractor in the BVA projects. We also looked at the benefits and challenges of cooperation and coordination. To receive an in-depth explanation, we chose to use in-depth interviews for the data collection as well as a thorough search on the available and relevant secondary data. The data collection will be further explained later in this chapter.

Furthermore, a case should be chosen if there is a possibility for a learning opportunity (Stakes, 1995). As Omsorgsbygg recently implemented BVA in their construction of two kindergartens, there are plenty of learning outcomes for Omsorgsbygg, which can be transferred to other firms in the industry.

We have chosen to conduct a case study with embedded subunits, as the selected case is within a single organization but includes several units. The embedded subunits of analysis are the construction of Vollebekk and Munkerud kindergarten. The use of this design allows researchers to increase the opportunities to provide an extensive analysis enhancing the insights into the single case (Yin, 2009). The entity that forms the basis of the sample is referred to as the unit of analysis (Easterby-Smith, Thorpe & Jackson, 2015).

The objective of the research is to conduct a thorough analysis of how BVA in the four phases might enable collaboration between the client and the main contractor in a construction project. This will be done by collecting data from the two subunits of Omsorgsbygg. We therefore saw the necessity to get an overview of the whole project process. The two kindergartens gave us the basis of comparison and were essential to identify elements of coordination and cooperation in the BV process. We have chosen not to compare the two projects. Instead, we have used both projects to receive as much information possible, on the execution of the BVA projects.

2.3 Data collection

Data collection is perceived as an essential aspect in any research project (Bryman & Bell). There are several approaches in terms of collecting data which both can vary and be combined, depending on the research question (Askheim & Grenness, 2008). According to Johnson & Turner (2003, p. 298), data collection is "a technique that is used to collect empirical research data" and is concerning how researcher receives their information. The six main data collection approaches are questionnaires, interviews, focus groups, tests, observations, and secondary data (Johnson & Turner, 2003). The data collection can be divided into primary data and secondary data, whereas primary data is defined as original data assembled for a specific research purpose (Hox & Boeije, 2005). While, secondary data concerns data that has been collected at an earlier time, by a different researcher to a different research purpose (Johnson & Turner, 2003).

Throughout the research process, the systematic combined approach allowed us to get an overview of the research field and the use of BVA in reality. These are the steps we followed:

Steps	Process
1: Reviewed the existing literature on the construction industry and BVA	We started the research process by doing thorough research on the construction industry. This gave us awareness on the current issues in the industry, an overview of what is considered as success factor in the industry, as well as the need for new procurement and project delivery models. By carefully reviewing the Best Value Approach, we have got a clear picture of the process described by the theory.
2: Reviewed and defined collaboration	In the process of obtaining an overview of the relevant literature, we found the article "The two facets of collaboration: Cooperation and coordination in strategic alliances" written by Gulati, Wohlgezogen, Zhelyazkov in 2012, to be beneficial and gave us the direction of our research. After thorough research on the issues in the construction industry, we found that collaboration often was discussed in the literature. The discussion concerned how collaboration is helpful to decrease the industry-specific issues and is described as an essential driver in construction projects.
3: Collection of data.	We collected secondary data on the topic of BVA, the construction industry, collaboration and its two facets, coordination and cooperation, and early involvement of suppliers. The theory regarding BVA is first and foremost obtained from the US and the Netherlands. Our primary data was collected through interviews with the client and the main contractors of the two projects, "Anskaffelseskonferansen 2018" arranged by Difi and two BVA experts.
4: Analysis of the data	We chose to audiotape the interviews to more easily transcribe them later. After the analysis, we found it necessary to look at the theory again, which contributed to more insights on the topics and resulted in our theoretical framework. We found it helpful to code the data using a thematic analysis. We were able to identify themes and sub-themes when analysing the data by thoroughly reading and rereading the primary data. The main themes we categorised the empirical data in was: coordination and cooperation and the BVA phases. Based on these, we developed sub-themes, namely information-sharing, defining roles and responsibilities, risk identification, understanding goals, roles and responsibilities, and trust.
5: Conclusion and further recommendations	We identified the major findings from the discussion, as well as the findings that was inconsistent with the theory. It was necessary to pinpoint the limitation of the research to provide the recommendations of future research.

Table 1: Research steps

2.3.1 Primary Data

Interviews are one of the most common data collection approaches and is used in both qualitative and quantitative research. There are different ways to conduct interviews, and for this research there are two, which are especially relevant, namely structured interviews and semi-structured interviews.

Applying *structured interviews*, the researcher aims to achieve standardized answers, to reduce the differences between the interviews in the research project. Standardization is preferred, as the variation in people's responses will be because it is "true" or "real," and not due to the interview context. Structured interviews are mostly applied in qualitative research (Bryman & Bell, 2015) and the researcher is required to provide the same context of questioning to all the interviewees. In other words, all the respondents are given the same interview stimuli. The structured interviews aim to aggregate the answers, which is possible if the answers are in response to identical cues. The questions given to the interviewees need to be in the exact order and are usually in a fixed rage. Therefore, it is easier to compare the answers and draw conclusions (Bryman & Bell, 2015).

Semi-structured interviews are applied in contexts where the interviews have a series of questions, which are conducted in a general form of an interview schedule. However, the sequences of questions can vary, and the questions tend to be more general, which allows the researcher to ask further questions if she or he sees the need for it. In semi-structured interviews, the researcher can be more open concerning what she or he needs to know regarding the topic. In other words, concepts and theories might emerge from the data. Using this type of interview, researchers can adjust the questions, and therefore ensure to get the information and depth required. However, it is harder to compare the answers and draw conclusions as the questions lack standardization in terms of a set interview guide (Bryman & Bell, 2015).

In our research, we believed that the depth comparison of the interview is more important than the strict comparison. Therefore, we chose to use semi-structured interviews in this research. We primarily interviewed people who were involved in the construction project of Munkerud and Vollebekk kindergarten. The interviewees were from the client and the main-contractors firm, as well as two BVA experts to gain an outside perspective. The prepared interview guide was based on the theoretical background and research questions. As the theory regarding BVA did not cover all areas regarding the facets of collaboration, we tried to get as much input regarding these as possible to cover the missing area in the literature.

The questions in the interview guide had a focus on coordination and cooperation and how the utilisation of these affected the different phases (Appendix 1 & 2). By using semi-structured interviews, we were able to rearrange the order of the questions, ask follow-up questions in case something was unclear or if we wanted the interviewees to elaborate even further.

During the interview with the client, the project manager and a hired consultant with the same responsibilities as the project manager were present. This gave us the possibility to discuss the topics even further in detail as they were triggering each other to elaborate even more. Hence, if one talked about an issue, the other one could elaborate and add additional input to that particular question. This information could have lacked if only one person were present. Besides, we interviewed the project manager from main-contractor 1and the manager from main-contractor 2 as well as, two BVA experts. The BVA experts were necessary, to gain more information regarding coordination and cooperation from an outside perspective. BVA expert 1 has an overview of all BVA projects conducted in Norway, while expert 2 is a key person in a firm who has implemented several BVA projects, as a client.

Client	Project Manager, Consultant
Main contractor 1	Project Manager
Main contractor 2	Manager
BVA expert 1	BVA Senior Advisor
BVA expert 2	External Expert

Table 1: Presentation of interviewees

The research also included information received from "Anskaffelseskonferansen 2018" arranged by Difi, where we obtained information from already executed projects in different industries. The information obtained from the conference will not provide us with information concerning the facets but will give us a direction on the effects by using BVA. We have also found relevant information in the "Konkurransegrunnlaget" for the different kindergartens, including the information the contractors had before the pre-qualification phase.

2.3.2 Secondary Data

Our research process started by reviewing the available literature on the topic to get an overview of the industry and relevant theories that could help us address the problem statement. We have used a search matrix to narrow down the relevant literature as can be found in appendix 3. The secondary data concerning established topics were collected from journals such as The Journal of Construction Engineering, International Journal of Project Management, Journal of Construction Engineering Management, and Journal of Business Resource. The secondary data regarding BVA was obtained from a different range of sources. Our primary source is Dean Kashiwagi, but we have also used other researchers to increase the scope of an already limited research area. The theory regarding BVA is first and foremost obtained from the US and the Netherlands, as the concept of BVA was first implemented in the US, and later adapted in the Netherlands.

We have chosen to use pure secondary data to find the benefits and challenges of using the two facets of collaboration, coordination and cooperation, since there are already a lot of available data on the topic. However, it lacks information concerning how the BVA enables these, which will be addressed in the analysis.

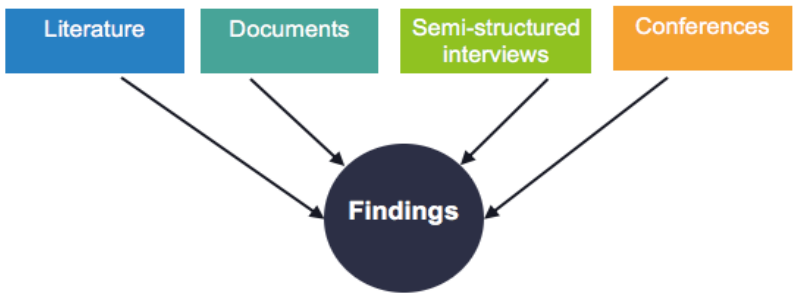

Figure 1: Data collection

2.4 Analytical Process

The analytical process is a fundamental part of qualitative research and shapes the research outcome (Flick, 2013). Ellram (1996) states that breaking down the data by applying open coding allows us as researchers to examine, compare, and categorise the data. However, it is not straightforward to analysis qualitative data, as it generates a large amount of data (Bryman & Bell, 2015). According to Flick (2013, p. 5), qualitative data analysis concerns "the classification and interpretation of linguistic (or visual) material to make statements about implicit and explicit dimensions and structures of meaning-making in the material and what is presented in it." By comparing the different material or texts, or multiple cases, the qualitative analysis aims to reach a generalisable statement (Flick, 2013). The analysis has several objectives, whereas the first can be to describe a phenomenon in detail. The description can be made by focusing on one case and its distinctive features, and the links between them, or by comparing multiple cases, looking at the similarities or differences between the cases (Flick, 2013). In our research, we have chosen to look at BVA as a phenomenon, and how the distinctive features of this method might enable the collaborative relationship between Omsorgsbygg and the main contractors.

As stated earlier in the paper, we have chosen to apply a systematic combining approach. When we first started the research process, we did a review of the literature on the topics we found relevant at that time. These were topics such as the characteristics and challenges in the construction industry, the BVA and the benefits and challenges of coordination and cooperation. Furthermore, we also reviewed literature on how coordination and cooperation influence collaboration, as well as new procurement approaches and delivery models are called to achieve collaboration. Secondary data is a vital source to identify other research areas, uncover missing areas in the literature, and define essential variables, as well as to identify the relationship among them (Strauss & Corbin, 1990). Finding literature on the construction-specific issues and success factors, made us realise that collaboration was a critical driver in many construction projects. To receive collaboration, cooperation and coordination were identified to be necessary. As the process evolved, we found additional elements that were necessary to include, such as early involvement of contractors. At the beginning of the research process, we got new insights from our supervisor and a BVA expert. After conversations with both, we made some changes to the research question and our sub-questions, which made us investigate the theory again. By diving even further into the topics of coordination and cooperation, and BVA, we found that there are indications that the BVA enables them.

The semi-structured interviews gave us even more input on how BVA enable coordination and cooperation and more in-depth insight and understanding of the area we wanted to explore. Before the interviews we chose to define coordination and cooperation, as well as collaboration to give the interviewees a better understanding of what these entail and how to distinguish them. We intentionally choose to audiotape the interviews, which allowed us to better transcribe the interviews afterwards, which was highly beneficial due to the very large amount of data. We found it helpful to both look at the theory and the analysis in order to develop the theoretical framework, which can be found in chapter 3. After we had looked at the theory and the analysis, we found the need to interview BVA expert 1, as expert 1 have an overview of all the current and implemented BVA projects in Norway. Therefore, could give us even more input concerning how BVA enables the facets. We also found it necessary to interview expert 2, as we knew he had

been responsible for implementing several BVA projects. Thus, expert 2 could give us even more information and a deeper understanding of the relationship between coordination and cooperation, and BVA.

An essential part of analysing qualitative data is coding the obtained information. We found it helpful to use Excel to perform this. The interviews were coded separately to gain a more precise overview of the data. To code the data, we used a so-called thematic analysis, which is one of the most common ways of approaching qualitative data (Bryman & Bell, 2015). The thematic analysis is a method which organises the data into topics and themes, which allows the researcher to comprehend the research and see connections. By placing the data into cells, we extracted it from the primary data collection and thereby made sure we got all the relevant data into the analysis. The thematic analysis is necessary as qualitative data collection tends to gather vast amount of data and the difficulty is how to interpret it afterwards (Bryman & Bell, 2015). When conducting the analysis, we were able to identify themes and subthemes by thoroughly reading and rereading the primary data (Bryman & Bell, 2015). The empirical data were categorised by placing the main themes, the four BVA phases along the y-axis and coordination and cooperation along the x-axis. This was done after each of the interviews and provided us with a clear overview of the findings. Also, we made a matrix for all the interviewees, including other relevant themes, such as risk, weekly risk report, early involvement of suppliers, challenges and benefits of BVA. By categorising the analysis into themes, we could more easily identify the sub-themes, namely information-sharing, defining roles and responsibilities, risk identification, trust, and the understanding of the goals, roles and responsibilities. In the analysis of the data, we divided the themes into repetitions, similarities and differences, which are useful elements from a list of proposed ideas obtained from Ryan and Bernard (2003).

As BVA is a new procurement and project model in Norway, we saw the necessity to fully understand the motivation as to why the parties chose to implement the Best Value Approach. A lack of motivation can make them unable to answer the questions regarding the facets to the same extent, as well as influence the engagement of the parties. From the theory, we identified information sharing, risk identification, and defining roles and responsibility to be essential elements to achieve coordination. While understanding the goals, roles, and responsibility and trust to be important elements to achieve cooperation. We therefore in the analysis examined how BVA influences these elements, as the present and proper utilisation of these contribute to cooperation and coordination. As a last note, we want to point out that the interviews were held in Norwegian, and we have placed emphasis on the translation from Norwegian to English, to not lose on any valuable points from the themes. The following table illustrates the key themes from the interviews.

	Quotation
Coordination	**Information sharing** *"Difi encourages the pilots to invite the market into a dialogue meeting in advance before announcing the competition, preferable a month before, so the market and the contractors can come up with feedback on elements such as max price, progress schedule and location. Some elements of the project are already determined, but the contractors can at this time give valuable input"* - Expert 1 *"We perceived the client to be helpful in the pre-qualification phase in terms of providing us with relevant information"* - Manager, Contractor 2 **Defining roles and responsibilities** *"By defining the roles and responsibility of the participants, what both expect, see the situation and the need of the other, makes it easier to understand each other"* - Manager, Contractor 2 **Risk identification** "*The contractor has the responsibility to map the risk in advance and handle it if and when it occurs, which is one of the main challenges in all construction projects. When the risk is identified in advance, it will be easier to mitigate and handle"* - Expert 1 *"Already in the offer the contractor engage in coordination as there is a need to set up a progress plan, and an overview of the risks and the measures on how to handle the various risks"* - Expert 1 *"The tools made in the clarification phase are used to increase the coordination in the execution phase"* - Expert 1

Cooperation	**Understanding of the goals, roles, and responsibilities** **"***By defining the roles of the participants, what both expect, see the situation and the need of the other, makes it easier to understand each other, which requires and invites for cooperation"* - Manager, Contractor 2 *"The big effort was in the beginning, as there were several meetings and good clarifications"* - Manager, Contractor 2 *"The client in some cases should be able to strike through with an opinion in order to reach the goal more efficiently, as the client in some cases has more experience"* - Manager, Contractor 2 **Trust** *"The interviews with key persons provide them with confidence as these key persons can manage the project, this creates trust"* - BV expert 2 *"We received trust from the client as we were entitled with the 'solution', which allowed for a high degree of cooperation in the preparation of the pre-project, in the actual pre-project, and in the development of the project scope and other important management documents, which is necessary to prepare early on in the process. If a proper job is done early, there should not be any ambiguities later on in the project"* - Project Manager, Contractor 1

Table 2: Quotations from the analysis

We have chosen in this table to present some of the quotes used in the analysis. The following table illustrate the connection between collaboration and its two facets, coordination and cooperation.

Collaboration	**Coordination**	The deliberate and orderly alignment or adjustment of partners' actions to achieve jointly determined goals" - Gulati et al., (2012, p. 12). Three important elements to achieve coordination: - Information sharing - Defining roles and responsibilities - Risk identification
	Cooperation	"Joint pursuit of agreed-on goal(s) in a manner corresponding to a shared understanding about contributions and payoffs" - Gulati et al., (2012, p. 6). Two important elements to achieve cooperation: - Understanding roles, goals, and responsibilities - Trust

Table 3: The connection between collaboration and its two facets

From the analysis and theory, we were able to identify elements that contributes to cooperation and coordination. The discussion was structured slightly different from the analysis, as we chose to highlight the two sub-questions, which will result in an overall answer on the problem statement. Therefore, the research will look at how the Best Value Approach enable collaboration operationalised through cooperation and coordination, illustrated in the figure below, figure 3.

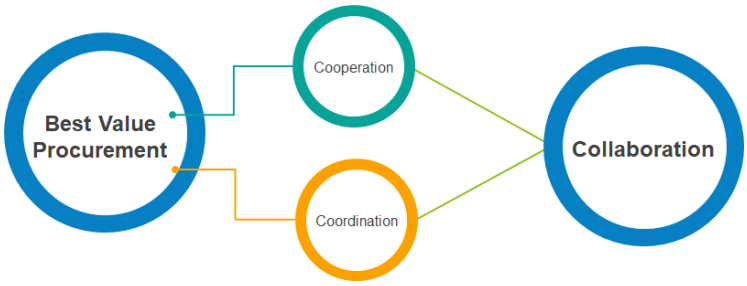

Figure 2: An illustration of the research

The conclusion was set up differently from the analysis and discussion. Therefore, we will in the conclusion place even more emphasis on the identified elements, and will through these be able to answer how Best Value Approach enable collaboration. Furthermore, we also focused on the findings that was inconsistent with the theory. The recommendation was chosen due to the research scope limitations, as well as the limitations on the research.

2.5 Quality of the research

There are various criteria when establishing and assessing the quality of a qualitative research. Bryman and Bell (2015), distinguish between authenticity and trustworthiness, where the latter has four criteria, which are credibility, transferability, dependability and confirmability. Authenticity, on the other hand, is concerning the political impact on the research. We will in this paper focus on the four criteria of trustworthiness.

Credibility concerns how true and accurate the findings are. The credibility of the research increases by using several sources of data (Bryman & Bell, 2015). We will obtain data both from interviews, as well as one conference, where BVA was one

of the discussed topics. In addition, we will use relevant theories to confirm our findings. As we audio-taped the interviews we could be sure that we included everything, as well as the interviews will be transcribed more accurately.

Furthermore, as we were two interviewers present it decreased both the interview and response bias, since both of us were able to ask questions. The interview conducted with the client was one of the primary data sources. At this particular interview, there were two project managers present, which we believe is beneficial, as one project manager can confirm or disagree with the other part during the interview and vice versa. Furthermore, the two contractors, can either disagree or confirm what was said by the client, which is also perceived as a benefit. We have also chosen to interview two BV experts, whereas one has implemented BVA in several projects and the other has an overview of all projects implemented in Norway. We believe this will increase the credibility, as trends that are external to the project can affect the potential outcome.

Transferability involves the possibility to adopt the findings to other contexts (Bryman & Bell, 2015). Our research concerns the two facets of collaboration and how BVA facilitates these, which we believe can be adapted into other industries, other entities in the public sector, as well as in the private sector. The construction issues we are addressing in the research are relevant for several actors, including both firms acting as clients, main-contractor or sub-suppliers. We further believe that even if they are not implementing the BVA methodology completely, it can be beneficial to take several elements from the BVA to experience a successful project outcome. However, we encourage the readers of this study to fully implement the BVA to be able fully utilise the perceived benefits.

In terms of ***dependability,*** Lincoln and Guba (1985) argue that to obtain merit when it comes to trustworthiness, researchers should implement an audio-tape strategy. We chose to audio-tape all of our conducted interviews before we transcribed them and inserted them into tables, to make sure what we included in the analysis and discussion was precisely what was said by the interviewees. Furthermore, we made an agreement with the interviewees that they could confirm or elaborate on our

choices regarding the information they provided the research with. Afterwards, we adjusted the analysis and discussion based on their feedback.

Confirmability concerns the objectivity of the findings. In other words, we have to assure that both we as researchers and our informants are not biased in terms of our and their values (Bryman & Bell, 2015). According to Bryman & Bell (2015), it is easy to ask questions influenced by personal opinions in the collection of qualitative data. Therefore, during all of the interviews both researchers were present, this facilitated good discussions and clarifications internally between the researchers as well as with the interviewees. This limits the possibility of the researcher`s beliefs and values influencing the data collection. All of our interviews were transcribed before we started with the analysis, which increases the confirmability, as we can assure that the information obtained is accurate in terms of what was answered in the interviews.

Furthermore, since BVA is newly introduced in Norway, the answers received from the project manager might be mostly positive as the project manager is eager to complete the project successfully. In addition, most of the information available concerning BVA is sources from the Netherland and the US and is only stating the benefits of using it. We have therefore in our research placed emphasis on being critical in the analysis of the secondary data regarding the topic, as well as both researchers tried to be as objective during the data collection process as possible.

Chapter 3 - Theoretical Background

This chapter will present the relevant theory to underpin our research question. The first part of the chapter will consist of the current situation in the construction industry as well as industry typified characteristics. As the industry today is facing several challenges, there is a need for more collaboration in the construction industry and new, improved procurement and project delivery models which enable collaboration (Bygballe et al., 2010; Eriksson et al., 2017). To achieve improved collaboration there is a need for both coordination and cooperation (Gulati et al., 2012), therefore, the second part will consist of theory concerning cooperation, coordination, as well as collaboration. However, the research will place an emphasis on cooperation and coordination. This will be followed by an introduction on early involvement of suppliers.

There are several models for how to promote collaboration in a construction project, and we will examine if BVA is one of them. BVA is primarily a project and risk management model that emphasises the contractor's expertise instead of price in the competition (Kashiwagi, 2017). The last section is divided into two paragraphs. The first paragraph will be a thorough description of the Best Value Approach. In the second paragraph, there will be an explanation of how the Best Value method enables coordination and cooperation.

3.1 Construction Industry

The construction industry is project-based, and the primary responsibility for the parties involved is the planning and construction of a specific building or infrastructure (Wasilkiewicz, Kilskar, Øren, Tinmannsvik, & Kilanowska, 2018). The industry is seen as traditional, operating in an environment that is greatly fragmented, complex and uncertain (Fearne & Fowler, 2006). In addition, the industry is known to be the most dynamic and challenging industry, which is highly affected by uncertainty and associated risk (Singh & Tiong, 2005). From a production perspective, Bertelsen & Koskela (2004, p. 5) define the nature of construction to be "a complex production of a one-of-a-kind product undertaken mainly at the delivery point by cooperation within a multi-skilled ad-hoc team."

This definition highlights at least three typical components for construction; namely, the production is a one-of-a-kind product; it is complex and set in motion through cooperation (Bertelsen & Koskela, 2004).

According to Gidado (1996), the complexity in the construction industry emerges from several sources such as, the project location, the knowledge required for the specific project, the required resources, and the amount of different interacting parties. The author states that there are two types of complexities, namely uncertainties, and interdependencies. Interdependencies concern "those that orgonite from bringing different parts together to form a work flow", while uncertainties concerns the "components that are inherent in the operation of individual tasks and originate from the resources employed or the environment" (Gidado, 1996, p. 215). There are also several industry typified issues, such as the fragmentation of the supply chain due to the split of design and construction, the lack of coordination among the relevant parties, low productivity, cost and time overruns, problems concerning quality standards and safety measures, and poor communication among the relevant parties (Briscoe, Dainty Millett & Neale, 2004; Dawood, Akinsola & Hobbs 2002; Singh & Tiong, 2005). All these issues can result in claims and time-consuming litigations (Dawood et al., 2002).

According to Eriksson (2008), traditional procurement facilitates standardised projects, with low uncertainty. Thus, many if not most, significant construction projects today are typically more complex, more uncertain, and have a specific time limit. These construction projects should be carried out by emphasising cooperation rather than competition, between the relevant parties (Eriksson, 2008). Fearne and Fowler (2006), states that the construction supply chain tends to be highly fragmented as the environment of the supply chain is often characterized as uncertain and complex. This results in the lack of the project participants willingness to seek long terms benefits when practicing the traditional approach in construction projects (Akintan & Morledge, 2013). Thus, there is limited room for sustaining relationships in the contract, because the terms often are rigorous and contentious (Akintan & Morledge, 2013). Despite that, Bygballe & Swärd (2019) state that the construction industry has been characterised by a traditional

adversarial behaviour but has the last two decades headed towards a more collaborative and integrated path. In addition, as the public procurement act aims to increase transparency and competition among the contractors, competitive bidding is a reasonable choice when selecting contractors (Eriksson & Westerberg, 2011). Competitive bidding often emphasises price due to many similar offers (Kaderfors, 2005). When the client selects a contractor mainly based on price, they do not recognise the differences in quality, performance, and value among the competing contractors. Instead, the client drives the contractor to be reactive, offer lower quality, or not utilising their expertise (Kashiwagi, 2011), which results in increased conflicts, risks, transaction costs and long-term damage value (Kadefors, 2005; Ahola et al., 2008).

Research shows that placing emphasis on collaboration in construction projects brings several benefits such as fewer conflicts, increased productivity, shorter lead times and increased innovation (Haugseth et al., 2014: Shelbourn, Bouchlaghem, Anumba & Carrillo, 2007). However, Beach et al., (2005, p. 612), is questioning "whether an environment which is frequently characterised by one-off contracts and short-term gains is capable of supporting a concept which is based on mutual trust and long-term collaboration." Despite that, the benefits of collaboration can influence the construction industry positively, solving many of the industry-specific challenges (Akintoye et al., 2000; Fulford & Standing, 2014; Haugseth et al., 2014). To achieve the benefits of collaboration, there is a need for coordination and cooperation (Gulati et al., 2012; Heath and Staudenmayer, 2000). Therefore, there is a need to implement models that facilitate collaboration and creates an environment that facilitates a collaborative relationship.

3.2 Collaboration and its two facets: coordination and cooperation

This section of the paper places emphasis on the two facets of collaboration, cooperation, and coordination and how the present and proper utilisation of these can improve the collaborative relationship. We will use related theories to gain a deeper understanding of how the facets influence the industry in terms of challenges and benefits, as well as how BVA enables these.

To achieve effective collaboration between the parties, it requires both coordination and cooperation (Gulati et al., 2012; Heath and Staudenmayer, 2000). This is in line with Gulati et al., (2012) perception of collaboration. In order to gain the full effect of the collaborative relationship, Gulati et al., (2012) illustrate the importance of emphasising the two perspectives of collaboration. The first perspective regards the coordination between the participants and is considered as an integrated part of the collaborative relationship, and the second perspective regards cooperation in terms of the partners understanding of the provision and allocation regarding resources in the collaborative effort (Gulati et al., 2012). Hence, coordination is referred to as the ability to collaborate, while cooperation is considered as the willingness to collaborate (Gulati et al., 2012). Additionally, Dewulf and Kadefors (2012, p. 248) discuss two elements needed to foster a collaborative inter-organizational relationship, namely "possibilities to signal trustworthiness and processes for developing joint understandings." These elements can be achieved by applying coordination and cooperation, whereas cooperation is needed to achieve a higher degree of trustworthiness (Whitener, Brodt, Korsgaard and Werner, 1998). The second element is achieved by both cooperation and coordination, as cooperation is necessary to achieve a jointly understanding, while coordination is the alignment and adjustment needed to achieve this understanding (Gulati et al., 2012).

We have taken a similar approach as Gulati et al., (2012) and looked into how cooperation and coordination in light of collaboration affect the different phases in a BVA project. We have among others chosen to place emphasis on the challenges with coordination and cooperation, as if the parties fail to take advantage of the effects, they will fail to utilize the synergies from the collaborative relationship. The next paragraph will include an explanation of the two perspectives of collaboration, Followed by an explanation of the topic of early involvement of suppliers.

3.3 How cooperation and coordination influence collaboration

In a large-scale project, the actors involved are typically facing a high degree of complexity, which affects the collaborative working environment. Beach et al., (2005) state that it is hard to obtain long-term collaboration in an environment characterised with one-off contracts and short-term gains. Additionally, the traditional competitive procurement method causes several challenges in today's demanding project context (Eriksson and Laan, 2007). According to Shelbourn et al., (2007), collaboration facilitates the client and contractor to achieve a set of tasks that one organisation is not able to solve alone. Collaboration removes distrust, duplication, and fragmentation, which is obtained by utilising the available resources, sharing the multiple project risk elements, and increasing motivation among staff and organisations. By creating a good relationship and a "pain and gain sharing" mentality the outcome can result in less conflict, increased productivity, shorter execution time, more innovation, improved cost efficiency, increased flexibility, improved work environment and continuous improvement of quality in both results and services (Haugseth et al., 2014).

3.3.1 The first perspective: Coordination

"The first perspective regards the coordination between the participants considered as an integrated part of the collaborative relationship" - Gulati et al., (2012)

Coordination is defined by Gulati et al., (2012, p. 12) as "the deliberate and orderly alignment or adjustment of partners' actions to achieve jointly determined goals." The authors (Gulati et al., 2012) view coordination to be the result of efficiency in terms of the relative cost of designing and operating coordination mechanism, and by effectiveness in terms of the level of which the coordination efforts have resulted in the requested alignment of action. Pfeffer & Salancik (1978) referred to in Frazier, Spekman & O'neal (1988, p. 57) state that by improving coordination in a project, one is anticipating obtaining stability in an uncertain environment, and

reach common expectations (Frazier, Spekman & O'neal, 1988). Hence, achieving improved coordination, sharing information concerning the parties expectations is crucial (Cheng, Li & Love, 2000).

The construction industry is highly dependent on information due to several interacting parties. As the industry is known to be uncertain and complex (Eriksson, 2008; Gidado, 1996; Xue, Wang, Shen & Yu, 2007) the information sharing is crucial, as it boosts the visibility and creates a solid base for collaboration (Olorunniwo & Li, 2010). The types of information sources vary greatly and include everything from "detailed drawings and photos, cost analysis sheets, budget reports, risk analysis charts, contract documents, and planning schedules" (Xue et al., 2007, p. 152). By placing emphasis on coordination, the participants will obtain improved efficiency, experience increased value, and meet the objectives of the project. The lack of coordination due to incomplete, inefficient, imprecise, inconsistent, delayed information, or a mixture of them, can cause waste in terms of both time and cost (Xue et al., 2007). An essential factor for all parties involved is to provide precise information on time, as it shapes the basis of the decision and allows the project to progress (Xue et al., 2007). Therefore, coordination concerns the requirement and operation of information sharing, decision-making, and feedback in the relationship, and is also considered as an important efficiency driver (Gulati et al., 2012). Sebastian (2011, p. 177) states that problems such as "budget overrun, delays, and suboptimal quality in terms of flexibility, end-user's dissatisfaction, and energy efficiency" is due to the absence of communication and coordination among the members involved in the different phases of a construction project. Therefore, coordination, as well as communication is a key factor in all phases in order to execute a successful project (Alaloul et al., 2016; Xue et al., 2007).

Thus, the first perspective according to Gulati et al., (2012), places more emphasis on the operations of combining the party's contribution, and less emphasis on preventing opportunistic behaviour among them. Even with collaboration where the party's interests are aligned perfectly, the parties have to allocate labour and obtain effective coordination in order to finish both collective and individual tasks. Therefore, it is vital to develop structures, institutions, and relationships, facilitating the parties to work across the boundaries jointly (Gulati et al., 2012). In the supplier

selection, it is important that the client consider levels of trust and alignment of incentives in their decision, as well as compatibility and complementarity of the (collaborative) relationship between the parties. This element will reduce coordination losses and increase coordination benefits (Parkhe, 1993). Mohr and Spekman (1994, p. 138) define coordination to be "related to boundary definition and reflects the set of tasks each party expects the other to perform." Hence, the partnership should not only consider the guarantee of enough contractual protection (Parkhe, 1993), but also include a significant understanding of the project requirements, the distribution of responsibilities, common response to contingencies and interaction protocols which are urgently crucial for early coordination (Doz, 1996; Mayer & Argyres, 2004; Mellewigt, Madhok, & Weibel, 2007).

By including financial incentives in the contract, the contractor becomes motivated to be aligned with the owner's objectives and minimize the project risk (Turner, 2004). However, when each party places too much emphasis on securing their profits, they can experience lack of trust among them (Barlow, 2000). Sobrero and Schrader (1998) distinguish coordination between contractual coordination and procedural coordination, whereas contractual coordination defines each party's financial, rights, accountabilities, and commitment. Procedural coordination is essential during project execution and aims to ensure that the agreed contractual terms are used in the communication between the involved employees. As construction projects often are unique, the industry has tended to emphasise financial transactions rather than collaborative work among the parties (Dubois & Gadde, 2000). As a result, the involved parties have confidence in contractual coordination (Bresnen and Marshall, 2000). However, Sobrero and Roberts (2002) state that contractual coordination by itself will not contribute to improving the project delivery but combining contractual and procedural coordination in the construction project can result in a better outcome. Thus, due to high uncertainty, the complex nature of construction projects and the risk transfer to the contractor, the client can perceive it as harder to experience coordination of collaborative work within the construction industry (Sobrero and Roberts, 2002). Even a partnership with the best intentions and well-aligned incentives can result in an incapable administrator of inter-organisational relationships. These relationships can fail to

address workable questions regarding task allocation. Hence, coordination is a particular process of preparing the implementation and operation of the relationship between two partners (Gulati et al., 2012). The parties can ruin the realisation of alliance goals, through among other things, failure to plan or failing to adjust to each other's practices and structures (Gulati et al., 2012). One of the main reasons for low performance in the construction industry is the absence of coordination between the relevant parties (Sebastian, 2011).

Varshney & Oppenheim (2011) referred to in Gulati et al., (2012, p. 15) states that coordination failures can occur when there is a limitation in the design and in the implementation of the coordination mechanism, and due to culture differences, inflexibilities and immobility of the current structure, process, and resources. Causes of coordination failures can arise because of oversights of crucial activities, temporal misallocation of resources, and planned complementary activities that ended up being incompatible. Further Varshney & Oppenheim (2011) referred to in Gulati et al., (2012, p. 15) states that causes can be because of task uncertainties, which limits the ability of the partners to predict the work process outcome, increases the likelihood of incompatibilities and make accurate synchronization of activities more challenging (Gulati et al, 2012). Coordination failures result in delays and inefficiencies, as well as it can prevent the partnering firms from achieving specific alliance goals (Mohr & Spekman, 1994)**.** Considering task and environment interdependencies and uncertainties, the partner's major coordination-related issues are, first and foremost to address if they can commonly identify and manage the issues, and secondly, if they can address them efficiently. The higher the interdependencies and uncertainties are, the likelihood of coordination failure will increase (Gulati et al., 2012).

One potential benefit when placing emphasis on collaboration is that services become more accessible and effective. In order to fix complex problems and provide the firm with the most effective and efficient help, there is a need for coordination (Mattessich & Monsey, 1992). Bunderson & Sutcliffe (2002), states that with a lack of coordination, the expert is not able to utilise their expertise. It is, however, essential to have a common understanding of how a problem should be solved, as, without this understanding, the collaborators may experience

inappropriate actions (Cronin & Weingart, 2007). Furthermore, previous research suggests that decreasing the coordination cost and the probability of coordination failures, organisations need to seek partners, not only based on their competences but also on their ability to show compatibility regarding their resources, organisational processes, language, and culture (Mitsuhashi & Greve, 2009; Stuart, 1998).

3.3.2 The second perspective: Cooperation

"The second perspective concerns cooperation in terms of the partners understanding on the provision and allocation regarding resources in the collaborative effort" - Gulati et al., 2012

The second perspective regards cooperation, and Gulati et al., (2012, p. 6), define inter-organisational cooperation as "joint pursuit of agreed-on goal(s) in a manner corresponding to a shared understanding about contributions and payoffs." In the last decade, there has been a raised interest in the cooperative concept in the construction industry, as cooperation can lead to trust, commitment-induced efficiency and improved allocation and utilization of resources, which again can result in enhanced performance in the industry (Lumineau & Malhotra, 2011). Cooperation will influence the project outcome as the benefits obtained from the interaction can lead to time and cost reduction, higher innovation, and increased quality (Barlow, Cohen & Jashapara, 1997). Therefore, cooperation is necessary to achieve project success and value creation (Lumineau & Malhotra, 2011; Wang, Chen, Fu & Zhang, 2017). However, cooperation is not effortlessly fostered nor certain (Lumineau & Malhotra, 2011). It is therefore crucial that the implementation is done correctly and for the proper reason in a suitable project (Bresnen and Marshall 2000). In order to achieve cooperation, there is a need to determine mutual project objectives, and transparent and effective routines to overcome conflicts (Eriksson, 2007).

The lack of cooperation in the construction industry has, for a long time been criticized, as the absence of cooperation, generates issues concerning both quality

and cost (Larson 1995). Particularly in the public sector, the relationships are adversarial and competitive rather than cooperative, as the contractor selection is mainly based on price (Naoum 2003). When the client is selecting contractors based on price, it does not recognise the differences in quality, performance, and value among the contractors. Instead, it gives the contractors incentives to be reactive, offers lower quality, or not utilizing their expertise (Kashiwagi, 2011). Therefore, the client often uses past performance information to avoid future cooperation failures (Gulati et al., 2012), as well as, consider the perspective of partners resource endowment (Eisenhardt & Schoonhoven, 1996). Evaluating the integrity, reputation, and expected commitment when selecting a contractor, decrease the risk of opportunistic behaviour (Gulati et al., 2012). This evaluation regards information concerning the contractor's record of performance and behaviour, and assessment of efforts for cooperation that these partners can become subject to (Gulati, Khanna, & Nohria, 1994).

The relevant parties must negotiate their contribution to the project, such as time, resources, and market access, in order to obtain what they want, such as more efficiency or enhanced legitimacy (Gulati et al., 2012). The agreement they form on these inputs and outputs express the engaged "extent of cooperation," or the engaged scope of the relationship. The stated scope involves everything from short-term initiatives, which are budgeted and defined, to long-term commitment, which is broad and open-ended (Gulati et al., 2012). Independently of engaging in a narrow or broad scope, firms typically implement cooperation to share investment risk or to seek different types of operations, commercial, technological or reputational benefits that are hard or impossible to achieve without the cooperation (Oliver, 1990). These agreements develop a specific arrangement of resource interdependencies (Pfeffer & Nowak, 1976) among the participants, as the individual participant expected benefits from the relationship is dependent on the other participants' contributions. The more inputs that are "provided or outputs expected," the greater the interdependencies between the participants, and the need for a higher level of cooperation between them will increase (Gulati & Sytch, 2007).

If cooperation failures occur, the partners can receive a negative judgement of the cooperativeness of the particular party, as they examine the sincerity of the assurance regarding the contribution and engagement, in addition to the loyalty of the understanding concerning the allocation and payoffs (Gulati et al., 1994). These failures can lead to a reduction of the partnership investment, which then can result in deterioration and worst-case scenario a dissolution of the partnership (Gulati et al., 2012). Often these cooperation failures are due to partners misaligned interests in the project (Gulati et al., 2012). Increased involvement and knowledge are needed to change the construction environment from a culture characterised of adversarial relationships to a more cooperative culture (Eriksson, 2010).

As stated earlier in this paragraph, trust is achieved by placing emphasis on cooperation. Mayer, Davis & Schoorman (1995, p. 712) defines trust to be the "willingness of a party to be vulnerable to the actions of another party based on the expectation that the other party will perform a particular action important to the trustor, irrespective of the ability to completely monitor and control that other party". There are several perceptions of trust, and Bennett, Ingram and Jays (1996) discusses two of them, referred to in Bresnen and Marshall (1999, p. 2). The first perception is where the development of trust between organisations is understood as a function of the length of the relationship. The other perception understands trust to be feasible over a shorter time duration, where the use of formal tools and techniques is used to establish project-specific partnering (Bennett et al., 1996; Loraine, 1993), which refers to a particular project focusing on short-term benefits (Cheng & Li, 2001). In other words, it is possible to develop trust in a construction project. Trust is also an essential factor in order to achieve success in an alliance between companies. Trust can contribute to reduce cultural differences and manage challenges that appear in collaborative relationships. Therefore, trust can be beneficial in order to encourage the parties to manage unforeseen circumstances, which a formal agreement cannot anticipate. Trust is also an alternative for close control and encourages collaborating organisations to share ideas and information, which are crucial actions for innovation and other types of knowledge creation (Child, 2001).

Gulati et al., (2012) conclude in their research that coordination and cooperation are seen as a challenge for alliance managers. They further state that managers should make sure that they can separate the problems regarding the coordination and cooperation, and the causes of the problems in order to more effectively identify problems concerning these. The authors also warn managers to keep cooperation and coordination issues in mind in all stages of an alliance, and that these issues have to be addressed to obtain a successful alliance. Furthermore, Mollaoglu, Sparkling & Thomas (2015) found in their research regarding barriers to partnering that cultural barrier were the most common obstructions identified by the respondents. The cultural barriers involve absence of trust, confusion regarding partnering among the partnering members, and issues related to communication. The second biggest obstruction among the research participants where project team barriers, which relates to opposition from team members, absence of training and workshop early in the process and an absence of transferring the decision-making power to the project team.

Efforts in enhancing cooperation and coordination are, to some degree, equal in their contribution to obtain accomplishments in the relationship (Gulati et al., 2012). Hence, both can aid to decrease overall relational and operational risk in the specific relationship, as well as decreasing the overall cost of coordination and cooperation. Therefore, coordination and cooperation contribute to improving partner's satisfaction and the faith in the practicability of the collaborative efforts. Hence, both influences the outcome of the alliance (Gulati et al., 2012). Furthermore, the facets are to some degree dependent on each other, as coordination requires some contribution from both parts, and in addition there is a prerequisite for an alignment of action, which requires some sustained and predictable commitment to collective exertion (Gulati et al., 2012). Further, the level of coordination required to serve the realisation of the alliance goals is positively assessed with references to those goals. Simultaneously, lack of cooperation in coordination exertion seems to be beyond the bounds of possibilities, as cooperation is goal-directed joint action, and therefore dependent on some level of coordination. Hence, both variables are a necessity and complement element in all types of alliances (Gulati et al., 2012).

3.4 Early involvement of suppliers

Through frequent collaborative communication with key suppliers, the partnership can establish a working environment of mutual support, which can result in a more efficient way of solving problems when they occur (Beach et al., 2005). The development of partnership and long-term relationships with suppliers are, therefore, closely linked to information-sharing (Beach et al., 2005). The information-sharing between the parties can also decrease the conflict level, and at the same time foster greater confidence (Beach et al., 2005), and the parties can then better predict the actual cost of the project (Ragatz, Handfield & Petersen, 2002). By involving the supplier earlier, the expectations will be more precise for both parties (Beach et al., 2005). Song, Mohamed & AbouRizk (2009, p. 2), define early contractor involvement as "a relationship between a contractor and an owner or a designer that engages the contractor from the early design stage and allows the contractor to contribute its construction knowledge and experience to design." To achieve the best value to a project, the authors stress the importance of early involvement of contractors and therefore allow them to directly influence the design process, which improves cooperation among the parties throughout the process (Song et al., 2009). Furthermore, early involvement allows the supplier to meet the needs of the client by creating value and be more effective. The gained values can be; increased quality of the project, higher level of innovation, and reduced product and development costs (Van Valkenburg, Lenferink, Nijsten & Arts, 2008; Wagner & Hoegl, 2006).

The traditional contracting approach involves a separation of the design and construction process. However, the split prevents a potential integration of design and construction knowledge and decreases the possibility for the contractor to influence the design decision (Song et al., 2009). Jergeas & Put (2001) found that benefits such as cost savings, improvement in terms of scheduling and safer worksites are lacking due to overwhelming barriers between the planners, designers, and constructors. The barriers can occur as planners and designers do not understand how their decisions at the beginning of the project will influence the field operations. Even if the client hires a third-party construction management consultant early on, the benefits of involving expertise early are limited as these

consultants are typically not the people who are accountable for the construction of the project (Jergeas & Put, 2001).

According to Briscoe et al., (2004), procurement models that involve suppliers early in the process, allows the supplier to become more integrated with the supply chain. Design and build contracts where the responsibility of information generation and control is given to the contractor rather than the client, enables faster construction, improved understanding of the need of the clients and the project goals, as well as better communication and enough involvement of value engineering exercises. These procurement models also facilitate an increased potential for innovation (Briscoe et al., (2004).

A procurement and project delivery method that shares the objectives and ideas of early involvement of supplier are among other models, the Best Value Approach.

3.5 Best Value Approach

Best Value Approach (BVA), was presented by Dean Kashiwagi in 1991 and is a method in project management and procurement that selects a contractor based on their capabilities, experiences, and qualifications, in addition to price (Kashiwagi, 2011; Palaneeswaran & Kumaraswamy, 2000). The Best Value Approach (BVA) has been developed based on the Information Measurement Theory (IMT), which concerns how risk can be minimized or even eliminated by using information effectively. By using performance measurements, the IMT aims to go from a "low bid environment" to an "information environment," which is done by using the information available to predict unforeseen events (Kashiwagi, 2002). Hence, the more information available and the better utilization of the information, the more precise is the prediction of risk for the future (Bruno, Gelderman, Lambrechts & Semeijn, 2018; Kashiwagi & Kashiwagi, 2012). In BVA, the client and the contractor identify risks in advance, to minimize unexpected situations. The Best Value Approach allows the client to transfer the identification of the risks to the contractor, as contractor has the proper expertise regarding the potential risks (Bruno et al., 2018). As the contractor is seen as the specialist by the client, the role of the client is to determine the desired project goals, while the contractor decides

how to reach the requested goals (Kashiwagi, 2011; Kashiwagi & Byfield, 2002). A research conducted by Joudi, Breivik, Wondimu & Houck (2018), found that the parties should not collaborate to find solutions. The researcher further explains that the client must create an environment where the client avoids exert to much control and management and allow the contractor to exploit their expertise.

BVA includes three models; a procurement model, which is also referred to as Best Value Procurement or Performance Information Procurement Systems, a risk management model and a project management model (Verweij & Kashiwagi, 2016). The goal when Kashiwagi developed the method was to improve the procurement and management of construction projects by selecting the most suitable contractor for the specific project, inspire the contractor to provide the highest possible performance, and to reduce the client's control and management functions (Kashiwagi, 2009). The philosophy places emphasis on making the contractor accountable for the project by minimizing the owner's direction and decision-making in the project (Snippert, Witteveen, Boes & Voordijk, 2015).

In the next paragraphs, we have gathered information from available literature on the topic BVA and will discuss the phases in more detail. The BVA process consists of four phases: pre-qualification (optional), selection, clarification, and execution. Each phase narrows down the number of possible contractors until the most qualified is selected (Corea et al., 2016; Palaneeswaran & Kumaraswamy, 2000).

	Name	Description
Phase 1	**Pre-Qualification Phase**	Optional, and is used when there is a need for education and training for the client and contractor. The involved parties are educated in the philosophy of BVA.
Phase 2	**Selection Phase**	The procurement organization identifies the most qualified contractor for the contract. The same five following criteria evaluate the contractors: - Level of Expertise document [LE] - Risk Assessment document [RA] - Value Added document [VA] - Price - Interview
Phase 3	**Clarification Phase**	Here the technical specifications are written by the contractor and then agreed upon by the client before the most qualified contractor is assigned to the contract. The clarification phase includes three stages: Kick-off, Refinement and Finalization.
Phase 4	**Execution Phase**	The client expects the expert contractor to execute a final project scope of work.

Table 4: The BVA phases

The pre-qualification phase is optional and concerns how to choose and educate the key personnel and prepare both the client and the contractor on how to accomplish the project (van de Rijt, Witteveen, Vis & Santema, 2011: Kashiwagi, 2011). The involved parties are educated in the philosophy of BVA, with BVA- typified elements such as the transfer of control and risk to the contractor, the shift from quality control to quality assurance, and the client's desire to minimize its decision-making. The education is organised by the client in BVA, and all interest parties are invited to participate (van de Rijt et al., 2011). During the training, the contractor asks questions and can receive important information regarding the project in an individual setting. This gives the contractor the possibility to discover some of the risks in advance, as well as minimize the need for communication, directions, questions and answers in terms of technical requirements of the project later on (van de Rijt et al., 2011)

The next step in the process is the *selection phase,* where the procurement organization identifies the most qualified contractor for the contract (van de Rijt et al., 2011). The decision-making when selecting the most suitable contractor becomes more efficient and unbiased using the BV approach (Sullivan, 2010), because the process becomes automated and unbiased as all the contractors are evaluated by the same five following criteria (Kashiwagi, 2017):

1. Level of Expertise document [LE]
2. Risk Assessment document [RA]
3. Value Added document [VA]
4. Price
5. Interview

The information from the five selection criteria are accumulated and evaluated all through the three stages of selection phase;

1. Project capability
2. Interview of key personnel
3. Prioritization, verification and dominance check

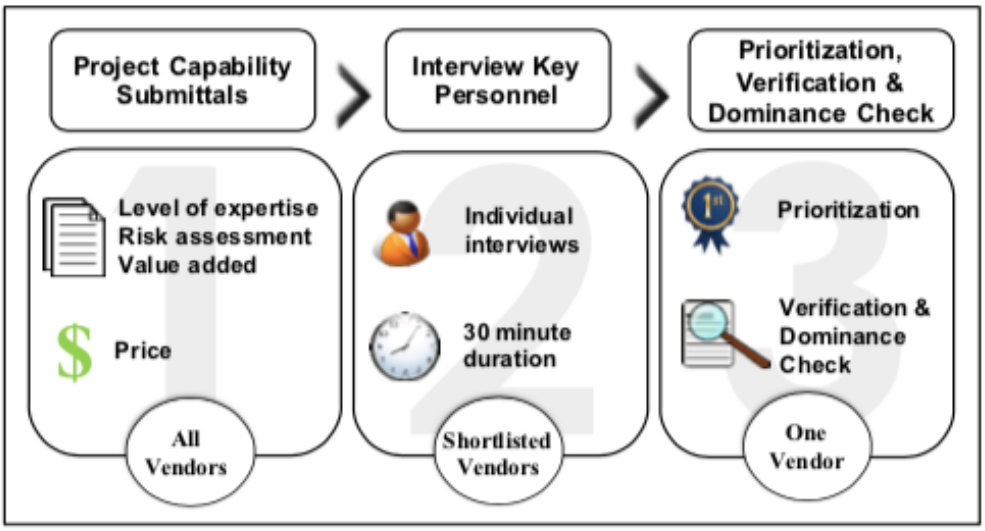

Figure 3: Selection Phase Stages (Kashiwagi, 2017, p. 12)

Both the criteria and stages are appealing as it reduces the resources for both the client and the non-qualified contractor and is especially important for markets where there are many qualified participants (Lædre, 2006). The first stage, project capability, contains three documents; Level of Expertise (LE), Risk Assessment (RA) and Value Added (VA). Each of the documents cannot exceed two pages and

has to include performance claims with supporting performance metrics. In the LE, the contractor needs to explain their expertise and capability to accomplish and deliver a project of high quality (Kashiwagi, 2017). In the RA, the contractor needs to address the client's significant risks in terms of time and costs, along with justifying their ability to reduce the risk (Kashiwagi, 2017). In the VA, the contractor can provide suggestions to the client, where the aim is to improve the value without receiving a penalty for the extra cost required to fulfil the proposal. Hence, even though one contractor is more expensive than the others, the price can be explained by the added value to the project (Kashiwagi, 2017).

The second stage is interviewing key persons, which is one of the most important criteria as it determines the contractor's expertise. The contractor is requested to explain the possible risks, show accountability and understanding of the BV method (Storteboom,Wondimu, Lohne & Lædre, 2017). Thus, the best-valued contractor is selected due to their expertise and not due to price (Corea et al., 2016). There is a consensus among firms to overlook considerable sources of indirect supplier costs, such as costs associated with delivery times, production breaks, and poor quality of delivered goods (Aissaoui, Haouari, Hassini, 2007). Using the information received from the interviews decreases the likelihood of overlooking these costs (Storteboom et al., 2017). The interview questions are standardized to prevent discrimination among the potential contractors, and the nature of the questions are designed to reveal the relevance of the interviewees` expertise and reflect the purpose of the project (Verweij & Kashiwagi, 2016). The aim of the interview is to find out if the contractor has an understanding of the project, specifically how they will carry out the project from the start to the end (van de Rijt & Witteveen, 2011).

The last stage contains prioritising, verification and dominance check, where the contractors` performance of the five selection criteria are prioritised. The LE, RA, VA, and the interview are rated using a 1 to 10 rating system, and the price is directly put into a scoring matrix (Appendix 4). After the client has identified the highest scoring contractor, the next step will be to start the verification process, where the goal is to ensure that the selected contractor truly can provide the best value for the least money. Before moving to the clarification stage, the client needs to provide the best-valued contractor with a justification, which is done using a

dominance check. If the justification of the potential best-valued contractor is not sufficient, the contract will be provided to the next best-valued contractor (Kashiwagi, 2017).

The third step in the process is the *clarification phase*, where the technical specifications are written by the contractor and then agreed upon by the client before the best qualified contractor is assigned to the contract (Corea et al., 2016). At this point, the client has delegated the responsibility to the contractor in terms of leading and coordinating the project. The delegated responsibility involves among other aspects, coordinating meetings and the necessary actions before the client approves the contractors` scope of work, using the weekly risk report (WRR) (Kashiwagi, 2017).

The clarification phase includes three stages: *Kick-off, Refinement, and Finalization*. During the *Kick-off,* the contractor is required to prepare and present the clarification documents, through the following techniques; an executive summary, project assumptions, performance metrics, detailed schedule, milestone schedule, risk management plan, weekly risk report, and a presentation. (Kashiwagi, 2017).

An executive summary	The executive summary is a selection of all the clarification documents. Project assumptions is a list containing critical assumptions in terms of the contractors budgeted scope of work.
Project assumptions	The contractor is a need for establishing a list of critical assumptions concerning what included in his/her budgeted scope of work and what is not.
Performance metrics	The performance metrics includes the performance of time and cost, which can be useful in terms of project milestones.
Detailed schedule	There is a need to identify all activities and transactions necessary to finish the project, by establishing a detailed schedule
Milestone schedule	A milestone schedule is used to identify the critical project milestones, that need to be understood by all parties involved
Presentation	A presentation that sum up the service at every stage of the Clarification period

Table 5: Description of clarification documents (Kashiwagi, 2017).

In the clarification phase, it is essential to use tools such as the weekly risk report and the risk management plan. The weekly risk report includes all data obtained from the selected contractor, such as, results of the week, deviations from all contractors in the project, results from everyone in the user organization, and risks that must be addressed with a solution and a responsible party (Corea et al., 2016). The risk management plan will include all potential risks and ways of reducing them and will be contained in the weekly risk report. Both the weekly risk report and risk management plan are essential tools to gather critical information, which will be used in the last phase, the execution phase (Corea et a., 2016). The WRR and risk management plan will be discussed in more detailed later in this chapter. At the early stages of the clarification phase, the contractor needs to make a presentation that summarises the project. The information gathered in the clarification phase gives a clear overview of the project and prepares the client to start the project straight after the contract is signed (Storteboom, 2017). To manage and reduce the risks, which are not within the control of the contractor, the contractor has to continuously and constructively apply the stated techniques and make sure that the project is delivered according to the technical specifications of the client (Corea et al., 2016).

The reason to initiate the kick-off is to present the project proposal, and where the stakeholders are allowed to provide relevant feedback to the project proposal. The meeting should include stakeholders such as project managers both from client and contractor, technical lead, procurement officers and the client's selection committee. The second meeting concerns *refinement*, where the contractor will have a meeting with the relevant stakeholders, where they will discuss elements which requires clarification or adjustment (Kashiwagi, 2017).

The last meeting is where the *finalization* takes place. Here, the contractor is required to bring all the documents introduced earlier in the phase and make a presentation that summarises the coordination and planning of the project. At this time, the contractor has assured the client of their ability to reduce the forecasted risk and proved their ability to handle surprises once the project has begun. Both the presentation and the stated documents should be included in the final contract.

The presentation is required to be non-technical and include the following specifications (Kashiwagi, 2017):

1. A precise schedule of cost and time
2. A proposal of deliverables for the project
3. A Weekly Risk Report, which includes a milestone scheme, the tracking of cost and time deviations, and performance metrics
4. A contract ready to be signed

At the end of the presentation, the contractor is requested to sign the contract and to complete a survey regarding the contractor's proposal and process.

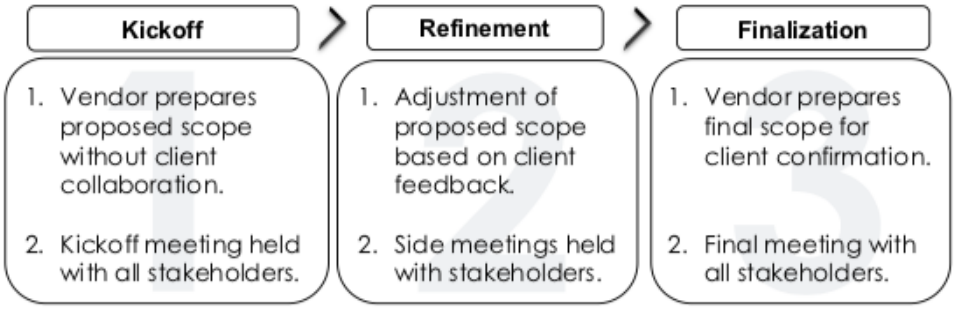

Figure 4: Clarification Stages (Kashiwagi, 2017, p. 39)

The purpose of the clarification phase is to assure a well-planned project delivery. Therefore, the clarification phase is only perceived as a planning phase, where the contractor is not intended to do any physical work for the project. An important aspect of the planning process is to include all the stakeholders in the meetings, as the stakeholder also holds critical knowledge. By utilising the stakeholders' knowledge, the contractor can adjust and refine, and therefore improve the initial proposal (Kashiwagi, 2017). In the clarification phase, both parties are also required to determine performance indicators, that provides them with clear expectations, which results in a higher degree of transparency in the execution phase (Storteboom, 2017).

The last step in the BVA process is the *execution phase,* which concerns the period after signing the contract. According to Kashiwagi (2017), the client expects the contractor to develop a final project scope of work in the execution phase, which should include:

1. A final deliverable concerning time, cost and performance metrics
2. A milestone schedule
3. Areas where it lacks information, including the contractors' estimates until the information is sufficient, as well as a plan to discover the information and risk mitigation measures.
4. Areas dependent on the actions of other stakeholders

3.5.1 Roles and Responsibilities

In terms of the roles and responsibilities in the execution phase, the contractor`s key roles are to perform quality control and execute their scope of work, where the latter was identified in the clarification phase. The quality control is a process, where the contractor makes sure that the quality of the product or service is maintained or improved. The operation of quality control includes maintenance of; systems that regulate and track the quality of the project in terms of time, cost and performance, the risk management plan, and the weekly risk report. The key roles in the execution phase for the client are to; perform quality assurance, carry out the activities identified by the contractor, and enable the contractor in order for them to execute their work in the best possible way (Kashiwagi, 2017).

3.5.2 Weekly Risk Report (WRR)

As mentioned earlier, the Weekly Risk Report (WRR) is established in the clarification phase and is submitted weekly during the execution phase. The WRR aims to track the progress of the project and the deviation of the contractors' scope of work (Appendix 5). According to Kashiwagi (2017, p. 48), the WRR is a performance tool used in the execution phase, which reports and tracks the following:

1. Deviations from a project's initial contract schedule and cost
2. Change orders approved on a project
3. Project performance metrics
4. Contractor's risk management plan

The stated information is maintained by the contractor and shared with all the project stakeholders every week. The information obtained in the WRR needs to be written in an easy and non-technical manner, and the time spent on the WRR should be limited. The WRR is recommended to be used as a tracking tool, in order for the stakeholders to follow and be aware of the project status (Kashiwagi, 2017).

The WRR can be adapted to fit the needs of the project. The information given by the WRR is collected in the Director`s Report (DR). The WRR and DR systems distinguish from other tracking systems, as:

1. The performance information is available and easily understood for anyone within the organisations, from the client`s top management to the contractor`s project team executing the project
2. The information from the contractor regarding performance is maintained and distributed directly from the contractor, and not from the client's personnel

Furthermore, the WRR and DR are important in terms of mitigating bureaucracy in the entire supply chain. The WRR and DR aim to establish transparency for all relevant stakeholders, avoid contracting issues by communicating information as soon as possible, allocate accountability, and support continuous enhancement. The use of the weekly risk report is essential in every project, and therefore, the

importance in using it accurately and communicating deviations on time (Kashiwagi, 2017).

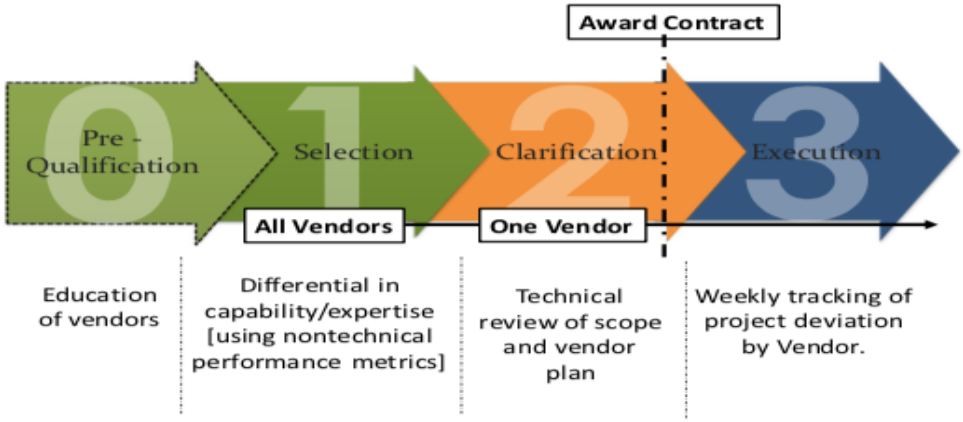

Figure 5: Performance Information Procurement System (Kashiwagi, 2017, p. 4)

3.6 How BVA influences coordination

In BVA, the contractor is required to coordinate risk from the beginning of the project by identifying the risk in advance, which can decrease the impact of the risk when it occurs (Storteboom et al., 2017). Practising the BVA, the parties aim to minimise or even eliminate risk by using available information effectively. This is necessary, as the information can limit the decisions that have to be taken, as well as the prediction of risk in the execution of the project will be more precise (Bruno et al., 2018; Kashiwagi & Kashiwagi, 2012). As coordination is the requirement and operation of information sharing (Gulati et al., 2012), sharing relevant information is therefore essential in all phases of a project (Xue et al., 2007). Information is shared already in the pre-qualification phase, as the contractors can contribute with valuable information on potential risks, as well as receive information from the client regarding the project (van de Rijt et al., 2011). In the LE developed in the selection phase, the contractor needs to explain their expertise and capability to accomplish and deliver a project of high quality (Kashiwagi, 2017). In the RA, the contractor needs to address the client's significant risks in terms of time and costs, in addition to justifying their ability to reduce the risk (Kashiwagi, 2017). The contractors can also offer additional value through going beyond the specifications in order to contribute to better fulfilment of the project

goals, which is described in the VA (Kashiwagi, 2017). In BVA, the contractor must explain the possible risks and show accountability in the interviews conducted in the selection phase (Storteboom et al., 2017). Using the information obtained from interviews with key personnel might reduce the likelihood of overlooking these costs (Storteboom et al., 2017). In the clarification phase, the contractor has to develop the risk management plan and WRR, which they start to use in the execution phase. Firms in general tend to overlook sources of indirect supplier costs, such as costs associated with delivery times, production breaks, and poor quality of delivered goods (Aissaoui et al., 2007). The additional workload and/or costs that are not stated in the initial contract, can contribute to cost and work adjustments, and have to be covered by the client (Hagstrøm and Bruserud, 2014). Changes and additional costs that might occur can therefore be reduced using BVA, as the contractor has to identify risks and provide the client with risk reducing measures throughout all the phases (Kashiwagi, 2017). Sharing information therefore allows the parties to predict the actual cost of the project (Ragatz et al., 2002). As a result, using this information efficiently can help the parties to decrease the conflict level, foster greater confidence, as well as the expectation between both parties will be clearer (Beach et al., 2005).

A research conducted by Al Nahyan, Sohal, Hawas & Fildes (2019) found that lack in communication and coordination in public entities resulted in several unnecessary changes, redesign and repeated progress interruptions. Further, the research showed the consensus among the stakeholders was to establish committees, improving the documentation and developing alliances to enhance the coordination in the project. A highly useful coordination tool in the BVA is the WRR which aims to track the project progress and the deviation of the contractor's scope of work. This establishes transparency for all the relevant stakeholders and allows the contractor to inform the client about the project status as well as to communicate continuous enhancement (Kashiwagi, 2017).

3.7 How BVA influences cooperation

According to Briscoe et al. (2004), the level of cooperation between the client and the contractor is determined by how the client is defining the responsibilities and authorities in the procurement process. One of the main features in BVA is to delegate responsibility to the contractor, which is done in the early stage of contractor selection. The contractor experiences increased flexibility when obtaining more responsibility from the client (Kashiwagi, 2011). According to the BVA, the client assumes that the contractors are the specialists, which means that the contractors have the proper knowledge to find a solution to the client's needs. The client, however, lacks the "right" knowledge and is therefore not aware of how to execute the project successfully (Kashiwagi, 2011). Clients that are practicing BVA use open and functional questions in the tender and therefore encourage the contractors to be innovative by increasing their flexibility (Van Valkenburg et al., 2008). Increasing the flexibility for the contractor by initiating a collaborative relationship, allows the contractor who has the expertise to deliver the product/service according to "best value for money". Thus, delegating the responsibility of the project to contractor allows the two parties to maximise the efficiency of their resources (Kashiwagi, 2011).

Trust is seen as an essential element, in order to execute a successful project (Cox & Ireland, 2002; Eriksson & Westerberg, 2011), and is developed in BVA projects through thorough cooperation and involvement, as well as the communication regarding project goals (Snippert et al., 2015). The emphasis on information exchange in BVA improves the establishment of the relationship and enhances the goal alignment between the two parties. In the Best Value approach, the implementation of metrics or past performance information is seen as calculus-based trust. The use of metrics and past performance information boost the cooperation and goal alignment among the participants (Snippert et al., 2015). Calculus-based trust is described to be relational trust, whereas one party, the trusting party, perceives that the other party, the trusted party, will execute the project in a beneficial way (Snippert et al., 2015). In this case, the trusting party is the client, and the trusted party is the contractor. Two features are especially important when establishing trust among the two participants, namely, economic self-interests and the stated calculus-based trust. To receive calculus-based trust,

one can implement financial incentives or sanctions if the trust is *"broken"* (Kadefors, 2004). Furthermore, in the relationship between the client and constructor, reducing and managing risk are important aspects (Snippert et al., 2015).

Dewulf & Kadefors (2012) state that to obtain valuable cooperation across the participating organisations, they need to achieve an understanding of the project commonly. When a so-called "true stewardship relationship" occurs, it likely enhances the achievement of the cooperation between the participants. For this particular relationship to occur the steward (contractor) places emphasis on accomplishing the purpose and goal of the project, while the principal (client) has to make sure to establish a situation that facilitates the steward (Davis, Schoorman & Donaldson, 1997). The stewardship theory differs from the principal-agent theory, as in the principal-agent theory emphasis is placed on personal interest, while in stewardship theory place emphasis on goal convergence (Segal and Lehrer, 2012). The introduction of a stewardship relationship between two parties can enhance the maximum potential for obtaining cooperation (Snippert et al**.,** 2015). This kind of relationship is exactly what the Best Value approach aims to achieve. However, Snippert et al., (2015) states there are barriers to realise the stewardship relationship. Firstly, the research show that the clients often tends to control and manage the contractor, which is not in line with the BVA. Secondly, some of the projects lacked transparency and trust. Still, the study conducted by Snippert et al., (2015) concludes that the Best Value approach can contribute to cooperation and the establishment of trust in the partnership between the client and contractor. However, to receive the benefits of a method like the BVA, the project is dependent on a structured implementation. In other words, the more the client and contractor deviate from the Best Value approach, the more difficult it is to gain the benefits from a stewardship relationship (Snippert et al**.,** 2015). Cicmil & Marshall (2005) states in their research that absence of trust in addition to attitude and suspicions towards a new methodology resulted in tension and problems.

3.8 Theoretical framework summary

In the development of the research question, an evaluation of the theoretical background was used as a base for the problem statement: "*How might BVA enable collaboration between the client and the main contractor in a construction project?"* The secondary theory has been used to receive an understanding of the benefits and challenges of the two facets, coordination and cooperation. As there is a lack of information on the research area concerning how BVA enables cooperation and coordination, there was a need to connect several insights from several authors and fields of theories to gain an overall picture. We will in the analysis therefore place emphasis on the relationship between coordination and cooperation and BVA.

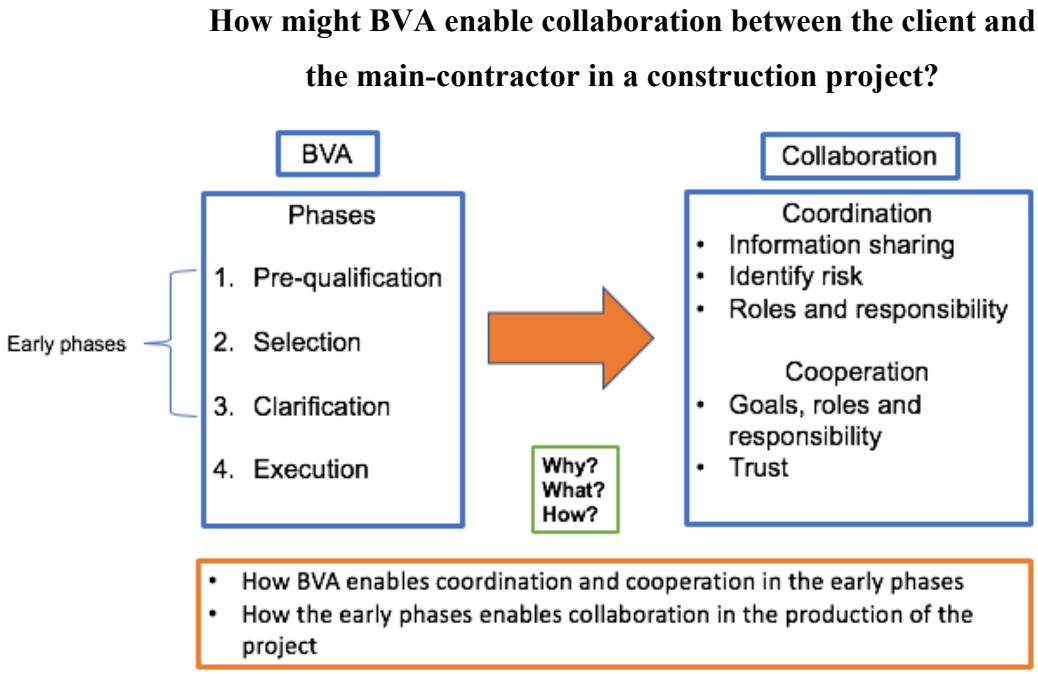

Figure 6: Theoretical framework

Fearne and Fowler (2006) states that the construction supply chain tends to be highly fragmented as the environment of the supply chain is often characterized as uncertain and complex, there is therefore limited room for maintaining collaborative relationships (Akintan & Morledge, 2013). The industry is also facing several issues, such as overruns, conflicts, delays, reworks, instance litigations, and not delivering expected quality on construction projects (Love et al., 2004; Mosland, 2016; Singh & Tiong, 2005). Despite that, Bygballe & Swärd (2019)

states that the construction industry has been characterised with a traditional adversarial behaviour but has the last two decades headed towards a more collaborative and integrated path. Emphasising collaboration in construction projects, the parties can experience improved efficiency and cost-effectiveness, enhanced opportunity for innovation and the improvement of quality products and service*s* (CII, 1991), as well as a reduced conflict level (Wong & Cheung, 2005).

Thus, there is a need to implement such a model that facilitates collaboration and creates an environment that caters for a collaborative relationship. According to Gulati et al., (2012), cooperation and coordination is a necessity in a collaborative relationship. From the theory, we identified information sharing, defining roles and responsibility and identification of risk to be important elements to obtain coordination. While understanding goals, roles and responsibility and trust to be important elements to obtain cooperation. We will therefore in the analysis examine how BVA enables these elements, as the present and proper utilisation of these elements contribute to cooperation and coordination.

Chapter 4 - Empirical Findings and Analysis

We have performed a case study to gain a greater understanding of the chosen research area, which concerns how BVA might enable collaboration between the main contractor and the client, operationalised through coordination and cooperation. The following chapter presents the empirical findings and analysis of the case study regarding our research question and sub-questions. We have chosen to combine the empirical findings and analysis, as, without this integration, there will be several repetitive assumptions, which will not provide the thesis with much additional value. Furthermore, the integration will allow an in-depth exploration of the findings in an orderly manner.

This chapter is based on interviews from two main contractors (from now on referred to as contractor), one client, as well as one BVA expert (expert 1) and one experienced external client (expert 2). The first section of this chapter will present a brief introduction of the case company and the motivation behind why the relevant actors chose to implement BVA. The second section consists of a short presentation of the two units of analysis, Vollebekk and Munkerud kindergartens. The last section of the analysis is structured in relation to the theoretical framework. We have chosen to define the earlier phases as pre-qualification, selection and clarification phase. Throughout the chapter, we will highlight quotes that are particularly important in answering the research questions and sub-questions.

4.1 Motivation for implementing BVA

This section presents the main actors in the construction of Vollebekk and Munkerud kindergartens. The Agency for Public Management and eGovernment (Difi) is currently coordinating and consulting several pilot projects within the public sector (Difi, 2019c). Including the projects of Vollebekk and Munkerud Kindergarten, which are the main units of analysis in this case study. The client of the two projects was one of the first firms included in Difi`s pilot project group in 2016 and is a municipality company. They became interested already in 2015, as they believe that the implementation of the method can put them at the forefront of the development in the industry and reach an even higher sustainable profile and

strategy. Contractor 1 was the contractor of Vollebekk kindergarten and chose to take part in the Best Value methodology, as the method is similar to how they want to work, as it gives them the trust to provide the client with improved quality. Contractor 2 was the contractor of Munkerud kindergarten, and became interested in the BVA method, as it can give possibilities to provide the construction industry with opportunities, which cannot be utilised to the same extent applying the traditional approach.

Since the BVA methodology recently was introduced in Norway, expert 1 points out the difficulty to fully utilise the expertise across the industry and obtain the full effect. Therefore, it is essential that the parties in the industry are open to trying a new method, which in the beginning requires additional development costs, as well to be attentive to the possibility of failing. It is necessary for the contractor and the client to participate in BVA certification courses, and as Norway has not yet received enough expertise in this area, there is a need to use a mentor who is educated in the BVA methodology to gain full utilization. Furthermore, the interviewees from the client and expert 1 state that the methodology must be fully rooted in the top management in order to achieve a successful implementation of BVA.

4.2 About the projects

Vollebekk kindergarten had a budget of NOK 63 million, which includes the total enterprise cost. The kindergarten will accommodate 162 children, in addition to the employees. The size of the kindergarten is estimated to be 2500 square meters, which is not considered to be very big. Contractor 1 believes that the client has adopted BVA on this particular project, as the consequence of the failing is not comprehensive. The time limit for Vollebekk kindergarten is set to be a year, from entering the project to the delivery in May 2019. According to the client, the project is characterised by a maximum budget with a leading approach. The leading approach allows the contractor to go slightly outside the boundaries of the project description. Thus, the additional value should be included in the system.

Munkerud kindergarten has a budget of NOK 75 million and was built in solid wood. The kindergarten will accommodate 108 children, with approximately 22 employees divided over six departments. The pre-qualification phase was set to start 08 May, 2017 and was delivered in may 2019. According to the interviewees from the client, the projects of Munkerud were carried out slightly different from Vollebekk as the Munkerud project had a guided approach, therefore the specifications in the Munkerud case were a bit stricter than the ones in Vollebekk.

4.3 Collaboration and its two facets: Coordination and Cooperation

The client has been satisfied with the overall collaboration in both projects. The contractors have known what to build and have used the BVA method as a basis to achieve the project goals, which are the minimum criteria. To solve specific tasks, they must establish a close collaborative relationship with the project manager from the contractor's firm. Expert 2 explains that by involving the contractor early in the project contributes to closer collaboration among the parties. Therefore, we will start this analysis with a discussion on early involvement before examining the two facets of collaboration, namely coordination and cooperation. From the theory, we know collaboration is dependent on cooperation and coordination (Gulati et al., 2012), we also know that coordination is achieved through information sharing, identification of risks, and defining roles and responsibilities. The theory also indicates that cooperation is achieved through understanding the goals, roles and responsibilities, as well as trust.

"I believe that the methodology behind the BVA makes it easier to create better cooperation and coordination between the parties, as it is the contractor who is the expert, and can assist earlier on and in that way get a deeper understanding about the different role that lies within the methodology." - Project Manager, Client

To give an illustration, the BVA methodology enables the participant's ability to interact, as the expert entrepreneur is assisting early in the process. Therefore, at an early stage they receive an understanding of the roles by sharing crucial information, and can develop improved coordination, as well as cooperation among the parties.

4.3.1 Early involvement of supplier

Expert 1 illuminates the importance of involving the contractor early in the process, as the BVA methodology requires, and the sooner, the better. The early involvement allows the contractor to give input and feedback regarding the project to the client in order to execute a successful project. The client receives feedback already before the competition starts and throughout all phases of the BVA process. Moreover, it is just as crucial for the turnkey contractor as for sub-suppliers, advisors, architects, to enter the project as early as possible. The research shows that all professionals involved hold critical information and knowledge on how to execute the project successfully. This applies to all parts of project execution; what the parties do early facilitates what happens later.

"We experience better results by involving the contractor early in the project, as the client receives the expertise from the contractor, which could not be utilised to the same extent using a traditional approach" - Expert 2

"We spent much more time at the beginning of the process, forcing both a good dialogue and becoming safer at each other's standpoints and what we wanted, that was an advantage " - Project Manager, Contractor 1

The contractor in the Vollebekk project also perceives early involvement of contractor to be highly beneficial. The fact that the contractor was involved early in the project allowed them to address the unformulated solution in an earlier stage. The client explains that the early involvement mindset in the BVA methodology makes it easier to fulfil the goal. This implies that by involving the contractor early, the contractor has the possibility to design the building in terms of what they believe is correct to fulfil the function criteria and project goals, and thereby spend more time on their solution, and not on an already pre-determined one.

"The benefit of involving the contractor earlier is that we can design the building in terms of what we believe is correct in order to fulfil the function criteria and project goals of the client" - Manager, Contractor 2

By practicing the traditional method, expert 2 states that the key persons are involved later, which can lead to disagreements regarding the requirements. One disagreement can be what they are expected to do, as well as the commitment of the contractor is at a much lower level. Therefore, the research underlines the importance of an early understanding of each other's expectations, as if the parties do not receive this understanding, there can be disagreements regarding the requirements. By involving the contractor early on as in BVA, expectations are shared earlier, and therefore, the research shows that BVA facilitates a more effortless fulfilment of the goal.

"During the kick-off, the client's expectations were presented, and the contractor had the opportunity to express their expectations regarding the project. This meeting illuminated what both the client and the contractor were supposed to deliver" - Project manager, Client

To fully implement the BVA methodology, contractor 2 tried to involve their sub-suppliers early on as well, and have to some extent succeeded. The BVA methodology is, however, incredibly new to their contractors, as they have less insight and a little less motivation to change their mindset on how to think in this new manner. The main contractors have more motivation, as they chose to enter a BVA competition, while the sub-suppliers are on the project even though it is a BVA project. This is agreed on by contractor 1, as they believe that the sub-suppliers are not mature enough for the methodology. However, contractor 2 believes that the sub-suppliers will after several BVA projects perceive it as a more adequate process because the methodology allows them to communicate their knowledge of the project early on.

All things considered, the research shows several benefits of involving the contractor earlier. It also indicates that BVA indeed facilitates early involvement, which is highly essential for the later phases in the process. However, as the discussion regarding involving sub-suppliers early was beyond the scope of this research, we have chosen to not focus on this area. However, it is reasonable to consider that sub-suppliers after several attempts of using BVA allows for the project participants to further exploit the benefits of this method.

4.3.2 Information sharing

Coordination is seen as an essential factor in order to achieve a successful project. To obtain the benefits of coordination this research has identified information sharing as an important element, which we have divided into two sub-themes, namely the importance of sharing information concerning the project, as well as sharing information regarding risk. The interviewees of this research also identified that sharing information early, especially regarding risk are important elements in the BVA and that this facilitates better coordination.

Already in the pre-qualification phase, the contractor was able to interact with the client, which allowed the contractor to provide the client with critical information regarding the project, as well as risk early on. The study shows that the information given in the pre-qualification phase was perceived to be beneficial, as the information provided from both parties was very useful later on in the project. The pre-qualification phase is optional, however as BVA is newly introduced in Norway, both projects adapted this phase. This phase included a BVA certification course, internal courses, and an analysis of the contractor market. The contractors received the training needed to execute the project according to the BVA method and received even more guidance than expected. However, due to the law of public procurement, the client could not take on a role that gave one contractor more advantage than the others.

"We perceived the client to be helpful in the pre-qualification phase in terms of providing us with relevant information" - Project Manager, Contractor 2

From the study, it is clear that the client's place emphasis on sharing information already from the beginning of the pre-qualification phase.

"Difi encourages the pilots to invite the market into a dialogue meeting in advance before announcing the competition, preferably a month before, so the market and the contractors can come up with feedback on elements such as max price, progress schedule, and location. Some elements of the project are already determined, but the contractors can at this time give valuable input" - Expert 1

The client is expected to invite the market in advance into a dialogue meeting, before announcing the competition, preferably one month before. By doing so, the contractors have the opportunity to come back with feedback such as maximum price, progress plan, and location. Additionally, the client should share information regarding what the contractors are supposed to deliver in the selection phase. This can be elements such as the format of the offer, where to deliver the offer, as well as when to deliver. Specifically, what the client need, how to answer the justifications, the risks, and the added value, as well as how the client will carry out the interviews.

"Once the suppliers are qualified to bid, the client invites them to a meeting and explains how to deliver a bid in accordance with the BVA methodology. The explanation will be on what does the client want, how to answer the justifications, the risks, and the added value, as well as how the client will carry out the interviews. All this information is given for the suppliers to be best suited" - Expert 2

This underlines the importance of sharing information already in the pre-qualification phase in order for all parties to really understand the methodology as well as what the project entails. The research refers to the importance of sharing information in order for the contractors to be better prepared. Expert 1 believes that the information meeting is a very important part of the competition and that BVA facilitates the parties to be in a collaborative dialogue. This information can also be given in the beginning of the selection phase. The research therefore illuminates the importance of sharing information already before the competition has started, which allow for coordination early on.

Despite that, expert 1 states that in the information meeting, the contractors can feel uncomfortable asking questions concerning the project in plenary. This can be due to business secrets or competitive sensitive information. Further, one by one dialogue is preferred, either orally in the form of a meeting or quest back and later on a plenary meeting.

The research points out that in the selection phase, the client evaluates the offers and should, in principle, not be in any close dialogue. The contractor is only supposed to deliver a six-page offer, which includes potential risk, what the contractor will deliver, and their qualifications.

"The selection phase is where the evaluations of the offers take place. In principle, there should be no dialogue, nor collaboration in this phase" - Expert 1

The parties therefore save a lot of work in terms of time and resources. Expert 1 states that from a socio-economic point of view, this is an appropriate way to do it. According to the interviewees from the client-side, the six-page offer in the selection phase made it easier for both parties, as it makes the offer clearer compared to the traditional method, where the contractor receives a proposed solution before submitting their bid on that solution. According to the second contractor the six-page offer is a documentation on whether they were eligible or not concerning the different criteria. The research highlights that the six-page offer is seen as a valuable source of information for the client. In addition to a neat way of providing an offer for the contractor and receiving the offer for the client.

The research, therefore, underlines the importance of receiving an understanding of the methodology to be more prepared later on. The information shared by the client, as well as the BVA mentor, is perceived as beneficial as the contractor receives a proper understanding of the methodology early. This understanding can provide the parties to spend less time on the methodology and more time on the project in the selection, clarification, and execution phase. It is reasonable to think that the more projects one implements, the more straightforward will the implementation of the different BVA-elements be.

"We used a BVA mentor from the Netherlands, which was beneficial for the later phases. Using a mentor allowed us and the client to truly understand the method and what it entails" - Manager, Contractor 2

In the clarification phase, when the contractor is chosen, the client invites the contractor to an information meeting. During this meeting, the client presents what the next step will be and what the deliverables are. In this phase, the coordination implies that the contractor presents the progress plan for the project, how they will address the assignment, as well as how they will coordinate it. The contractor is also supposed to coordinate the risk by including it in a risk management plan, which provides the parties with a clear overview of the possible risks that can occur. By doing so, expert 2 states it allows the project to move forward to the execution phase faster, as the contractor already has identified the possible risks as well as convinced the client that they are the expert.

The research highlights the importance of applying the weekly risk report (WRR) and the risk management plan in the clarification phase, which is used to increase the coordination in the execution phase.

"The tools made in the clarification phase are used to increase the coordination in the execution phase" - Expert 1

Therefore, by establishing the WRR and the risk management plan in the clarification phase, the parties facilitate an environment of accessible information regarding risk. These documents are essential and should be used during the whole execution. The coordination in the execution phase is according to expert 2, the progress plan and the management of it, monthly reporting, as well as weekly risk reports that are linked to the risk assessment plan and the management and coordination of it. For that reason, it is crucial, according to expert 1 to apply the weekly risk report from the first week of the execution, even if there is nothing new to report. The intention is for the top management of both the client and the contractor to easier see the particular risk for that week, which will give them a direction of the project progress. It also provides the parties with control of the risk measures identified earlier in the project, which must be controlled in order to mitigate the risk.

The time spent in the earlier phases in the construction of Vollebekk and Munkerud kindergarten, was of great advantage as it enables a higher level of information-sharing, and therefore a more precise definition regarding how to implement the project, the meaning of the project, what to include, and the selected solution concerning both management and risks. As the clarification phase first and foremost concerns the documentation on how to achieve the goals, there is according to the client a good basis of documentation in this phase. The documentation includes laws, regulations, interviews conducted in the selection phase, as well as other relevant documents. The research reveals that the risk-reducing measures identified in the earlier phases were perceived by contractor 2 to be beneficial. This was highlighted by contractor 2, as they avoided some expenses in the execution phase due to the time spent on the identification of the risks and the measures. The client specified the importance of weeding out all unexpected costly elements in the clarification phase.

"The risk-reducing measures we identified in advance were so complete and good because both parties put a lot of time into the measures. Therefore, the client avoided some expenses due to the time spent on these measures" - Manager, Contractor 2

Applying BVA, feedback is perceived as important. As the client having function-based requirements, the contractor could address these requirements and get feedback from the client in the shape of questions. Receiving these questions gave them the possibility to rethink their solutions and come back with an adjustment. This was perceived by contractor 2 as good coordination. The research highlights information sharing from the beginning and how the feedback from the client is crucial later on, as the client might have different information and expertise, and therefore see the project from another perspective.

"When providing the client with our solution on the functional requirements for the project, we received questions regarding our solution from the client. If you receive questions, then the contractor has to adjust the initial solution. This was very straightforward, and we found it to be valuable cooperation"- Manager, Contractor 2

Overall, there was a common understanding among the interviewees from the contractor side that spending more time on the project with the client in the earlier phases, resulted in better communication throughout the process, as well as becoming more secure of each other's standpoints. These meetings illuminated what both the client and the main contractor were supposed to deliver. To receive this understanding, the study shows the necessity to share information regarding their knowledge of the project, as well as expectations. Therefore, the parties could create good clarifications and better communication early on, as well as be more secure on the other parties' standpoints, which resulted in fewer ambiguities in the production of the project.

"The big effort was in the beginning, as there were several meetings and good clarifications" - Manager, Contractor 2

"The contractor and the client agreed on spending more time on dialogue and kick-off meetings in the earlier phases, which resulted in a better communication throughout the process, as well as becoming more secure of each other's standpoints" - Project Manager, Contractor 1

"If a proper job is done early, there should not be any ambiguities later on in the project" - Project Manager, Contractor 1

4.3.3 Defining roles and responsibility

For the parties to receive an understanding of the roles and responsibilities, there are a need to identify these early. The research points out that the client need to take on a role where it provides the contractor with the flexibility and freedom needed for them to reach the project goals.

"We as experts, received the necessary freedom to execute the project in the best possible way, as we are not being told by the client how to do it. As we received this confidence to solve a task that we know how to solve" - Manager, Contractor 2

The research shows that coordination allows for a better overview of the projects, as both participants can define the expectations, see the situation of the other, and receive an overview of what they are accountable for. To be able to conduct these definitions, the research indicates that there is a need to share the information early on concerning what role and responsibilities the client expects the contractor to take, and vice versa, in order to receive the standpoint of both participants.

"By defining the roles and responsibility of the participants, what both expect, see the situation and the need of the other, makes it easier to understand each other" - Manager, Contractor 2

"The contractor and client agreed on the areas of responsibilities for each party, which links to the preparation of the clarification documentation, the preparation of the pre-project, evaluation criteria, etc. early on in the BVA process. This was perceived as a smooth and quick process, which provided both parties with an overview of what they were accountable for" - Manager, Contractor 2

Contractor 1 places emphasis on the importance of spending more time on these definitions early on, as it allows for a faster start of the construction in a BVA project compared to the traditional approach, where the contractor spend more time on studying and understanding the meaning of the project. Hence, the research shows that time spent in the early phases facilitated faster start in the execution phase, as the BVA methodology enables the parties early on to discuss and clarify elements such as expectations, responsibilities, roles, information and risks before signing the contract. BVA allowing for a faster start of the construction is confirmed by expert 2.

"What we do in the clarification phase allows for the project to start faster in the execution phase, as the client and the contractor had discussed a lot before signing the contract. One gets clarified a lot in advance of the signing, which is a positive element in the BVA methodology" - Expert 2

"A major difference when applying the Best Value approach was perhaps the transfer of ownership of the solution from the beginning of the processes. The contractor could therefore define the solution within the project straightaway" - Project Manager, Contractor 1

The contractor has the responsibility for the solution and the quality of the project. However, according to contractor 2, it is important to spend time on defining the quality and what the project entails for both the contractor and the client. Therefore, adjusting these definitions already in the selection phase is seen as an advantage in the research. After the assessment, all of the risks must be clarified, as stated in the BVA model.

The research points out that the BVA enable the parties to define the roles and responsibilities early on, and this is important for the later phases.

4.3.4 Risk identification

Our research shows that already in the offer the contractors engage in coordination as they need to set up a progress plan, an overview of the risks and the measures on how to handle the various risks, which is included in the six-page offer. At this time, the contractor needs to form the work structure to be able to manage and coordinate the process to reach the desired project goals. This process starts already in the offer, but the actual work of receiving an overview of the risks starts in the clarification phase, by identifying the risks in the project and highlight them in the risk management plan.

"Already in the offer the contractors engage in coordination as there is a need to set up a progress plan, and an overview of the risks and the measures on how to handle the various risks" - Expert 1

Both experts highlight the advantage of catering for uncertainties early in the project planning. To obtain this advantage, the contractor needs to identify measures to prevent and minimize the risks in the project. These measures should be clarified as early as possible in the risk management plan. In addition, the identified risk should be placed in the WRR of the specific week they might occur. Having that

said, this might also be one of the most challenging tasks for the contractor to carry out. The identification of risk happens already in the selection phase, as the contractor has to include their opinion of the risks related to the project in the offer.

"*The contractor has the responsibility to map the risk in advance and handle it if and when it occurs, which is one of the main challenges in all construction projects. When the risk is identified in advance, it will be easier to mitigate and handle"* - Expert 1

Both experts' further states that the risk management plan is the contractor's most important tool and should only consist of elements that might occur. This plan should be transparent and visible for both parties, and as long as the risks are stated in the plan, both parties have a certain degree of control. As it is the contractor's responsibility to prevent the risk from occurring, expert 1 hopes that they truly understand the importance of these tools, as it is the contractor who has the most benefit from them. Despite that, there were different perceptions of how to use the WRR properly. In the Vollebekk project, the parties could not quite figure out how to use the WRR, as they were not sure what to include in the report and what it actually entails. Expert 2 had the same perception as contractor 1. However, after implementing several BVA projects, the more confident expert 2 become in using the WRR. According to the client, a lot of the traditional principles for management and contract management were used, such as contract meetings, monthly client meetings, and monthly reports, in addition to WRR in both of the projects. Therefore, they perceived the WRR as unnecessary workload. By contrast, contractor 2 found the WRR to be beneficial, as they spent time on addressing the risk in advance, and therefore avoided some risk-related expenses in the execution phase. It can be several reasons why contractor 2 manage to use the WRR in a proper way. Since it was contractor 2 first BVA project, they might have placed even more emphasis on the methodology throughout the process in order to make every step correct. Another explanation, which relates to the other, is because they chose to use a mentor.

"Weekly risk report was the form of report that we together with the client couldn't quite figure out how to use properly" - Project Manager Contractor 1

"The weekly risk report in some cases become a little extra work"- Consultant, Client

"We found the weekly risk report to be beneficial, as it forced us to address what lies ahead in time" - Manager, Contractor 2

As the knowledge regarding WRR differs, it is especially important for both parties to use a Dutch mentor who knows how to use it, to speak the same "language". However, independently of the model, there must be some degree of involvement from the parties during the entire project process to govern reasonable communication. It seemed to be clear that the BVA methodology enables risk identification by using risk management tools, such as the WRR and the risk management plan.

4.3.5 Understanding of goals, roles, and responsibilities

Cooperation is described in our theoretical framework to be two aspects, understanding the goals, roles, and responsibilities. These understandings are perceived by the participants in the study to be highly beneficial, as they contribute to project success. Understanding goals, roles and responsibilities also include maintaining or clarifying these roles and responsibilities.

Our research points out that already in the selection phase, the parties receive an understanding of the project goals as well as an understanding of the roles and responsibilities of the involved parties. This is done through the offer as well as from the information provided in the interviews with key personnel. The key personnel are those who actually execute the project. A benefit with using BVA is according to expert 1, the development of common project goals, where the project goal governs the initial tendering process and the implementation of the project. To meet the project goals, the contractor can add an additional value, which needs to be included in the offer. The additional value is new elements the contractor adds to the requirement, which contributes to fulfilling the project goals or even exceeding them. In the interviews the contractor is supposed to show that they are capable of finding a solution to the client's needs, therefore in the preparations of

the interview, the contractor needs to show they have an understanding of the project goals. The research also shows that the interviews are beneficial as they ease the evaluation of the persons who will execute the project.

"To win the tender, the key personnel must familiarize themselves with the project, to truly understand the project, as well as how to achieve the objectives of the project" - Expert 2

"Finding the "expert contractor" is easier than in traditional forms, which is one of the main essences of the methodology" - Expert 2

"The required interviews in the BVA methodology are beneficial, as they ease the evaluation of core personnel and the people they actually have to work with to a greater extent" - Project Manager, Client

An interesting aspect of the clarification phase is, according to expert 1, that it is managed by the contractor and not the client. The contractor will lead the meetings and write reports. Thus, already in this phase, the workload for the client will be reduced. There are according to our research, some degree of cooperation in the clarification phase, as cooperation is defined by expert 2 to be who does what. Expert 2 further states that the cooperation in the clarification phase is the discussion on how to carry out the project, how often the parties should meet, and what kind of tools they will apply. All these discussions lay the foundation for the clarification phase, as well as the execution phase. The research therefore shows that the parties should know their roles and responsibilities before the contract is signed in the clarification phase, as well as they should have an understanding of the project, including the goals determined by the client. This underlines that the parties are dependent on the definitions of the responsibilities developed in the earlier phases. The explanation of cooperation described by expert 2, is in line with the understanding of the goals, roles and responsibilities, as these discussions clarify who does what. It is, therefore, essential for the parties to have these understandings in mind throughout the process, as these can allow them to achieve a common goal.

"The cooperation that they have seen early in the clarification phase, concerns the discussion on how to carry out the project at the point of signing the contract, how often the parties should meet, what kind of tools will be applied, all these discussions lay the foundation for the clarification phase, as well as the execution phase" - Expert 2

In the Vollebekk project, the client and the contractor could have spent more time in the clarification phase. However, the contractor worked quite closely with the client in this phase, which resulted in improved efficiency and a closer relationship between the parties. In addition, the client and the contractor had an overall discussion regarding the clarification of the expectations and the roles of the participants, which was clarified already in the development of the pre-project. The agreement was perceived as a smooth and quick process, which provided both parties with an overview of what they were accountable for. This information made the two parties more familiar, as well as they became sure of what the other party emphasised in the project, which requires cooperation. By working closely in the clarification phase, they came up with a good solution on how to carry out the project. This underlines the importance of understanding the goals, roles and responsibility in the project, as receiving this understanding allows for a situation where the two parties can come up with good solutions together. This applies to the Munkerud project as well, as the most important cooperation according to contractor 2 was to justify clarifications such as, which functions to apply, how to address the project, which need to match the budget and the project goals, which again needs to be linked to the client`s descriptions and perception regarding what a good solution is.

"The important necessities in the implementation of a project is first and foremost to understand the specific project, the goal of the project, the expectations of the involved parties, and to understand the role and the standpoint of each party in the project" - Consultant, Client

The research therefore shows that the participants of the construction of Vollebekk and Munkerud kindergarten have the same perception of cooperation in terms of understanding the goals, roles and responsibilities as expert 2.

Despite all the benefits of cooperation in the two BVA projects, there are also some challenges. The research points out two challenges for the contractor before the contract is signed. The first one is to teach the contractor how to fill out the offer template, while the second and more challenging one, is then receiving the responsibility to lead. Not surprisingly, handing over the control to the contractor is perceived as the most challenging part for the client. The client must, according to expert 2, listen to the solution provided by the contractor and then propose valuable and open questions. The challenge is therefore to avoid correcting the contractor, especially if the client has managed the contractor in previous non-BVA projects.

"There are two main challenges for the contractor. One thing is to teach the contractor how to fill out the offer template, and the other is them receiving the responsibility to lead" - Expert 2

"We found it challenging to hand over the control to the contractor" - Consultant, Client

"We perceived that the client had a hard time letting go of the control" - Project Manager, Contractor 1

However, there is a common understanding in the research that the client in some cases should be able to strike through with an opinion to reach the goal more efficiently, rather than asking open questions as stated in the methodology. This can be explained by the client in some cases having more experience in particular areas than the expert contractor.

"The client in some cases should be able to strike through with an opinion in order to reach the goal more efficiently, as the client in some cases has more experience" - Project Manager, Contractor 2

The research reveals that the role of the contractor in the execution phase is to deliver a finished project within the agreed terms, while the client should have a reclining role in the execution phase. The contractor on the other hand, has the overall responsibility to carry out the project. However, the client is highly dependent on the WRR coordination tool, which is used to notify early on about possible events or deviation concerning the project goals, progress, quality, and risks.

"The client should have a reclining role in the execution phase while the contractor has the overall responsibility. However, the client is highly dependent on the WRR and that the contractor notifies early about possible events or deviation in relation to the project goals, progress, quality, and risks" - Expert 1

Therefore, cooperation was found between the client and the contractor, as the client had the opportunity to interact if they perceived an appearance of a potential dispute in the project. As contractor 1 states, if the client during the process requested to gain insight into how the contractor solves a specific function they have agreed on, the client was entitled to do so. Through frequent client-meetings or by visiting the construction sites, the client can receive information regarding potential deviations from the already agreed terms. The research shows that this type of information received from the client can be crucial when entering the execution phase, as the client also can have crucial information regarding the project.

This is confirmed by expert 2, who states that the contractor and the client could be better at finding out what both parties can contribute with, as the client also can assist the project in a positive way. Therefore, the research underlines the importance of utilising both the expertise of the contractor and the client, as both can contribute to the project positively.

"The contractor and the client could be better at finding out what both parties can contribute with, as the client also can assist to the project in a positive way" - Expert 2

In conclusion, the contractor must at all times show why they are the experts, and early on understand the goals, roles and responsibilities, and take the role as the expert and the responsibility that comes with it.

4.3.6 Trust

In the earlier phases, as well as in the clarification phase, the client communicated that trust is absolutely crucial in the relationship with the contractor. In the two projects, there were few undocumented requirements, a transparent financial, and there was no attempt made to deceive the client throughout the project. If the client had some questions regarding the project, they got an answer in an orderly manner. This is confirmed by the contractors, as the relationship between them and the client was from the beginning built on trust and felt like they received trust, as well as confidence in all the phases.

"We received trust as well as confidence from the client in all of the phases" - Project Manager, Contractor 1

In addition, the interviewee from contractor 2 felt the client acted in a way that stimulated them to deliver a better project. The research therefore indicates that there was a high degree of trust both ways in the two projects. In relation to trust, the research points out the importance of the client providing the contractor with the flexibility and freedom needed for them to reach the project goals, as this allowed contractor 2 to use the funds in the Munkerud project to develop new solutions in the design and construction of the project. For this to happen, the client should place emphasis on understanding how the contractor carries out the project and how they defined the project scope, which worked out well in the Vollebekk project. The findings indicate that the BVA enables the contractor to solve the problems themselves and not being told how to solve it. The most significant advantage is therefore how BV enables trust, which forces the contractor to show why "they as a group" have been chosen. The research also shows that the contractor found it comfortable to not constantly be in need of answering control questions from the client and if some disagreement occurred, they could just refer to the defined solution. Therefore, the research underlines the importance of trust,

which links to the limited need for the client asking control questions to the contractor. Therefore, the client needs to trust the contractor to do their job.

"We as experts, received the necessary freedom to execute the project in the best possible way, as we are not being told by the client how to do it. As we received this confidence to solve a task that we know how to solve, makes it easier for us to finish the project faster, as you are not in constant need of answering control questions and therefore have to refer to the solution, which was very comfortable for us." - Manager, Contractor 2

The findings show that the interviews with key persons provide the client with confidence, as the key persons can convince the client with their expertise and demonstrate their capability to execute the project in a proper way, which creates trust. However, trust needs to be earned.

"The trust must be earned, therefore the contractor must document with objectively verifiable documentation that they are worthy of this trust." - Expert 1

To receive the trust of the client, the contractor needs to provide the client with documentation on their capability of executing the project. Therefore, the WRR can be a crucial source to receive trust among the parties. However, this was not found in our research concerning the two kindergartens. The interview provides the client with confidence to the key persons, as well as the client knowing what they should be aware of. Therefore, expert 2 believes that the discussions concerning what the contractor has control over, what they can and cannot do, needs to be enlightened even more, and transferred to the execution phase. From the Vollebekk project, contractor 1 experienced that once the contractor has been selected, the contractor received the confidence to execute the project. At the point a contractor is selected, this contractor is in control of the process. Applying the traditional approach, expert 2 states that the client is not capable of knowing whether or not the contractor has the right expertise to execute the project in the same way.

"The interviews with key persons provide them with confidence as these key persons can manage the project, this creates trust" - Expert 2

The research reveals another reason for the development of trust in the two projects. The reason is the feeling of belonging and ownership the contractor receives for the project on a completely different level, which enables both trust and creativity. Compared to the detailed requirements in the traditional method, contractor 1 states that the contractor will not perceive the same level of belonging and ownership, as the contractor is only supposed to follow up and deliver. The contractor in the Vollebekk project could therefore define the solution within the project straightaway. Since they were forced early on to develop the solution, they were in need to among others have control over the cost related to the solution, and therefore experienced closer coordination within the organisation as well. Hence, the analysis reveals that, as the contractor receives the ownership of the project early on, the contractor achieves better control in the execution phase.

"BV creates belonging and ownership on a completely different level, which enables trust and creativity" - Project Manager, Contractor 1

For the contractor to show their expertise and make sure that the client understood what the pre-project entailed, contractor 1 needed to clarify the pre-project at a higher level of detail in the Vollebekk project. From a contractor perspective, the research shows that the client provides the contractor with trust, as the contractor can show the client their ability to provide them with the best solution. This enabled a high degree of cooperation in the clarification phase, due to the preparation of the pre-project, the actual pre-project, the development of the project scope and in the documentation, which is necessary to prepare early in the process. If a proper effort is made early in the project, there should not be any uncertainties between the parties in the execution phase. From a client perspective, an important element of the BV methodology is the fact that the contractor has the responsibility to describe what to deliver and why they are the experts, which increases the quality of the

project. In other words, one really encourages the contractor to justify their choices to a much greater extent. The client received better documentation on the consequences on what the contractors did, and better documentation in relation to the choices the client made. In other words, it is clear that BVA enables trust among the parties.

"We received trust from the client as we were entitled with the solution, which allowed for a high degree of cooperation in the preparation of the pre-project, in the actual pre-project, and in the development of the project scope and other important management documents, which is necessary to prepare early on in the process. If a proper job is done early, there should not be any ambiguities later on in the project" - Project Manager, Contractor 1

"An important element of the BV methodology is that the contractor has the responsibility to describe what to deliver and why they are the experts, which increases the quality of the project. In other words, one really encourages the contractor to justify their choices to a much greater extent. We received better documentation on the consequences of the suppliers doing, and better documentation in relation to the choices we made"- Project Manager, Client

There can be many reasons for the trust that was developed in the two projects. An important source of trust was the interviews in the selection phase, where the contractor shows their expertise and capability, by spending time on truly understanding the client`s determined goals. Trust also seems to be developed because the contractor receives the freedom of finding a solution to the clients need and therefore receives a belonging and ownership to the project. It is reasonable to think that the trust established in the earlier phases is maintained in the execution phase. Hence, the importance of establishing trust in the earlier phases.

To sum up, cooperation is initiated in BV projects as the contractor must demonstrate its capability by using objectively verifiable information to show that they can identify risk in advance, manage the risk when it occurs as well as addressing the project. The trust gained from the interviews gives the client an assurance on the contractors' capability of executing the project in a proper way

and for the proper reason. Trust was also developed due to the transfer of ownership of the solution to the contractor. To gain this trust, there is a need for both parties to have an understanding of the goals, roles and responsibilities.

Even though it was found that trust had been developed between the parties in the Vollebekk and Munkerud projects, an evaluation of all BV projects carried out so far revealed other results. This evaluation was conducted by Difi in autumn 2018. Interestingly, the results revealed that there are more trust in ordinary projects than BV projects. This is fascinating, as trust has been highlighted in this study to be very important. There are several explanations for the results in Difi`s evaluation and expert 1 provided us with two. Firstly, when a new method is introduced in the market, the parties become uncertain and often choose the method that they are used to. Which implies that the traditional mindset of the industry is hard to change. Secondly, the lack of trust in BV projects so far might be because the clients have found it challenging to let go of the control. However, expert 1 believes that the clients' uncertainty will decrease when they over time have executed several BV projects, and then trust will be developed between the parties. Due to the findings of this research, we know that the participants of the two projects experienced trust between them. We have earlier in this chapter analysed some potential explanations for this: the transfer of ownership of the solution, the client providing the contractor with freedom and flexibility, the maintaining of roles and the corresponding responsibilities, the six-page offer and the interview.

			Pre-Qualification	Selection	Clarification
Collaboration	**Coordination**	**Information sharing**	**Contractor:** Max price, progress schedule and location. **Client:** BV Methodology and project	**Contractor:** Risk, added value and their understanding of the project	**Contractor:** Risk, expectations, knowledge of the project
		Defining roles and responsibilities		**Contractor:** Expert **Client:** Provides flexibility and freedom to the contractor	**Both:** Clarify and discuss expectations, responsibilities, roles and risks
		Risk identification		**Contractor:** Six-page offer and interview	**Both:** Develop Risk management plan and WRR
	Cooperation	**Understanding of roles and responsibilities**		**Both:** Six-page offer and interview	**Both:** Clarifications and discussions in the meetings
		Trust		Interviews, client providing flexibility and freedom, the transfer of ownership of the solution	Contractor is seen as the expert

Table 6: Detailed overview of the answers from all interviewees

4.4 The production of the two projects

All things considered, in the Vollebekk project, the information sharing in the earlier phases facilitated a limited need for communication in the execution phase. Still, contractor 1 deliberately through maintained dialogue with the client and the same information level throughout the execution phase. Even though it was limited need for discussion in the execution phase, the maintained dialogue included how to solve things and what it implied in detail, and where they were in the process. However, the client is not supposed to make decisions at this time and must therefore become confident about what will be delivered. The trust facilitated by BVA has been perceived as important in the projects and been highlighted by both the client and the contractor to be an important element in all phases, including the execution phase. The contractors have received the trust to provide the contractor with a better product and of higher quality. Having said that, contractor 1 has so far perceived the execution phase to be carried out smoothly and there have been few issues to discuss with the client during the project execution.

"We experience that we gained as much trust from the client as they via the clients representatives had the opportunity to give" - Manger, Control As

"We perceived a high degree of trust both ways in the two projects" - Consultant, Client

"It was the first phases in the project which laid the foundation for a successful execution phase" - Project Manager, Contractor 1

Contractor 1 further states that most discussions have been between them and their consultants and sub-suppliers, which have been handled without involving the client. After the solution had become final, there have only been a few cases where they used the project scope. When contractor 1 experienced deviations from the agreement in the pre-project, they used the provisions in the project scope and were then able to solve the potential disagreement without consulting the client. The project manager from the client stated that the methodology was used to receive a better product and improved collaboration. However, in the end, it is the content of the contract and the main contractor which are decisive. Therefore, the research

indicates that spending more time on discussing risks, roles, expectations, and responsibility in the earlier phases have allowed there to be fewer discussions in the execution phase.

All things considered, in the Vollebekk project, there have been few disagreements and the parties have overall agreed during the execution of the project.

"The cooperation has been in a certain way closer than earlier. Throughout the project, they have most of the time followed the same direction as the client, with just a few deviations. Overall, there have not been any major discussions and there has been a very good climate between the parties to find good solutions at all times in this project" - Manager, Contractor 2

Interestingly, Expert 2 believe that BVA is not based on collaboration, as one of the elements within the method is to find an expert and the expert is supposed to provide the client with the best outcome. However, the collaboration in the execution phase has been valuable in the projects that expert 2 has conducted, as the collaboration has been seen as working together to find great solutions, which they do by co-operating through regular meetings. However, there can arise some disagreements in finding the solution.

As a recommendation, the project manager from the client states that there should be more clear milestones, and a few meetings to evaluate the different phases, and they could have benefitted from having more distinct phase transitions during the project. Additionally, using a non-BVA contract, the client can demand that the contractor fix a specific problem, compared to BVA, where the client must ask if the contractor has a solution to solve the problem. The research points out that the client could in some cases have benefited from telling the contractor what to do, instead of asking how they will solve it. This is illustrated by one of the client's project manager, who states that they could have put even more pressure on the contractor, although this is not in accordance with the BVA methodology. The way the client communicates with the contractor differs from project to project, in some cases it may be appropriate to ask questions and elaborate, as in the BVA methodology, while in other cases it is more preferred to be strict and

straightforward, as in the traditional model. Independently of the procurement method, as long as we have the specifications as a basis, the contractor has less freedom to go outside the boundaries of the project.

As a final conclusion, the findings of the research point out that the implementation of a project is first and foremost to understand the specific project, the goal of the project, the expectations of the involved parties as well as the role and the standpoint of each party in the project. These aspects are dependent on good coordination and cooperation in the project. It seems that the common understanding among the interviewees is therefore that the BVA method enables these two facets of collaboration, and the time used in the earlier phases are essential for the execution phase. As a final note, with the BVA method, the supplier becomes more aware of performing and delivering as it creates an environment for innovation and development. This creates a performance culture and not a price culture and affects the development of the industry in a positive way (Anskaffelseskonferansen, 2018).

		Pre-qualification	**Selection**	**Clarification**	**Execution**
Coordination	Information sharing	X	X	X	X
	Defining Roles and Responsibilities		X	X	
	Identify Risk*		X	X	
Cooperation	Understanding Goals, Roles, and Responsibilities		X	X	X
	Trust		X	X	X

*identify risk includes WRR and Risk management plan

Table 7: Overview of coordination and cooperation from the analysis

Chapter 5 – Discussion

In this chapter, we discuss our empirical findings in relation to the theoretical framework presented in chapter 3. By using the most relevant findings from the analysis and relevant theory from the theoretical background, we have addressed our research question. Overall, our research has examined if BVA enables collaboration in a construction project, through its two facets, coordination and cooperation. Therefore, the structure of the study is to first look at how BVA enables coordination and cooperation in the early phases, and then look at how the proper use of coordination and cooperation in the early phases enables collaboration in the execution phase. In the discussion, the earlier phases are defined as the pre-qualification, selection, and clarification phase. In other words, the time before the contract is signed.

We have primarily looked at the relationship between the client and the main contractor. From the analysis and the theory, we know that coordination is influenced by information sharing, risk identification, and defining roles and responsibilities. While cooperation is influenced by understanding the goals, roles, and responsibilities and the establishment of trust among the parties. The aim of this research is, therefore, to find if and how BVA enables collaboration operationalised through cooperation and coordination in the four different BVA phases.

5.1 How does BVA enable coordination and cooperation in the early phases?

5.1.1 Coordination: Information sharing, defining roles and responsibilities, and risk identification

According to our study, it is the client's responsibility to coordinate all the administrative parts in the pre-qualification phase. By communicating and sharing information regarding the project and the BVA methodology, the contractor becomes more prepared for the upcoming phases. This is done by inviting the contractor to a dialogue meeting where the client explains their expectations, the risk management tools, and how they will carry out the interviews. The explanation will also be on what the contractors are supposed to deliver, when to deliver and

the format of the offer. This is in line with previous literature, as this phase is implemented to prepare both the client and the vendor on how to accomplish the project (Kashiwagi, 2011; van de Rijt et al., 2011). Sharing relevant information to all parties at the right time is perceived as necessary, as it shapes the basis of the decision and allows the project to progress (Gulati et al., 2012). Therefore, by sharing the stated information, the next phase can start straight away. Our research also points out the importance of utilising the information from the contractors in the pre-qualification phase. By doing so, the client can receive valid information and feedback concerning potential risks, location, and price before the tendering process starts. Our study confirmed the findings from van de Rijt et al., (2011) who state that the contractor can in the pre-qualification phase contribute with crucial information concerning potential risks, as well as obtain information from the client regarding the project.

Our research shows that in the selection phase, the six-page offer, and the interviews were also considered as a valuable source of information, especially for the client. The six-page offer provides the client with information regarding the contractor's expertise, identified risks, and value-added elements. This is confirmed by Kashiwagi (2017). While in the interviews, the contractor needs to show their capability and expertise regarding how to execute the project by elaborate the offer. A similar conclusion was reached by, Stortboom et al., (2017), who explains that the contractor has to explain the possible risks, show accountability and understanding of the BV method during the interview. This suggests that the information received in the interviews is valuable in the early phases and especially for finding the expert contractor.

There were also signs of information sharing in the clarification phase, as in this phase the parties needed to share information regarding their expectations and knowledge regarding the project in the meetings. The research identifies the clarification phase to be a pure planning phase with a good basis for documentations. This is coherent with Kashiwagi (2017).

The methodology facilitates the contractor to provide the client with feedback throughout the phases. However, the research also underlines the importance of the client providing the contractor with feedback, as the client, despite the fact not being the expert, can contribute with valuable information. The feedback from the client is, as the methodology requires, to be in the shape of questions. The literature points out that the client is supposed to ask questions rather than tell what the contractor should do (Snippert et al., 2015). However, the same researchers found that challenging to achieve, as the client was not able to let go of the control. Contrary to these findings, our study found the use of feedback from the client in the clarification phase to be beneficial, as the contractor could re-evaluate their initial proposal. Thus, our research shows that the client and the contractor maintained their roles and responsibilities throughout the process. This is in line with previous research, which confirms that the feedback from the client is essential, as the client might hold critical information and knowledge regarding the project. This information can be used to adjust and refine and thereby improve the initial proposal from the contractor (Kashiwagi, 2017). Furthermore, the research also indicates that the feedback in shape of questions could in some cases be inefficient. Hence, in some cases, there could be more beneficial for the client to strikethrough with their opinion, to make the process more effective, while in some cases, the open questions were more suitable. Overall, our research found that there is room for feedback in the relationship between the client and the contractor.

The research, therefore, indicates that the parties share information in the earlier phases of the BV process. Similarly, information sharing has been pointed out by Xue et al., (2007), to be important in all phases of a project.

When practicing BVA, the research shows that the client is supposed to define the goal, while the contractor is supposed to define how to reach the goal. In terms of the roles and the corresponding responsibilities, the research shows that already in the selection phase, the contractors take the role as an expert, and start to define how they can carry out the project. In this process, the research illuminates the importance of defining the expectations, see the situation of the other, and receive an overview of what they are accountable for. These definitions are dependent on information concerning what role and responsibilities the client expects the

contractor to take, and vice versa. The role descriptions are in line with other researchers, as the role of the client is to determine the desired project goals, while the contractor decides how to reach the requested goals (Kashiwagi, 2011: Kashiwagi & Byfield, 2002). In the two projects, the roles and corresponding responsibilities were further defined in the clarification phase, specifically, the development of the preparation of the pre-project, the actual pre-project, the project scope, and in the documentations the BV methodology require the contractor to make.

Our research identifies several coordination tools the contractor can apply throughout the project. The identified tools are the risk management plan, and the weekly risk report. These coordination tools help the parties to keep track of the progress of the project as well as to uncover potential risks. By using the risk management plan, the contractor and the client have a certain level of control as this should be both transparent and visible for the parties involved. These basic findings are consistent with the theory as the risk management plan, and the weekly risk report (WRR) is used to receive transparency for all relevant stakeholders, and to communicate the risks as early as possible (Kashiwagi, 2017).

The risk management plan is identified in the research to be the contractor's most important tool and should only consist of risks that might happen, as well as measures to prevent them. The identified risk should as soon as possible be included in the risk management plan, and then placed in the WRR of the week they potentially will arise. This is confirmed by the literature, as issues related to coordination failures emerge due to the task and environment uncertainties, should first and foremost be identified and managed, and secondly be addressed efficiently (Gulati et al., 2012).

By using the WRR frequently, the contractor can early notify the client about deviation, which can reduce the impact of the outcome when it occurs. Through placing emphasis on frequent information sharing by using the stated coordination tools, the parties can prevent coordination failures. Since coordination failures can occur due to incomplete, inefficient, imprecise, inconsistent, delayed information or a mixture of them, the failures can cause waste in terms of both time and cost

(Xue et al., 2007). As the WRR is submitted weekly in the execution phase, both the client and the contractor are aware of what will happen next, and the possibility for coordination failure decreases. This is confirmed by Kashiwagi (2017), as the WRR should be used as a tracking tool, so the client can follow and be aware of the project status. Therefore, there is a need to truly understand it, as without this understanding, the WRR will not be utilised appropriately. Despite that, our research shows that a lot of traditional principles for management and contract management were used, in addition to the WRR. Therefore, the WRR might be perceived as unnecessary. However, in the end, our findings suggest that when implementing several BV projects, the understanding regarding the WRR becomes clearer.

Overall, there has been coordination in the earlier phases in terms of information sharing, defining roles and responsibilities and risk identification. Information sharing has been utilised in the information meeting in the pre-qualification phase, the six-page offer, and interview in the selection phase, as well as the meetings in the clarification phase. Our research highlights information sharing regarding risk, the project, and the BV methodology. There has also been a focus on the feedback from the client. In our research, defining roles and responsibilities happens already in the selection phase, as contractor takes on the role as an expert in order to reach the project goal. The client on the other hand, provides an environment for the contractor to adapt its role. Regarding risk identification, the methodology enables this in the six-page offer, the interview and in the WRR, and Risk management plan.

5.1.2 Cooperation: Trust, and understanding of goals, roles, and responsibilities

Our research points out that already in the selection phase, the parties receive an understanding of the project, including goals, roles, and responsibilities of the involved parties. This is done through the offer as well as from the information provided in the interviews with key personnel. This is in line with the research conducted by van de Rijt & Witteveen (2011), as they found that the client needs to evaluate the contractor's understanding of the project, specifically how they will carry out the project from the start to the end. It is reasonable to believe that this

understanding includes goals, roles, and responsibility from the start of the project to the end.

Our research shows that the parties should know their roles and responsibilities before the contract is signed in the clarification phase, as well as the contractor should have an understanding of the project, including the goals determined by the client. Dewulf & Kadefors (2012) found in their research that achieving a common understanding of the project, the parties create an environment for cooperation. Further, the researchers explain that this type of cooperation is facilitated through a "stewardship relationship". Our findings reveal that the client and the contractor established a "stewardship relationship". This relationship occurred, as the client provided the contractor with the confidence needed by taking a step back and making them the responsible party. Therefore, the client established a situation that facilitated the contractor to accomplish the goal of the project. The trust and confidence enabled the contractor to provide the client with a project of high quality. It is reasonable to believe that this is due to the emphasis in the BV methodology on understanding the goals, roles, and responsibility, as well as the establishment of trust. Snippert et al., (2015) had to some extent the same perception of the connection between a "stewardship relationship" and BVA. However, they found several barriers to obtain this type of relationship using BVA. Contrary to the findings of Snippert et al., (2015), Kashiwagi (2017), defines the role of the client to take a step back and leave the following-up responsibility, quality control, as well as risk management to the contractor. This suggests that in theory, we know there is a possibility to establish a "stewardship relationship", but this might be hard to achieve in reality. However, in the two projects this was established and there can be several reasons for why the relationship did occur. The trust obtained in the relationship could be due to the transfer of ownership of the solution, the explanation of the contractor's expertise in the interview, as well as the trust developed due to the maintaining of the roles and responsibilities.

Furthermore, our research found a similar outcome as Snippert et al., (2015) concerning the difficulty of letting go of the control for the client. There was a distinction between the research of Snippert al., (2015) and our research, as they found that the client regardless of using a BVA method took a managing and

controlling role. Nevertheless, in our research the client found it hard to let go of the control, but maintained the role the BVA methodology requires the client to have. This can be explained by the use of a BVA mentor and underlines the importance of using one. Snipper et al., (2015) suggested in their research, that the lack of experience was the reason why the client took a managing role. This implies that with lack of experience, the parties need to invest in a mentor that can provide them with as much understanding of the methodology as possible. Regardless of the differences, our research demonstrates that in some cases demanding the contractor to fix the problem immediately could be beneficial. Despite the challenges of letting go, our research found that there have been few errors needing to be solved by applying BVA, compared to the traditional approach. A reason for this can be, that the contractor receives the responsibility of getting things done in the project, as well as they are responsible for their own mistakes. This results in less speculations, which implies that the parties need to truly understand the roles and corresponding responsibilities. This is in line with a research conducted by Child (2001), who found that trust is an alternative for close control.

Our research indicates that transferring the ownership of the solution to the contractor has provided the project with trust and satisfying solutions. The latter is confirmed by the literature, as Oliver (1990) points out that cooperation is crucial to achieve better solutions, as firms typically execute cooperation to seek operational or technological benefits. These benefits can be difficult or impossible to obtain without cooperation. This can be explained by the arrangement of resource interdependencies (Pfeffer & Nowak, 1976), among the participants, as one party expected benefits from the particular relationship is dependent on the other party's contributions (Gulati & Sytch, 2007). The BV methodology enables the contractor to provide the client with operational or technological benefits, that would have been impossible without the contractor. If the client wants to receive benefits from the contractor, the client needs to give the contractor a certain contribution. Our research show that the client has to trust the contractor to be the expert by letting go of the control and enables for a situation where the contractor can carry out a project in the best possible way. Therefore, the contractor will provide the client with a product that would not be possible without the contractor`s expertise. This

particular relationship Gulati & Sytch (2007) refers to, was seen in the two projects. Trust is therefore necessary to achieve the stated relationship.

Both the research conducted by Snippert et al., (2015) and Oliver (1990), seemed to have the same message. Therefore, it is justifiable to conclude that BVA creates an environment where the client trusts the contractor to provide a better solution, which requires cooperation. However, this environment is not certain nor easy to achieve, as it requires the client to hand over the control to the contractor. Hence, the importance of trust and the understanding of the project, specifically the roles.

The interviews with the contractors were perceived as highly beneficial by the clients, as the interviews facilitate an easier way of finding the expert, corresponding to the goal of the methodology (Kashiwagi, 2009). The trust is established in the interviews, as the key persons convince the client with their expertise and demonstrate their capability to execute the project in a proper way. This is confirmed by the literature, as the questions are designed to reveal the relevance of the interviewee's expertise and their reflection of the project (Verweij & Kashiwagi, 2016). Our research shows that trust was established in the interviews of key personnel, as they gave the client the confidence, they needed to execute the project. The literature states that information-sharing between the client and the contractor foster greater confidence among them (Beach et al., 2005), and therefore our research in relation to what has been discussed truly believe trust is established in the interviews. However, it needs to be said that the trust must be maintained throughout the process.

The research show that once the contractor has been selected, the contractor is in control of the process, and therefore receives the confidence and responsibility to execute the project. Lumineau & Malhotra (2011), confirms that allocating the responsibility to the contractor provides benefits such as trust, in addition to commitment-induced efficiency, as well as it improves allocation and utilization of the resources. Our research indicated that the contractor felt like they received trust and confidence from the client in all phases. The trust made it easier for the parties to understand each other, which requires and invites cooperation. Establishment of trust in a project is confirmed by Snippert et al., (2015), as trust is developed in BV

project due to the thorough cooperation and involvement, as well as the communication of project goals.

It is clear from our research that the contractors received responsibility early on. This is confirmed in the research, as when receiving the responsibility, the contractor felt they could provide the client with a better "product". Since they received more flexibility and freedom to reach the project goals, it allowed them to use the funds in the project to develop new solutions and method in how to design and build. The literature confirms this, as allocating more responsibility to the contractor increases the flexibility for the contractor (Briscoe et al., 2004; Kashiwagi, 2011).

So far, our study has identified several sources of trust between the client and the contractor. The last finding in our research concerning trust, is the trust established due to the functional questions in the offer used in the BVA. By applying functional questions, and therefore not using detailed requirements, as in the traditional method, the contractor receives a belonging and an ownership to the project on a completely different level. This can be explained by the contractor being able to solve the problems themselves and not being told how to solve them. Trust is therefore found in the relationship due to the transfer of ownership the BVA facilitate. Theory states that the use of open and functional questions in the proposal also encourage the contractor to be more innovative by increasing their flexibility (Van Valkenburg et al., 2008). However, it is important to point out that as long as there are some specification as a basis, the contractor do not have full freedom to address the solution.

An interesting discussion in our research concerns the evaluation by Difi of already executed BV projects. The evaluation revealed that the client had perceived a higher degree of trust in ordinary projects than in BV projects. This research proposes several reasons for trust to be developed, which is the opposite of what other clients and contractors have experienced. Firstly, the trust is established in the interviews. Secondly, trust is also seemed to be developed due to the freedom the contractor receives to find a solution to the client's needs. Lastly, trust can be established by handing over the control to the contractor, even if this has been proven to be hard

by other researchers (Snippert et al., 2015). Nevertheless, our research experienced trust in the relationship, as well as the challenges described by Snippert et al., (2015). This implies that the trust obtained in the two projects have been crucial, as the parties manage to maintain their roles. This entails that the client was able to let go of the control they usually have in a non-BVA project.

To conclude, the parties has to know and understand their goals, roles, and responsibilities before the contract is signed. The research highlights that the client should establish an environment that enable the contractor to provide the client with a project of high quality, as well as making clarifications early on. Further, letting go of the control has been identified to be a challenge for the client, but the client manages to maintain the role the parties defined early on. However, in some cases the research found that it could be beneficial to strike through with an opinion. Trust has been established as the contractor receives confident from the client to solve unformulated solution, this allows for the contractor to feel an higher level of ownership to the solution. Trust has also been established in the interview.

5.2 How does BVA in the early phases enable collaboration in the production of the project?

5.2.1 Early involvement of contractors

Early involvement of contractors has been identified in our research to be an essential element in order to execute a project of high quality. It applies to all project executions, what the parties do early facilitates what happens later.

Our study found that involving the contractor early is of great advantage. The client receives the expertise from the contractor who has the practical knowledge on the area, and thereby knows how to solve the as yet unformulated solution. This is in line with Song, et al., (2009, p. 2) definition of early involvement. They define early involvement of contractor to be “a relationship between a contractor and an owner or a designer that engages the contractor from the early design stage and allows the contractor to contribute its construction knowledge and experience to design.“ In addition, our research points out the necessity of understanding the expectations of

the involved parties, which they received early on. A similar conclusion was reached by Beach et al., (2005), which states that the expectations between the parties will become clearer by involving the contractor early on. By receiving this understanding early, it is reasonable to believe that the expectations become clearer for both parties, as was found in Beach et al., (2005). This implies that already in the earlier phases the parties receive an overview of what the project entails, which is beneficial for the later phases.

The early involvement mindset, which BVA requires, allows the contractor to provide the project with the right expertise earlier than in a traditional approach. The research underlines the importance of early involvement, and the sooner the better. From the analysis, it is clear that this mindset found in the BV methodology has been important for the two projects and helped the parties to more easily fulfil the goal. The contractor had the possibility to early on address the unformulated solution. Therefore, they could design the building in terms of what they believed was correct to fulfil the function criteria and project goals determined by the client. In line with the ideas of other researchers, it can be concluded that by involving the contractor early, the parties not only reach the project goals, but one achieves increased quality of the project, higher level of innovation, and reduced product and development costs (Van Valkenburg et al., 2008; Wagner & Hoegl, 2006). This suggests that the BVA facilitate early involvement, which is essential for the later phases.

Our research barely touches on the topic of early involvement of sub-suppliers, but our study shows that the coordination between the contractor and their sub-suppliers are just as important as the one between the contractor and the client. However, the methodology is incredibly new to the sub-contractors, and they therefore have less insight and motivation to change their mindset to think in this new manner. It is justifiable that the benefits of involving contractors also apply to subcontractors. However, this is outside the scope of the research, as we only examine the relationship between the client and the main-contractor.

5.2.2 Coordination: Information sharing, risk identification, and defining roles and responsibilities

In our research, we found that information sharing starts already in the pre-qualification phase. In this phase, the contractors are invited to a dialogue meeting in advance, before the competition is announced. By doing so, the contractor has the opportunity to come back with feedback such as maximum price, progress plan and location. This information is according to van de Rijt et al., (2011) important, as the phase reduces the need for communication, directions, question and answers in terms of technical requirements of the project later on. The research confirms that the information was valuable for the production of the projects, especially information regarding what the client wants, how to answer the justifications, the risks, and the added value, as well as how the client will carry out the interviews. This information allowed the contractor to be better prepared later on in the project.

In the selection phase, the contractor is supposed to deliver a six-page offer, whereas the client will rank them according to the different criteria (Appendix 6). The client provided the contractors with useful information on a general basis regarding what and how the offer should be evaluated. The evaluation which was done by the client concerned the developed pre-project, what the contractor will deliver, potential risk, as well as the proposed price for carrying out the project. Our research indicates that the evaluation was perceived as beneficial, as crucial information provided by the contractor, such as risks, price and developed pre-project, were evaluated ahead in time. This provided the project with a solid foundation of documentation if unforeseen events occur in the execution phase. In line with the ideas of Al Nahyan et al., (2019), it can be concluded that having a solid base of documentation allow for enhanced coordination throughout the project.

In the clarification phase, there is according to our research a good basis for documentation, including laws, regulations, interviews, as well as the project scope, which has been highly beneficial in the execution phase. Similar to our research, Briscoe et al., (2004) state that giving the responsibility of information generation and control to the contractor allows for improved communication. The information from the documents may explain the improved communication in the early phases,

which facilitated less communication in the production of the project. To illustrate, if the contractor experienced deviations from the agreement in the pre-project, they used the provisions in the project scope. They were then able to solve the potential disagreement without consulting the client. Interestingly, there is less need for communication in the execution phase. However, the study aims to find if the coordination and cooperation in the early phases enable collaboration in the execution phase. One can therefore argue that this type of coordination results in less need for collaboration in the production of the project.

That said, the parties saw the need for communicating to some extent in the execution phase as well. In the execution phase, through client-meetings and by visiting the construction site, the client obtained information regarding possible deviations. Further, they had the possibility to reach out to the contractor if they perceived an appearance of a potential dispute in the project. This is in line with Beach et al., (2005) research, which found that frequent communication with key contractors allows for a working environment of mutual support, which can result in a more efficient way of solving problems when they occur. The emphasis on communication throughout the phases of the project, seemed to allow for an environment of mutual support.

When it comes to risk identification, the research without a doubt shows that the BVA enables the parties to identify risk, however, the outcome of the use of the tools varies. Throughout the phases, the contractor together with the client have the responsibility to identify risks. The contractor is in need to form the work structure to be able to handle and coordinate the process to reach the desired project goal. This is exemplified by our research as there is a need in the clarification phase to set up the progress plan in order to receive an overview of the risks and measures on how to handle these risks in the execution phase. The coordination in this phase is according to the research practiced through the WRR and the Risk management plan. This is consistent with what has been found in the study conducted by Corea et al., (2016).

The findings point out that the tools made in the clarification phase are used to increase the coordination in the execution phase. This enables the contractor together with the client to cater for the uncertainties as early as possible, as well as identifying measures to prevent and minimize the risk in the production of the project. According to our research, it is necessary to apply the weekly risk report from the first week in the execution phase, even if there is nothing new to report. The purpose is that the top management of both the client and contractor receives an overview of the risks of a particular week, which will provide them with the direction of the project progress. It also provides the parties with better control of the risk measures identified earlier in the project, which is in need to be controlled to mitigate the risk. This is consistent with the theory, as the WRR aims to establish transparency for all relevant stakeholders, support continuous enhancement as well as avoid contractual issues by communicating information regarding risks as fast as possible. Therefore, the use of the weekly risk report is essential in every project (Kashiwagi, 2017).

Even though the findings indicate that the WRR was hard to understand and implement, it was perceived as beneficial in one of the projects. This can be explained as the contractor placed emphasis from the beginning of the project to make all the BV elements correct, including the WRR. As a result, the contractor managed to forecast some of the risks in advance and thereby avoided some expenses for the client. Knowing this, it is especially important to place emphasis on this type of coordination tool as the identified risk and measurement are critical for the project progress. It is also reasonable to believe that without this identification, the production of the project has a greater chance of being delayed and/or go over budget. Therefore, our research emphasises the importance of applying coordination tools properly in order to provide value for the client and meet the objectives of the project. This can be exemplified by using Sobrero and Schrader (1998) two perspectives of coordination, namely contractual and procedural coordination. The literature points out that there is a need to apply both to achieve improved project delivery (Sobrero and Schrader, 1998). The findings reveal the importance of catering for uncertainties as early as possible in the pre-qualification. The risks are identified by the contractor and communicated to the client. By using the weekly risk report and thereby have a continuous dialogue

throughout the project regarding risks, the coordination stated by Sobrero and Schrader (1998) will be ensured by the contractor. Hence, coordination can be enabled by BVA, as the contractor takes the role of identifying risk, and thereby apply contractual coordination. By using the weekly risk report and thereby ensure the contractual terms, the parties also apply procedural coordination. The use of the WRR and risk management plan allowed one of the contractors to reduce some risk-related expenses in the execution phase.

Our research further illustrates that the contractor must understand their responsibility of identifying and manage the risk, as it is the contractor who has the most benefit from the plan. If the parties have information regarding potential risks, it is reasonable to believe that it will be easier to make decisions in the production of the project. This relates to the importance of precise information given on time, which can facilitate easier decisions making, as well as it allows the project to progress (Xue et al., 2007). It is clear that proper use of coordination tools is important to identify risk, as well as it is highly beneficial for the execution phase.

To conclude, information has been shared from the very beginning of the process, until the production of the project. The information shared throughout the project has allowed for less communication in the execution phase. The contractor has been able to use the information in the documents they have developed in the earlier phases when facing issues. In terms of defining roles and responsibilities, the research has found that defining roles and responsibilities have influenced the execution phase, as these definitions have been important for the understanding of these, which was shown in the first part of the discussion. The risk identified in the early phases has been highly beneficial for the production of the project. There has been showed that one of the projects avoided some risk-related costs in the execution phase due to the time spent on identifying risks in the earlier phases.

5.2.3 Cooperation: Trust, and understanding of the goals, roles, and responsibilities

To receive an understanding of the goals, roles, and responsibilities, both parties need to define these. This finding indicates that the understanding of the goals, roles, and responsibilities are necessary to prepare early on in the process. If a proper job is done on defining these early, there should not be any ambiguities between the participants later on. These definitions led to a clearer understanding of what the project actually entailed. The research points out that the contractor has the responsibility for the solution and the quality of the project, therefore spending time together with the client on defining the quality and what the project entails for both parties provides an understanding of the project goals. Although, adjusting these definitions already in the selection phase is perceived by the client and the contractor to be of great advantage. It is therefore reasonable to believe that the understanding the parties receive is important in order to not experience any ambiguities in the execution phase. This result ties well with Cronin & Weingart (2007) studies, who underlines the importance of having a common understanding of a problem, as without this understanding the parties can experience adverse results.

Our research found that the clarification phase is managed by the contractor, whereas the contractor is responsible for leading meetings, writing reports, and making plans. So already in this phase, the workload for the client is reduced. This is consistent with the theory, as Kashiwagi (2017) describes that the client delegates the responsibility to the contractor in term of leading and coordinating the project in the clarification phase. Thus, the research highlights that the client has to take the role of helping and guiding the contractors in the best possible manner, for them to do a good job executing the project. This is also in line with how Kashiwagi (2017) defines the roles of the client, whereas the client is supposed to perform quality assurance, carry out the activities identified by the vendor, and enable the vendor in order for them to execute their work in the best possible way. Therefore, by not receiving the understanding of the roles and the corresponding responsibilities, the client may not provide the contractor with the environment that

enable them to utilise their expertise. In such an environment, it has been shown in our research that trust is important.

It is clear that the clarifications made by the two parties in the earlier phases are of great importance, as then there is limited need for discussions in the production of the project. The clarifications made in the clarification phase are identified by our research to be the most crucial. In line with the theory of Kashiwagi (2017), our research emphasises the clarifications made by the client and the contractor. The clarifications which were made by the client and the contractor was the most valuable for the execution phase. The clarifications made in this phase were which functions to apply and how they would address the project. This must be aligned with the budget and the project goals, which needs to be linked to the stakeholder`s descriptions and perceptions regarding what a good solution is. We therefore believe that the clarification done in this phase enable the parties to receive an even better understanding of the project later on.

In the earlier phases, the client communicated that trust is absolutely crucial in the relationship. As the contractors proved to have few undocumented requirements, transparent financial recording, and no attempts were made to deceive the client, there were few challenges that needed to be addressed. Our research points out that the interviews with key persons have been important for all the participants, especially the clients, as it made it easier to evaluate core personnel. The interview also allowed for clarifying what the contractor has control over, which should easily be transferred to the execution phase. Similarly, Storteboom et al., (2017) found that the interviews are important, in order to know if the contractor has control over the possible risks, understanding of their responsibility, and the BV method. Therefore, our research shows that trust is established as the contractor has to demonstrate its capability to execute the project, by using objectively verifiable information to show that they can address the project, as well as identify risk in advance and manage the risk when it occurs.

Our research concludes that there is reasonable to believe that the understanding the parties receive is important in order to not experience any ambiguities in the execution phase. In addition, our research highlights the importance making clarifications early on, in order to avoid unnecessary ambiguities in the execution phase. Overall, the identified trust established in the earlier phases are of high importance in the execution phase. However, we cannot be sure if it is a causality between the trust and the few challenges in the project, as there could be other reasons for the few challenges in production of the project.

The research reveals several interesting findings concerning coordination and cooperation and how BVA enables them. However, an important finding is that the elements that influence coordination and cooperation cannot be clearly separated. Firstly, to receive trust in the interviews, the client is dependent on the contractor providing them with information regarding the project. Therefore, one can argue that to receive trust there is also a need for coordination, which makes the two perspectives dependent on each other. Secondly, in order to receive an understanding of the goals, roles, and responsibilities the parties are depending on defining them, and share information regarding these. However, we have in this research identified cooperation to be the deciding factor to gain trust and understanding of goals, roles, and responsibilities, and therefore placed emphasis on how trust and an understanding on goals, roles, and responsibilities influence cooperation.

Chapter 6: Conclusion

The aim of this research was to find if the Best Value Approach enables collaboration in a client- contractor relationship. There is a common understanding among researchers that collaboration is crucial in a construction project (Bygballe, Jahre, & Swärd, 2010; Eriksson, Lingegård, Borg & Nyström, 2017). Considering that previous research points out that collaboration is absence in a Best Value project (Joudi, Breivik, Wondimu & Houck, 2018; Rivera & Kashiwagi, 2016), we needed to take a different approach than previous research in order to find if BVA truly enable collaboration. We therefore chose to use Gulati et al., (2012) perception of collaboration, which concerns that collaboration is dependent on coordination and cooperation. To address our research question, we needed to find if the facets of collaboration, namely coordination and cooperation is applied throughout all phases of a BVA project.

In the first sub-question we have examined how BVA in the early phases enable cooperation and coordination. In the second sub-question, we have examined if the perception of coordination and cooperation in the early phases contributes to improved collaboration in the production of the project, specifically in the execution phase.

To examine if coordination was applied in the earlier phases, we identified several elements that contributes to increased coordination. These elements are information sharing, defining roles and responsibilities and risk identification. Many of our findings reflects the literature, and our findings thereby show that BVA indeed enables coordination in a construction project. However, the research identifies two differences from the experiences from the two units of analysis, Munkerud and Vollebekk kindergartens, and previous literature. Firstly, in the BVA methodology previous literature states that the client is encouraged to ask questions rather than tell the contractor what to do (Snippert et al., 2015). However, our research found that in some cases the parties could have benefited from the client striking though with an opinion rather than asking how to solve the issue. Secondly, previous literature on BVA, underlines the importance of using the WRR to identify risk and achieve transparency among the parties (Kashiwagi, 2017). Even if our research

found the WRR to be highly beneficial, the research also found it to be difficult to use, thereby the participants lacked the motivation to use it properly. We have identified two explanations. Firstly, the parties have limited experience of using the WRR, as this is the first time they implement a BVA project. Secondly, there were used a lot of traditional principles for management and contract management in the two projects, which made the WRR excessive. Furthermore, information was shared in all phases, as well as the roles and responsibilities were defined in the selection and clarification phase. Risk was also identified in the selection and clarification phases. All three elements contributed to a better understanding and overview of the projects.

In order to find if BVA enabled cooperation, we identified common understanding of the goals, roles, and responsibilities, as well as trust to be essential. Most of our findings were confirmed by already conducted research. However, there were some distinctions in this part as well. One distinction concerns the understanding of the roles and responsibilities of the parties. Our research found that it was challenging for the client to let go of the control in the execution phase but managed to maintain the role the BVA methodology requires. Snippert al., (2015) identified the same challenge, however, the client regardless of using a BVA method took a managing and controlling role. Using an experienced mentor is therefore advised to receive an understanding of the roles and responsibilities within the methodology. In line with the research conducted by Snippert et al., (2015) and Oliver (1990), we found that BVA enables an environment where the client trusts the contractor to provide the client with a better solution. Thus, Snippert et al., (2015) did not reach the same conclusion as our research. The environment needs to facilitate the contractor to solve the problems themselves. Therefore, an advantage is how BVA enables trust, which force the supplier to show why “they as a group” is chosen. However, this environment is not certain nor easy to achieve. The research suggests that trust is essential for the parties to achieve such an environment. Our research place emphasis on the understanding of goals, which was received early on by both parties. However, it was in the clarification phase the understanding became sincere. In this phase, the parties made the clarification for the production of the project. This is in line with earlier research (Kashiwagi, 2017).

In a BVA project, the contractors are included early on. This has been identified as an essential element in order to execute a project of high quality by both our research and previous research (Song et al., 2009). The early involvement of contractors allowed for the parties to enhance the execution phase, as what the parties do early facilitate what happens later.

Coordination was perceived in the research to be essential in order to achieve collaboration in executing phase. Our research corresponds with the research conducted by Briscoe et al., (2004). This can be explained by the emphasis placed on documentation in the early phases. However, this facilitated a limited need for communication in the execution phase. Furthermore, in line with Beach et al., (2005) the research also found that information sharing throughout the phases allow for an environment of mutual support in the execution phase. Therefore, one can argue that the coordination found in the early phases allowed for some collaboration in the execution phase, if such an environment is established. Defining roles and responsibilities enhanced the understanding of the goals, roles and responsibilities in the selection, clarification and execution phase. Hence, our findings show that these definitions influence the collaboration in the execution phase. In terms of risk identification, the research is overall consistent with Kashiwagi (2017). As Kashiwagi (2017) states, the risks identified in the clarification phase, are communicated through WRR in the execution phase, which was done in the two projects. Therefore, BVA enable the contractor to identify risk early on, which due to the weekly risk report will be shared in the execution phase and increases the transparency among the parties. This enable collaboration in the execution phase, as the parties work together to minimise the possibility of risk occurring in this phase.

Cooperation was also perceived as important when aiming for collaboration in the execution phase. As stated earlier in the conclusion, the clarification made in the clarification phase was highly important for the understanding of the project. Being able to make these clarifications early on allows for less disagreements in the production of the projects, and a faster start of the production. This result ties well with Cronin & Weingart (2007) studies. These clarifications allowed for limited need for collaboration in the execution phase, as there were less disagreements to

address due to the clarifications in the execution phase. Therefore, the parties have to a lesser extent interact with each other to reach the common goal. An interesting deviation from the literature (Snippert et al., 2015) and other BVA projects conducted in Norway is that trust was established in the Vollebekk and Munkerud projects. The identified trust established in the earlier phases was identified to be of high importance in the execution phase. However, our research could not be certain if it is a causality between the trust and the few challenges in the project, as there could be other reasons for the few challenges in the production of the project.

The research show there is a certain degree of dependency between coordination and cooperation, which makes it challenging to separate them. This is in line with the research conducted by Gulati et al., (2012) as well.

To answer our research question, we can conclude that there needs to be a high level of coordination and cooperation in a BV project. Through the two projects we have seen the possibility of achieving both coordination and cooperation if the method is applied properly. As we based our research on the work of Gulati et al., (2012), this can indicate that BVA enable collaboration in a construction project. The findings reveal that what the parties do in the early phases, in terms of coordination and cooperation, facilitate collaboration in the execution phase. This highlights the importance of accurate work in the early phases.

6.1 Limitations and Recommendation for Future Research

The research reveals that the parties in the construction of Vollebekk and Munkerud kindergarten perceived both coordination and cooperation throughout the BVA process. However, there were a couple of issues which are important to have in mind in order to utilise coordination and cooperation even more. We will in this section discuss these issues as well as the limitation in terms of our data and recommendations for future research.

Firstly, even though we identified trust to be achieved as a result of cooperation, trust can also be obtained as a consequence of sharing information, which the research defined as coordination. This indicates that the two perspectives are to

some extent dependent on each other. It is therefore challenging to properly distinguish how coordination and cooperation influence collaboration.

Secondly, Omsorgsbygg is our main source of information, and they have only conducted these two projects. Therefore, it can be hard on their first attempt to receive full utilisation of the methodology and receive the results the methodology promise. As the methodology is newly introduced in Norway it requires a change of the behaviour and mindset among the project participants, this change is hard to achieve on the first attempt.

Thirdly, the coordination tool, WRR, which was applied in both projects, was either considered unnecessary, difficult to use or valuable. In order to better exploit the benefits of a WRR, we believe that if the WRR was used in accordance to the methodology, the answers received could be different.

Fourthly, the methodology has been adjusted by Difi to fit the way it's done in Norway. Therefore, the theory from the US and Netherland does not always match the practises in Norway. There has also been some adjustment of the methodology internally in the two projects. These adjustments can cause losses of aspects that are important in order to obtain full effect of the methodology. The outcome of the project can therefore be due to randomness instead of the methodology.

Fifthly, a limitation in terms of data collection, was the time and capacity constraint. As the construction of the two projects were not completed at the time the data was collected, we were not able to see the finished result of the project. If we have had the opportunity to take part of the whole process, form the first phase to the last, we would be able to get more information and more accurate answers.

Lastly, as there only was two units of analysis, we decided to include an external more experienced client, as well as an external BVA expert to increase the credibility of the research. However, to receive an even more precise results, we believe there should be more units of analysis included to truly underline the findings.

6.2 Future recommendation

Recommendations for future research is first and foremost to take a similar approach as this study, but use more than two units of analysis, to be able to reach findings that are easier to compare and generalise. There could also be interesting to further examine how cooperation and coordination influence each other when practising BVA, as was found in this research. The third recommendation for future research is to examine the effect of involving the sub-suppliers earlier when practising BVA, as this was barely touched upon in our research. Another recommendation is to further investigate the evaluation conducted by Difi, especially the question regarding trust. As we fund trust to be highly important in a BVA project. Lastly, as the method becomes more mature nationally, the last recommendation is to look at the changes in the hybrid versions and how the method develops optimal utilisation of collaboration.

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Appendix

Appendix 1: Interview-guide Client

1. Hvilken rolle/stilling hadde dere i de to prosjektene?
2. Fortell kort om de to aktuelle prosjektene (omfang, kostnad, størrelse, tid)

Hvorfor BVA – Fordeler/Utfordringer

1. Kan dere definere kort hva dere legger i BVA?
2. Hva er deres syn på BVA så langt?
3. Hvorfor valgte dere å ta i bruk BVA i prosjektene deres?
4. Hva er de største forskjellene mellom den metoden dere brukte før og BVA?
5. Hva er de største fordelene ved bruk av BVA?
6. Hva er de største ulempene/utfordringer ved å ta i bruk BVA?
    a. Hvordan kan man evt løse disse?
7. Med tanke på at forbredelsesfasen er frivillig, benyttet dere av denne fasen?
8. Hadde dere et mål om økt samarbeid, samhandling eller koordinering?

Samhandling, samarbeid og koordinering

1. Hvordan tilrettelegger BVA for samhandling i de forskjellige fasene?
2. Hvordan tilrettelegger BVA for samarbeid i de forskjellige fasene?
3. Hvordan tilrettelegger BVA for koordinering i de forskjellige fasene?

4. Hvordan tilrettelegger samhandling, samarbeid og koordinering for en mer suksessfull utførelse, udyp?

5. Med tanke på at BVA baserer seg på at man skal involvere leverandøren fra begynnelsen av, ser dere noen forskjeller ved å involvere leverandøren tidlig i prosjektet sammenlignet med senere?
    a. Hva slags fordeler er det ved å involvere leverandøren tidlig?
    b. Hva slags utfordringer møter man på/opplevde dere ved å involvere leverandøren tidlig?
    c. Hvordan påvirkes utførelsesfasen ved å involvere leverandøren tidlig?
6. Opplevde dere (økt) tillit ved å ta i bruk BVA?

Vår masteroppgave er blant annet basert på en artikkel skrevet av Gulati et al., (2012) hvor de konkluderer med at økt koordinering og samarbeid fører til en bedre samhandling

1. Hva tenker dere om dette?

Appendix 2: Interview-guide main-contractor

1. Hvilken rolle/stilling hadde dere i de to prosjektene?
    a. Fortell kort om de to aktuelle prosjektene (omfang, kostnad, størrelse, tid)

Hvorfor BVA – Fordeler/Utfodringer

2. Kan du definere kort hva dere legger i BVA?
3. Hva er ditt syn på BVA så langt?
4. Hvorfor valgte dere å delta i konkurransen?
5. Hva er de største fordelene ved bruk av BVA?
6. Hva er de største ulempene/utfordringer ved å ta i bruk BVA?
    a. Hvordan kan man evt løse disse?
7. Med tanke på at forberedelsesfasen er frivillig, benyttet dere av denne fasen?
8. Hadde dere et mål om økt samarbeid, samhandling eller koordinering?

Samhandling, samarbeid og koordinering

1. Hvordan tilrettelegger BVA for samhandling i de forskjellige fasene?
2. Hvordan tilrettelegger BVA for samarbeid i de forskjellige fasene?
3. Hvordan tilrettelegger BVA for koordinering i de forskjellige fasene?

4. Hvordan tilrettelegger samhandling, samarbeid og koordinering for en mer suksessfull utførelse, utdyp?

5. Med tanke på at BVA baserer seg på at man skal involvere leverandøren fra begynnelsen av, ser dere noen forskjeller ved å bli involvert tidlig i prosjektet sammenlignet med senere?
    a. Hva slags fordeler er det ved å bli involvert tidligere?
    b. Hva slags utfordringer opplevde dere ved å bli involvert tidlig?
    c. Hvordan påvirkes utførelsesfasen ved å bli involvert tidlig?
    d. Involverte dere underleverandørene tidligere?
6. Opplevde dere (økt) tillit ved å ta i bruk BVA?

Vår masteroppgave er blant annet basert på en artikkel skrevet av Gulati et al., (2012) hvor de konkluderer med at økt koordinering og samarbeid fører til en bedre samhandling

1. Hva tenker dere om dette?

Appendix 3: Search matrix

Parameters	***Subject terms, synonymes restriction***	***Broader alternatives if relevant***
Language	English	Norwegian, Swedish
Methodology	Qualitative	Quantitative
Subjects/search term	Construction industry, BVA, public procurement, coordination, cooperation, collaboration	Early suppler involvement, trust, information sharing,
Business sector/Industry	Public sector, private sector	
Graphical area	Norway, Scandinavia	Worldwide
Literature type	Journals, academic articles, previous reviews	
Publication period	2000-2019	1970-2000

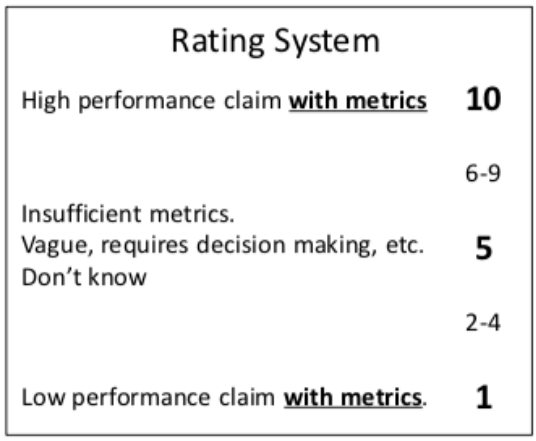
Appendix 4: Weighting Criteria

No	Weighting Criteria	Weight
1	Level of Expertise [LE]	35%
2	Risk Assessment [RA]	5%
3	Value Added Plan [VA]	5%
4	Interview	20%
5	Price	35%

Weighting Criteria (Kashiwagi, 2017, p. 14)

No	Summary Criteria	Unit	Weight
1	Level of Expertise [LE]	(1-10)	35
2	Risk Assessment [RA]	(1-10)	5
3	Value Added [VA]	(1-10)	5
4	Interview	(1-10)	20
5	Price	$	35

Weights and Selection Criteria (Kashiwagi, 2017, p. 31)



Rating System (Kashiwagi, 2017, p. 15)

Appendix 5: Weekly Risk Report (Munkerud)

WEEKLY RISK REPORT - UKE 3

Nr.	Beskrivelse av risiko	Konsekvens/ mulig konsekvens	Risikored. tiltak Control	Risikored. tiltak OBY	Fordeling risiko	Kommentarer
1						
2						
3						

KPI			
Avfallsortering: avvik fra			
Fremdrift: dager etter kritisk linje			
HMS: H-tall			
Beslutninger: forsinkede beslutninger			
Innovasjon: antall nyvinninger for prosjektet			

Appendix 6: Tildelingskriterier (Munkerud)

Tildelingskriterier	Vekting	Dokumentasjonskrav
Tilbudssum	25 %	- Alle poster i **«vedlegg 4 – prisskjema»** skal fylles ut. Samlet tilbudssum skal ikke overstige byggherrens makspris (BMP). - se «punkt 4.1.2 Kriteriet tilbudssum»
Prestasjonsbegrunnelse	15 %	- Maksimum 2 A4 sider, Skrifttype Calibri størrelse 11 (vedlegg som overstiger dette blir ikke evaluert) og margene må være minst 2,5 cm i topp og bunn. - Bruk vedlagt mal **«vedlegg 14 – mal for prestasjonsbegrunnelse»**. - Ingen henvisninger til leverandøren eller dens underleverandører skal oppgis i svaret. Firmanavn eller logo skal heller ikke være med i svaret. - se «punkt 4.1.3 Kriteriet prestasjonsbegrunnelse»
Risikovurdering	20 %	- Maksimum 2 A4 sider, Skrifttype Calibri størrelse 11 (vedlegg som overstiger dette blir ikke evaluert), og margene må være minst 2,5 cm i topp og bunn. - Bruk vedlagt mal «**vedlegg 15 – mal for risikovurdering**». - Ingen henvisninger til leverandøren eller dens underleverandører skal oppgis i svaret. Firmanavn eller logo skal heller ikke være med i svaret. - se «punkt 4.1.4 Risikovurdering»
Tilleggsverdi	10 %	- Maksimum 2 A4 sider, Skrifttype Calibri størrelse 11 (vedlegg som overstiger dette blir ikke evaluert) og margene må være minst 2,5 cm i topp og bunn. - Bruk vedlagt mal **«vedlegg 16 – mal for tilleggsverdi»**. - Ingen henvisninger til leverandøren eller dens underleverandører skal oppgis i svaret. Firmanavn eller logo skal heller ikke være med i svaret. - Se «punkt 4.1.5 Tilleggsverdi»
Tilbudte nøkkelpersoners(**) personlige egnethet	30 %	- Evaluering av utpekte nøkkelpersoner vil bli gjennomført i fm intervju. - Utfylt mal for nøkkelpersonell **(«vedlegg 17 – mal for nøkkelpersonell»)** skal inneholde: • Tilbudte personers navn • Kort profil, bakgrunn • Kort beskrivelse av de prosesser eller områder nøkkelpersonene er ansvarlige for. - Se «punkt 4.1.6 Kriteriet Kvalifikasjoner og erfaring hos nøkkelpersonell» (**)*Tilbudte nøkkelpersoner kan ikke byttes etter tilbudsfristen, se kontraktsformularet NS8407 punktene 28 og 29. Det er kun anledning til å tilby en ressurs per rolle.*