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A Best Value Approach (BVA) to Supplier Selection

– A case study of Best Value Procurement (BVP) in the Norwegian Construction Industry

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Abbreviasjons:	
NV	Nye Veier
BVA	Best Value Approach
BV	Best Value
Difi	Direktoratet for IKT og Forvaltning

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Abstract

It is a well-known fact that the construction industry has long been struggling with project cost and duration overruns, quality, and safety measures. It is characterized as conservative with low-bid contracting which has led to conflicts, delays, and unexpected additional costs. These issues clearly identify the need for a shift towards a more holistic view and increased focus on quality within the industry. Among other, early supplier involvement, supplier integration, and supplier selection have received further attention. At a time that requires close cooperation between organizational units, as more innovations in the industry come from suppliers, integration could affect industry development. The need to improve supplier selection has led to several new tendering models, and this thesis will further investigate one of these models, called the Best Value Approach.

Implementing a new procurement method requires a willingness to change as implementing change often impacts relations of power, work tasks, and professional identity of individuals affected. The objective of this thesis is to understand what it takes to change from a traditional supplier selection based on the lowest bid to alternative selection criteria. Hence, our research question is: "*How can a Best Value Approach aid construction client in supplier selection, and what are the potential benefits and challenges of this approach?"* To answer this question, we have conducted a case study of the use of BVA in a pilot project in Nye Veier, a newly established public client in the Norwegian construction industry. BVA uses past performance documentation and interviews in addition to price to identify the most qualified supplier. Data were collected through semi-structured interviews, observations, participation, and attendance at meetings between Nye Veier and the involved contractors.

The findings from the study show a main driver for implementing BVA was the issues related to high total costs in the industry. They confirmed that by using an approach that focus more on quality and past performance, they were aided in identifying the qualification of the supplier. Our study found that the approach showed signs of providing cost-efficient and innovative solutions before project completion. The focus on open communication and transparency contributed to a constructive environment with emphasis on collaboration.

CHAPTER 1 - Introduction

The thesis investigates one supplier selection method called Best Value Approach (BVA) through a pilot project in Norway. BVA has become a well-known procurement and project management practice in the United States and the Netherlands, and it is an approach where both price and performance are considered instead of just price (Abdelrahman, Zayed, & Elyamany, 2008; D. Kashiwagi, 2011). American literature describes the Best Value Approach established by Dean Kashiwagi from Arizona State University as Best Value Approach/ PIPS (Performance Information Procurement System), while the Dutch call it Best Value Procurement (BVP). The reason for the name BVP in the Netherlands was that they thought it to be mostly a procurement tool, rather than both procurement and project management. For simplicity, this thesis will mainly use BVA rather than PIPS or BVP. When investigating the implementation of a new procurement method, the willingness to change, and the impact on relations of power, work tasks, and professional identity of individuals, are important aspects to consider.

This thesis will follow a case study on Nye Veier (NV) through their implementation of the BVA. NV is a fully state-owned company, which tasks include planning, building, operating, and maintaining key main roads. By ensuring comprehensive and cost-effective development and operation of traffic-safe highways, they aim to be a slim and efficient construction organization. The company's vision is to build good roads, smart and quickly (Nye Veier, 2017b). According to Sullivan (2010), the success of the BVA does not hinge on any new concepts or ideas, but on a different approach to the application of earlier quality management programs. BVA has never been implemented in Norway before and this study will give insights into the benefits and challenges during the process. BVA is characterized by measuring performance and project deviations, as well as reducing the client's management, and control of the contractor. Contractors administer their own contract by the minimization of project cost and time deviations, and BVA does not use negotiation of price (D. Kashiwagi, 2011).

The knowledge obtained during this process can benefit several parties. It will be specifically directed at projects that want to implement the BVA. Providing project managers with such knowledge will enable them to clearly identify their requirements and need for preparation before implementing the change. This thesis will not conclude on the success or failure of the approach, rather the focus will be on the benefits and challenges observed during the implementation. Even though BVA has been a success in other countries, it is not given that this will be the case in Norway due to different country laws, regulations, culture, etc. Potential obstacles in the Best Value contractor selection can be the legal requirements in each country (Wang et al., 2013).

The purpose of this thesis is to explore how implementing a new procurement approach can contribute to better project delivery in the construction industry, and identify the potential challenges and possibilities in selecting a qualified contractor. By using the experiences of the implementation process, the aim was to provide knowledge for potential future implementation of the approach.

1.1 Background and motivation

The Norwegian construction and real estate industry (BAE) is facing several challenges due to high conflict levels and a perception of a low degree of innovation and high supplier costs (Rijt & Santema, 2013). The industry has for some time struggled with project overruns, disputes, delays, budget cracks and high level of conflict during and after construction projects (D. Kashiwagi & Kashiwagi, 2011; D. Kashiwagi, Kashiwagi, Kashiwagi, & Sullivan, 2012; K. T. Sullivan, 2010; Tekna, 2016). Tekna argues that it could be a connection between procurement practices and the cost / level of conflict. Even large clients do not always manage to acquire proper expertise in the construction projects. Hence, the cost and the level of conflict arises, and management attempt to fix the problems with more control and micromanagement (Tekna, 2016). Also, abroad the building industry has been described as inefficient and resulting in many project changes (Ibbs, Nguyen, & Lee, 2007; Savicky, Kashiwagi, Hurtado, & Sullivan, 2014; Thomas & Napolitan, 1995; Wambeke, Hsiang, & Liu, 2011). As a result, the construction industry has drawn their attention to alternative procurement methods (Naoum & Egbu, 2015; Ruparathna & Hewage, 2013), and primarily the design and build delivery method due to the numerous advantages it can offer for

a project (Borg, 2015; Molenaar & Gransberg, 2001; Naoum, 2003; Naoum & Egbu, 2015; Pakkala, Martin de Jong, & Aijo, 2007). The focus is more towards a holistic view and on quality to reduce total costs (Odeh & Battaineh, 2002). Supplier integration has also become important in the industry in a time that requires close cooperation between different organizational units (Song, Mohamed, & AbouRizk, 2009), as well as early supplier involvement that is beneficial as more innovations in industry come from suppliers (Jeroen, Hans, & Bart, 2012). The overall goal of supplier selection is to identify high potential suppliers (Kahraman, Cebeci, & Ulukan, 2003), hence attention has been directed away from traditional 'arms-length' contracting and towards relationships based more upon cooperation and trust (Mike Bresnen & Marshall, 2000, 2010; Jacobsson & Roth, 2014; Laan, Noorderhaven, Voordijk, & Dewulf, 2011). New alternatives such as lean, turn-key and Best Value Approach (BVA) are now explored in the wake of a need for new thinking and innovation (Barlish, Nihas, & Kashiwagi, 2013; Cicmil & Marshall, 2005; Fernandes, 2013; Molenaar & Gransberg, 2001; Naoum & Egbu, 2015; Sage, Dainty, & Brookes, 2012; K. T. Sullivan, 2010; Van Duren & Dorée, 2010). As a result, we were motivated to investigate one supplier selection method which has recently been introduced in Norway.

1.2 Research question

The aim of this thesis is to get insight into what kind of knowledge can be gained by studying an implementation process, and identify potential broader issues applicable for future implementation of the BVA. Hence, the research question is:

- ***"How can a Best Value Approach aid construction clients in supplier selection, and what are the potential benefits and challenges?"***

This overall question will be further investigated through the following sub-questions:

  - *How was BVA implemented?*
  - *What criteria does BVA use to select contractors?*
  - *What drives alternative supplier selection?*
  - *What are the prerequisites when using BVA?*

1.3 Empirical setting

The newly established company, Nye Veier is a public client responsible for plan, build, operate, and maintain highways in Norway. The company was introduced to a new procurement and project management method in 2016 and they are the first company in Norway to implement Best Value Approach. The focus moves from the traditional contractor selection towards early supplier involvement and supplier integration, as well as an emphasis on performance instead of just price. The analysis follows the implementation process and documents the challenges that occurred along the way. This thesis will be two folded as it will look at how BVA can be used as a tool for a better supplier selection, and what the challenges are when implementing a change in contracting approach.

In this case, we strived to observe the process and challenges that occur during the implementation, get a better understanding of how to change and why it is needed, get an overview of the contractor's organizational structure, and talk to the personnel with key roles in the project. In addition, we aim to identify areas that can be applicable in other cases by providing knowledge for potential future implementation of the approach and to contribute to the theory by exploring both benefits and limitations when implementing the BVA. By following the implementation process of BVA, we aim to answer these sub-questions and provide some conclusions and recommendations for future projects in the construction industry.

The following steps were done to get an understanding of the research field and gather useful information to document for future implementation projects.

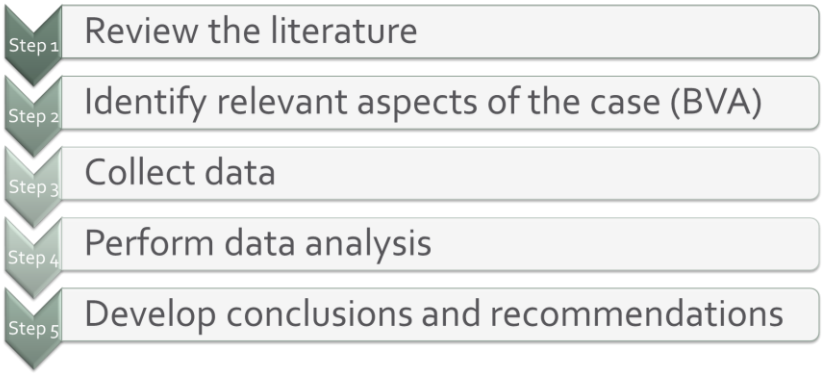


Figure 1: Research steps

1.4 Scope of the study

Due to the time and resource restriction in this study, the scope was limited to one case study. The research was also limited to the procurement phase of the approach as the project duration exceeded our deadline. The literature review was limited to only a fraction of the research conducted on change management. In addition, the focus on project delivery methods was mainly on design-build as that was the most relevant area to our case. Lastly, only English literature on BVA was included in our study.

1.5 Outline of thesis

The first chapter of the thesis will give a thorough review of the theory on characteristics and challenges in the construction industry, followed by procurement methods, early supplier involvement and supplier integration, and supplier selection. This provides a natural introduction to the new contracting method, Best Value Approach. The second chapter is the research methodology where we present the case study. The empirical findings and analysis are presented in chapter four, and chapter five discusses these findings compared to the theoretical background. Finally, conclusions, recommendations, and suggested future research are presented in chapter six.

CHAPTER 2 - Research methodology and methods

This chapter gives a description of the research methodology used in this thesis, as well as the scientific approach. This is to be able to answer our research question and sub-questions which our research is based on. First, we argue why a qualitative method was used, and the reasons behind choosing a case study. Secondly, we will give a brief summation of our data collection process and how our main data sources were utilized. Thirdly, limitations to the research design is discussed due to the scope of project, time restriction, and resources.

2.1 Selection of research design

2.1.1 Research strategy

When considering which strategy to use, the properties and advantages of both qualitative and quantitative research strategies were thoroughly studied and considered. Qualitative research can be described as a strategy that emphasizes words rather than quantification in the collection analysis of data (Bryman & Bell, 2015). Observable but not measurable data are typical of qualitative research, in contrast to quantitative. Qualitative research methods are designed to help researchers with in-depth knowledge of the context, and generate rich, detailed, and valid data (Bryman & Bell, 2015). Further, Kahn (2014) describes qualitative research as a naturalistic paradigm where the reality is manifold and interrelated, which links the researcher with the subject. It is used to explore the potential antecedents and factors about which little has been known and explored. Bartunek (2012) argues that the benefits of qualitative research are the focus on local perceptions and experiences of phenomena, and the enabling of the understanding and appreciation of the dynamics associated with these events. Our study aims to get an insight into what knowledge can be gained in an implementation process to get experience from that phenomena. By conducting a qualitative case study, we believe we can answer how BVA can aid in supplier selection. As this study was concluded before project completion, there is a lack of quantitative data to collect. Hence, we found that a qualitative approach was most suitable in the study of supplier selection and implementation of the BVA.

According to Blaikie (2007), there are four major research strategies; inductive, deductive, retroductive, and abductive, which are based on different styles of reasoning (Blaikie, 2007). Abductive approach is a mixture of inductive and deductive, and is one of the less commonly used strategies (Blaikie, 2007), However, it is becoming more common to apply in recent years (van Hoek, Aronsson, Kovács, & Spens, 2005). Dubois and Gadde (2002b) state that the abductive or systematic combining approach is closer to the inductive than the deductive approach. “The abductive approach stems from the insight that; most great advances in science, neither followed the pattern of pure deduction nor of pure induction” (Kovács & Spens, 2005, p. 135). In abductive reasoning, the case presents a possible, but not logically necessary conclusion, but it can lead to “suggesting” general rules. In studies relying on abduction, the original framework is modified and adjusted along the process, partly because of unanticipated empirical findings, but also of emerging theoretical insights gained during the process (Dubois & Gadde, 2002b; P. Eriksson & Kovalainen, 2015).

In this thesis, the focus was on the process itself, selection of suppliers, contractual agreements, cooperation, and the implementation in practice. We used measures such as challenges, drivers, prerequisites, and benefits which are all qualitative in nature. To see how theory is used in practice, it is important to gather data from professionals in the field (Blaikie, 2007). In this study, observations made in the implementation process might identify unanticipated issues that need further analysis in the interviews and literature, hence a systematic combining design was used.

2.1.2 Research design

In this research, we wanted to get a contemporary look at a real-life situation to get a basis for the application of the BVA theory. The aim was to observe the process and challenges that occur during the implementation, hence a case study satisfies the purpose of our research. According to Ellram (1996), there are excellent opportunities for using case study in many areas of logistics and purchasing, such as exploring implementation issues. Case studies are excellent for theory building, for providing detailed explanations of "best practices," and

providing more understanding of data gathered (Ellram 1996). According to Dubois and Salmi (2016) case studies are valuable, for instance, for investigations of contextual issues, of dynamics, and of emerging issues. According to Dubois and Araujo (2007), investigations using the case study method has much to contribute to the development of the procurement and supply chain field, namely in terms of theory development, providing strong exemplars as well as testing theories culled from other disciplines. However, they examined the trend of using multiple cases and found that it was a relative neglect of the links between theory and method, and that it was often inappropriate statistical criteria to justify a multiple case research design.

A case study method is often chosen because the researcher wants to know how the context of the phenomenon of interest affects the outcomes (Ellram, 1996). A single case study is a detailed and intensive study of one case. According to Eisenhardt and Graebner (2007), a single case research typically exploits opportunities to explore a significant phenomenon under rare or extreme circumstances. The focus is on observing the complexity and nature of the case in question, and is a popular research design in business research (Baxter & Jack, 2008; Stake, 1995; Yin, 2014). In a single case study, the challenge of presenting rich qualitative data is addressed by presenting a relatively complete rendering of the story within the text. The story typically consists of a narrative that is interspersed with quotations from key informants and other supporting evidence (Eisenhardt & Graebner, 2007).

This thesis is a single case study based on an implementation process, and can therefore be categorized as a process study. Process studies focus attention on how and why things emerge, develop, grow, or terminate over time (Langley, Smallman, Tsoukas, & Van de Ven, 2013). Further, they argue that process conceptualizations offer ways to understand emergence and change as well as stability, and they incorporate understandings of causality as constituted through chains of events rather than through abstract correlations (Langley et al., 2013). By following Nye Veier's pilot project of implementing the BVA, we were able to get insight on communication, cooperation and the dynamic between the different parties involved in a more in-depth level than by observing several cases. The aim

of the case study was to both get insight into what kind of knowledge can be gained in this particular case, as well as identify potential broader issues applicable in other cases. Stake (1995, 2013) describes this as a combination of intrinsic- and instrumental cases.

2.2 Data collection

2.2.1 Research steps

In line with the systematic combining approach the research steps were not conducted chronologically, but rather in a back and forward fashion. Dubois and Gadde (2002b, 2014) developed a model (Figure 2) which illustrates the basic ingredients in systematic combining.

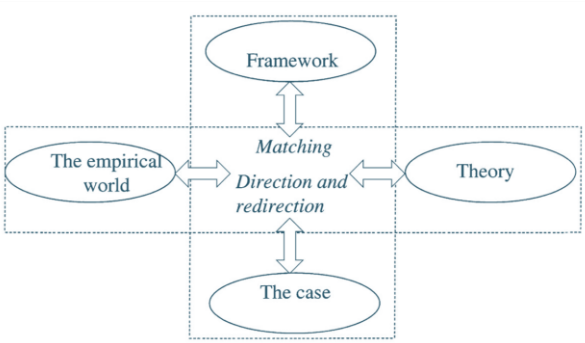


Figure 2: Systematic combining by Dubois and Gadde 2002b, 2014

Dubois and Gadde (2002, 2014) argue that the goal of the research is to confront theory with the empirical world and have a continuous research throughout the process.

The following steps (Table 1) were done to get an understanding of the research field and gather useful information to document for future implementation projects.

1. Review the literature:	As we have viewed how project procurement approaches are implemented, it was necessary to review the current practices used in project procurement. Especially how other approaches differ from Best Value Approach. How the BVA have been implemented in other countries was also deemed necessary to address in the literature review.
2. Identify relevant aspects of BVA in construction industry's endowment to change:	The thesis defines BVA, and identifying the aspects of BVA that are facilitating the opportunity for change within the industry.
3. Collect the data:	In the implementation of BVA, the first data collected was based on articles and previous case studies done in the field. This was mostly obtained from the US and Netherland since this approach has mainly been conducted in these countries. When researching how BVA could be implemented in Norway, various types of interviews and observations was completed. We were invited into the process at an early stage, and participated in internal education, meetings and gatherings with Nye Veier and contractors throughout the whole implementation. We were given full access to most documents and dedicated time to interview all participants.
4. Perform data analysis:	A back and forth approach between the framework, literature and observations were conducted. Comparisons between theoretical and empirical information was analyzed, and used to document experiences. Theory on the relevant aspects of BVA was further supplemented as observations and interviews were conducted and new aspects were discovered. Through a certification course on the approach by the founder we were able to strengthen our analysis.
5. Develop conclusions and recommendations:	Based on observations and analysis of the data, topics will be categorized to get a better understanding of the main issues that occurred in the observed case. The findings will be used to describe suggestions for solutions based on how they were solved in this setting. The results can contribute to knowledge transfer on future implementation projects.

Table 1: Research steps

A triangulation with interviews, observations and participation was conducted in combination with the literature to get a thorough understanding with multiple reference points. In addition, a document analysis was conducted to understand the interviews and observations better. This was done to reveal possible misunderstandings during the observation. There are different types of research interviews (structured, standardized, semi-structured, unstructured/qualitative, focused, group e.g.) (Bryman & Bell, 2015). Most applicable for this case was the semi-structured interview in the early stages with some structured questions that opened for further conversation on the topic. Later in the process, we went more into the topics uncovered during the first interviews and observations. As the study was time limited and quantitative data was not available, parameters such as types of obstacles during the process, conflicts between theory and praxis, training on the approach, misunderstandings and resources used to resolve issues was analyzed.

2.2.2 Primary data

Participation and attendance

During most parts of the BVA implementation process, we were in attendance of meetings, interviews, internal education, workshops, and gatherings (Table 2). Despite the focus on observing rather than contributing, we were conferred on several occasions to clarify uncertainties about the approach. As implementation compliance was crucial, we aided the participants in obtaining relevant documentation to ensure proper understanding. According to Flick (2009), participation can aid a researcher in obtaining knowledge about relations in the studied field, to get a better understanding. However, it is also important to maintain some distance in order to stay professional. During initial workshops, we played a more active role and were also asked to share opinions on some occasions during the later stages.

Interviews	Nye Veier's personnel: - All evaluation team members during the selection phase (6 members) - Project management during the clarification phase - Member of the procurement team during the execution phase Contractors: - All contractors invited to the selection phase - Key personnel at the beginning of the clarification phase - Key personnel during the clarification phase - Key personnel during the execution phase BVA experts: - At Difi's meeting in the initial stage before starting the project process - At Nye Veier's budget meeting for all invited contractors - Meeting at Nye Veier when entering the clarification phase with the chosen contractor Difi: - Four unstructured conversations with Difi representatives
Observations during the BVA process	Nye Veier's meetings in all phases of the approach: - Initial meeting for all invited contractors in the pre-qualification phase - Budget meeting in the pre-qualification phase - Three days during the interview rounds in the selection phase (three contractor companies, three key personnel from each company, one day on each company) - Four days during the clarification phase
Observations during other BVA meetings	- Three meetings initiated by Difi - One day internal education at Nye Veier - One meeting with the founder of BVA, Dr. Dean Kashiwagi - Two days BVA conference in Trondheim (B+ certification achieved)

Table 2: Data collection table

Observation

Observation is when the researcher immerses into a group for an extended time period, observing behavior, listening to what is said in conversations both among others and with fieldworker, and asking questions (Bryman & Bell, 2015). Triangulation of data helps to overcome the potential problem of informant bias by using some combination of multiple informants, internal company memos, procedures, and other documents, as well as the use of direct observation, written questionnaires, and other data gathering techniques. Multiple indicators also tend to produce more stable and reliable results (Ellram, 1996). Due to the nature of this case study, observations were essential to get a proper picture of the situation and how the actors conduct themselves during the implementation. This type of data collection is often combined with interviews and collection of documents. There was only conducted overt observations in this study, and all participants were asked if they consented to being observed. It was important to access some key informants, but it was of great importance that their influence was not too high on the outcome of the research. We conducted field notes during the observations as the main data collection, and the focus was mainly on negotiation meetings, selection process discussions, and clarification meetings.

Interviews

Ellram (1996) identifies interviews as one of the three primary qualitative techniques that may be used as part of a case study. As mentioned above, the use of direct observation, written questionnaires, and other data gathering techniques such as interviews in our case, could help to overcome the potential problem of informant bias (Ellram, 1996). When deciding on how to gather data through interviews, it is important to understand the nature of the information collected. As the challenges and problems in a process are unpredictable, it would have been counterproductive to use structured interviews with a strict format. As a result, the decision landed on a semi-structured interview format because it was a combination of structured questions and loose topics to elaborate. A sample of interview questions that were used can be found in appendix 1.

In the selection of interview and observation objects, it was important to identify key participants in the process to obtain relevant information. In this case, these participants were the ones working with procurement and negotiation, as well as engineers, project managers, technical experts, and other key personnel during the building process (Appendix 2). Our key informant was the project manager, which has the overall responsibility. We interviewed both participants in Nye Veier and key participants in the different construction teams involved in the process. In addition, we conducted an interview with Dutch experts on BVA, participants in the pilot project from Difi (the Norwegian Agency for Public Management and Government) and the founder of the Best Value Approach Dr. Kashiwagi. The purpose when identifying the sample was not quantity, but the personnel that could influence the implementation and selection.

2.2.4 Secondary data

Literature review

The first data collected were literature from articles and previous case studies obtained from other countries such as the USA and the Netherlands. The literature on established topics were collected from journals such as Journal of Public Procurement, Journal of Construction Engineering and Management, and Academy of Management Journal, while the literature collected on the Best Value Approach was assembled from a range of different sources.

Document analysis

Document analysis is often used in combination with other qualitative research methods as a means of triangulation (Bowen, 2009). During the implementation process, there was a great deal of documents such as tenders, evaluation sheets, project plans, forms, legal justification, presentations, minutes of meetings and clarification attachments. The relevant documents were used to get a holistic view of the process. The documents were obtained through Nye Veier, Difi, Dr. Kashiwagi, Best Value Group, RIF, Hæhre and the Internet. Often, documentary evidence is combined with data from interviews and observation to minimize bias and establish credibility (Bowen, 2009). The information collected through these

documents was used as a baseline for the interview questions and to support the understanding during the observations.

2.3 Data analysis strategy

2.3.1 Analytical Process

In this section, we present the analytical process which is the baseline for the entire case study. The theoretical framework, data collection, and the analysis is described in relation to each other and provides a holistic view of the research process. According to Ellram (1996), specific analytical procedures should be followed in formulating case study research design, gathering evidence, developing theory, explanation, and presenting case study data. A case study data analysis should embrace the concepts of both internal and external consistency. Searching for patterns is a key strategy in providing an explanation and validity of results. Use of external reviewers and review by key informants is important in providing construct validity (Ellram, 1996).

We began this research by considering the theoretical background in relation to characteristics and challenges in the construction industry, different procurement methods, and change management in relation to implementing new procedures. As the process evolved, more literature was reviewed as new aspects occurred. Wacker (1998) argues that one of the main reasons why theory is important is that it provides a framework for analysis. The data collected in the literature review were analyzed by a qualitative content analysis, which emphasized on allowing categories to emerge out of data and recognizing the significance for understanding the context in which the items being analyzed appeared (Bryman & Bell, 2015).

Through the study of the previous literature we identified some main areas that needed to be analyzed in order to get a thorough understanding of our chosen research field. The topics identified in the literature were used when the initial research question and sub questions were formed, when determining the scope of the thesis and in the initial focal points when conducting empirical data collection. According to Bowen (2009), it is important in qualitative research to draw upon multiple sources of evidence to triangulate findings. To seek convergence and

confirmation through the use of different data sources and methods we collected data through interviews, observations, participation and document analysis.

Through systematic combining the initial findings were used for further theoretical and empirical studies. This back and forth approach formed the basis for developing the theory and framework, which further directed the literature and case study. In studies relying on systematic combining, the original framework is modified and adjusted along the process, partly because of unanticipated empirical findings, but also due to emerging theoretical insights gained during the process (Dubois & Gadde, 2002b, 2014; P. Eriksson & Kovalainen, 2015). It was important to interpret the data while collecting it to identify areas in need of more theory research. As the process evolved, more categories emerged and the focus was adjusted. These "emergent themes" were added as new ideas, concepts, actions, relationships, and meanings were discovered during the data collection. As this process went back and forth between theory and data collection, the final themes were developed. One of the cornerstones of the systematic combining research process is 'matching'. Matching is "about going back and forth between framework, data sources and analysis" (Dubois & Gadde, 2002b, p. 556; 2014). After each new data collection session, the themes were reviewed per the new information, and adjustments to the final categories were made.

During our literature review and the data collection, new topics emerged which both added to the scope and changed directions. The theoretical foundation began by describing the challenges and characteristics in the construction industry such as lack of integration, lack of effective communication, uncertainty and so on. Further, different procurement methods were explained and the shift from traditional design-bid-build to design-build represented as a shift towards a more wholly integrated industry, where achieving best value and continuous improvement through team integration is introduced. This was presented as a basis of introducing BVA and the research on how this approach was implemented in the pilot project by Nye Veier. Other fields that emerged from this were the focus on supplier selection and the importance of early supplier involvement and close cooperation between client and contractor. The literature emphasized a call for change in relation to these subjects. According to Dubois

and Araujo (2007), the task of the analyst is to progressively construct the context and boundaries of the phenomena under investigation, as theory interacts with methodological decisions and empirical observations. The research object, its boundaries and context are often emergent outcomes of the research process.

To start the coding of the data, a thematic analysis was further conducted and the main themes were developed. A thematic analysis extracts key themes from the data to identify repetitive topics, categories, analogies and metaphors, transitions between topics, similarities, and theory related data to mention some (Bryman & Bell, 2015). When the first data was collected, it was sorted and organized to be analyzed both with the pre-set topics. This is in line with the theory for comparisons, similarities and differences according to Carmaz's concept: "… to remain open to all possible theoretical directions indicated by your readings of the data" (Marshall & Rossman, 2006, p. 46). The empirical data were categorized in main themes, first order observations, and secondary observations. First order observations were clusters of topics that were observed and discussed such as objectivity during contractor evaluations, some examples of this is shown in table 3. The second order observations summarize several first order observations into categories such as competition laws in relation to objectivity.

Themes	2nd order	1st order	Extracts from data/observation
Drivers	Motivation	Driven for change /new thinking	This is why some chose to work for NV (because they are innovative and want to think new), - How do we solve... in accordance with the BVP principle - What do we do if … occur - what does ... mean - According to Jeroen it is important that we focus on… - According to the BVP manual… - I read that … is important when … is considered - Understanding the possible benefits of BVP
		Enthusiasm	- eager to take notes - eager to ask questions - participation in discussions - attending all meetings/gatherings - motivated behavior
Benefit	Reduced use of resources	Simplify evaluation	NV found the six-page tender, easy to evaluate and compare, and they got a better understanding of the capabilities when other criteria than price were introduced.
		Reduced time spent on selection	NV and the selected contractor were ahead of their time schedule with regards to both project plans and milestones.
	Better interaction between actors	Communication and transparency	NV had a high focus on communication and transparency, and they believed in the benefits of increased collaboration and supplier integration to achieve this.
Challenges	Resistance	Uncertainty	Can be challenging to see which ones are lacking knowledge and who is just silent
			Afraid to become redundant and let another take over their tasks.
			Change is scary and leads to behavior that would not normally occur
Prerequisites	Laws and regulations	Negotiation	Value adding
			Clarification phase (making changes, etc.)
		Objectivity	Anonymity The industry is small (easy to know which, company says what)
			Preliminary judgement (exclude international)

Table 3: First and second order observations

This was done to organize all the findings in a systematic way and to make sure that all findings were accounted for in the preset themes. In sum, the information found using the categories and the themes were reviewed up against the interviews and observations (Table 4). In some instances, the different sources gave conflicting information, such as when the empirical observations contradicted the previous theory on relationship and trust between actors. As a result, we had to return to the literature to further investigate the contradicting results. When all the collected data were categorized and analyzed, the outcome provided a holistic view used as a basis for our discussion and conclusion.

Key Theme	Findings
Drivers for alternative supplier selection in the construction industry	- Statement NV: Referred to their mandate to build faster, cheaper, and better through new and innovative methods, as a main motivation to deviate from the traditional contractor selection. - Statement NV: The procurement process already shows signs of providing cost-efficient and good solutions according to representatives from Nye Veier. - Quote NV: "This approach suits our vision to involve contractors at an early stage."
The perceived benefits of BVA	- Statement NV: They found the six-page tender, easy to evaluate and compare, and they got a better understanding of the capabilities when other criteria than price were introduced. - Observation: NV and the selected contractor were ahead of their time schedule with regards to both project plans and milestones. - Observation: NV had a high focus on communication and transparency, and they believed in the benefits of increased collaboration and supplier integration to achieve this.
Identified barriers and challenges during the implementation process	- Observation: Lack of proper understanding of the approach made members of NV organization deviate from the framework and that the ownership of the approach rested on a few members. - Quote: "The clarification process is very difficult, as it is hard to agree on the details without micromanaging." - Observation: Lack of knowledge and proper education caused insecurity and hindered implementation fidelity.
Prerequisites for BVA	- Observation: One of the main conditions for implementing this approach was the constant awareness of the Norwegian laws and regulations and how to stay in line with both these and the BVA requirements. - Observation: Difficult for some to adapt and follow the requirements to achieve a proper implementation process. - Observation: Small and large deviations from the approach occurred during the implementation process.

Table 4: Coding of findings

2.4 Quality of research design

The literature points out some problems associated with qualitative data, particularly regarding collection and analysis. Miles (1979) argues that even though qualitative data can be rich, holistic, and real, it can also consist of serious weaknesses and problems. He points out that studies based on qualitative data tend to confuse and blur the concepts of validity, generalizability, and analysis. He concludes that there is an inherent conflict between validity and reliability, and with regards to generalization, the complexity of cross-case assessments can make comparisons unmanageable. Others have argued that there is no consensus in this respect (Hannah & Lautsch, 2011).

The case study research design is often associated with a subjective research strategy (Stake, 1995), because of this it is important to consider both the sources of the data and the setting it is investigated under. According to Eisenhart and Graebner (2007) the limitations of a case study should be mitigated through careful justification of theory building, theoretical sampling of cases, interviews that limit informant bias, rich presentation of evidence in tables and appendixes, and clear statement of theoretical arguments. In addition, Bryman and Bell (2015) states that several case studies should be compared if generalizations are to be made. However, Hallórsson and Aastrup (2003) argues when conducting a case study, one should avoid generalizing the findings. The case that is chosen might not be representative for the population. Hence, it is important to emphasize the particularization rather than the generalization, and concentrate on the uniqueness of the case to understand its complexity (Halldorsson & Aastrup, 2003).

It has been argued that despite a strong tradition for a quantitative research approach within the logistics discipline, strong evidence exists in support of the emergence of qualitative research efforts (Halldorsson & Aastrup, 2003). Dubois and Araujo (2007) argue that in the social sciences, where recourse to controlled observation or experiment is limited, much of what we know derives from classic case studies and standard interpretations of these cases. Researchers addressing logistics problems by qualitative research approaches should consider the issues

of truth-value, transferability and contextualism and trackability, and explicitly when considering the criteria for evaluating their research efforts. Hence, rigor in logistics research should not automatically be associated with the concepts of validity and reliability as used in quantitative research approaches (Halldorsson & Aastrup, 2003).

As first introduction, can only occur once, replicability will be hard. However, it is possible to compare the findings from this study with similar cases of implementation in other countries. Furthermore, authenticity is concerned with the research impact on a wider aspect. In our case, a tactical authenticity can be argued because it empowers members to take necessary steps in implementing BVA, but Bryman and Bell (2015) argues that a wider impact of such research is controversial.

By using the criteria in Hallórsson and Aastrup (2003) we have documented how quality was ensured in this thesis. Table 5 shows some of the measures used to assure truth-value, transferability and contextualism, and trackability and explicitly.

Quality criteria	Measures to ensure the quality
Truth-value	Through triangulation of interviews, observations/participation, and document analysis. Validation of findings through communication with different key personnel concerning the same topics. Documentation of both observations and interviews is transcribed, which make it possible to go back to date and time of collection. The process was observed and documented by two researchers at all times, reducing the chance of misinterpretations. Written documents were collected from both client and contractor after each gathering throughout the whole process. By using reliable and highly acknowledged journals in the literature review, ensures credibility and trustworthiness. To validate the theory and understanding of the framework, we have conferred with the founder of BVA (Dr. Kashiwagi) and Dutch BVA specialists
Transferability and contextualism	Applicability of knowledge outside its context relies on the differences and similarities between these contexts. As all public procurement rely on a set of rules and regulations, the context plays a smaller role on how procurement is done. This makes the study more transferable. The nature of this study is contextual, but many similar industries would rely on comparable processes during tendering and could transfer several aspects of the findings to their context. This study does not strive to make generalized conclusions, but rather give insight into a particular case.
Trackability and explicitly	All interviews, conversations with involved actors, meeting summaries, and processes are documented in detail to ensure trackability of findings. The findings are backed up by statements as well as observations in a clear and detailed manner, to reduce room for confusion or doubt. Transcripts of the semi-structured interviews are attached to the study to trace statements.

Table 5: Overview of quality criteria based on Hallórsson and Aastrup's (2003) research

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

CHAPTER 3 - Theoretical background

In this chapter, literature about important aspects of improving supplier selection will be presented. The chapter will start with a characteristic of the construction industry, challenges the industry face, and the root causes of these challenges. Following, procurement methods used in tendering contractors, the delivery methods that are most common, and how supplier selection criteria change based on delivery method. There is an awaited call for change in the construction industry, hence topics such as supplier integration, early involvement, and improved supplier selection is investigated. The need to improve supplier selection has led to a development of new tendering models, and this thesis will further investigate one of these models; Best Value Approach.

3.1 Characteristics and challenges in the construction industry

The construction sector is a project-based industry, and has several of the typical project characteristics. “A project-based organization is one in which the project is the primary unit of production organization, innovation, and competition”. (Hobday, 2000, p. 874). A project is often task-driven, aiming at creating a unique result (DeFillippi & Lehrer, 2011b). This is done in teams with different knowledge and background, and with limitations concerning time and resources. The construction industry consists of actors involved in activities such as building, engineering, designing, and demolishing structures. At the most basic level, construction projects involve the planning and building of some physical facility (Pinto & Covin, 1989). According to Hartmann and Bresnen (2011), subcontracting is a key characteristic of construction and up to 90% of the total value created in construction projects are done by subcontractors. They often subcontract services to increase flexibility and minimize fixed assets.

In addition, the low entry barriers have resulted in a large number of firms that range from small local entrepreneurs to large corporations (Singh & Tiong, 2005). The increase in the number of firms seems to be a factor in the large amount of subcontracting within the industry. The subcontracting and outsourcing trend

leads to specialization and a high degree of interdependency in the supply chain (Dubois & Gadde, 2002a). The many actors involved, combined with more complexity in design, adds challenges for both clients and contractors in matching the required skills and capabilities to deliver the project successfully at the tender process (Doloi, 2009).

Dubois and Gadde (2002a) state that the industry is characterized by competitive tendering, lowest price bids, adversarial relationships, and risk transfer. Thus, the industry is experiencing cost and duration overruns, serious problems in quality and safety measures, leading to an increased number of claims, counterclaims, and litigation (Singh & Tiong, 2005). The traditional contracting method in construction has been often a separation of design and build which hinders knowledge integration and diminishes the contractors influence on designer decisions. When there is a lack of contractor's input in the design, implementing the design can result in schedule problems, delays, and disputes and harm the overall project performance (Song et al., 2009). In the 1990s, several industry and government sponsored reports sharply criticized the construction industry for its insufficient project performance and lack of integration (Hartmann & Bresnen, 2011).

Another challenge in construction is that no projects are identical in terms of site conditions, design, construction materials, labor requirements, plants and equipment requirements, construction methods, technical complexity, and level of management skill required. Due to this, the construction clients face a challenge in determining which contractor to select for the specific job to minimize or optimize the risk (Jaskowski, Biruk, & Bucon, 2010; Singh & Tiong, 2005; Yawei, Shouyu, & Xiangtian, 2005). Over the years the construction industry has changed and become increasingly complex, mainly because of the projects' ever-increasing technical complexity and the client's need for a more value for money projects (Naoum & Egbu, 2015). An inappropriate contractor increases the risk of delays, cost overruns, substandard work, disputes, or even bankruptcy (Jaskowski et al., 2010).

According to Snippert, Witteveen et al. (2015), traditional procurement is characterized by hampered processes of trust development and no goal alignment between client and contractor. Development of relationships of trust between client and contractor seems to be difficult in construction projects as they often engage in projects that are characterized by high complexity, uncertainty, and risk (Laan et al., 2011). Poor communication and a low level of supplier integration cause a fundamental weakness in the interface between the buying firm and its suppliers, undermining the buying firm's efforts to achieve increased levels of supplier performance. Consequently, supply uncertainty increases (Danese, 2013a). According to Naoum and Egbu (2015), the main problems that the building process are facing can be summarized into separation of design from construction; lack of integration; lack of effective communication; uncertainty; changing environment; changing clients' priorities and expectations; and increasing complexity. Root causes for economic inefficiency have over the years been directed to the fragmented nature of the industry, the uniqueness of construction as a product, the split between design and construction, the role of the consultants, and procurement methods (Naoum, 2003). Hence, there is a call for change within the industry, which will be further explored in this thesis.

3.2 Procurement methods in construction

The role of procurement has evolved as firms recognized the importance in reducing cost and handle increased competition (Ellram & Carr, 1994; Glavee-Geo, 2015). Procurement methods have received considerable attention and discussion within the construction industry in the past decades (Naoum & Egbu, 2015; Ruparathna & Hewage, 2013).

The design-bid-build or traditional method has a strong separation between design and construction phases. The method was essentially created around the time of the industrial revolution when the specialty fields of expertise of design professionals and contractors were developed and segregated from each other. Contracts based on the schedule of rates or bill of quantities seem to be dominant in the traditional method, which has led to much administration and several conflicts at project end (Pakkala et al., 2007). Design-bid-build has the reputation

of being conservative, problematic, having low productivity growth, and low pressure for change, which leads to a focus on different strategies that can be used to improve the sector (Borg, 2015).

As a result, there has been a rapidly increasing interest in implementing performance-based contracts and long-term contracts with an integration of design, construction, and maintenance in the construction sector. Due to the recognition of the need to integrate the design and build process, an increasing number of companies across the world are changing their construction projects from the traditional separation of the two fields (design-bid-build) to projects where the design is integrated into the building tender (design-build) (Borg, 2015; Naoum, 2003; Naoum & Egbu, 2015; Pakkala et al., 2007). Implementing these types of contracts can create incentives to build with better quality, increase innovation and decrease cost overruns, as well as contribute to construction industry productivity growth. This type of contract has increased ever since the 1970s, but accelerated considerably worldwide in the 1990s (Borg, 2015). According to Odeh and Battaineh (2002), adopting new approaches to contracting, such as design-build, can reduce delays by limiting owner interference, improve design, and improve the contractual relationships among all parties in the project.

The design-build delivery method is increasingly used in construction due to the numerous advantages it can offer for a project (Molenaar & Gransberg, 2001). It is a project delivery method by which design and construction services are delivered by one single contractor (Chen, Xia, Jin, Wu, & Hu, 2015; Clough, Sears, Sears, Segner, & Rounds, 2015; Songer & Molenaar, 1996). Design-build is described as an evaluation process in three parts; pre-qualification process, a technical review, and evaluating the proposed project price for realism and reasonableness. The goal is to select the design-builder with the highest probability of successfully completing the project to the higher level of quality that is required (Gransberg, Runde, & James, 2000). The primary reason an owner selects design-build is to take advantage of the timesaving's inherited in the process, in addition to establishing cost, reducing cost, improve constructability/innovation, establishing a schedule, and reducing claims (Songer & Molenaar, 1996).

The advantages of design-build include shortened project duration and early certainty of the project cost, and have been proved both theoretically and empirically in recent years, leading to the increasing popularity of design-build in the international construction market (Chen et al., 2015; Songer & Molenaar, 1996). Because of coordinated efforts between the designers and the builders, construction can begin prior to completion of construction documents (Molenaar & Gransberg, 2001).

The design-build delivery method is further divided into several procurement methods. Molenaar and Gransberg (2001) introduce a framework which places the different methods according to the focus on price versus quality, such as sole source, qualifications-based, fixed budget/best design, best value, and low-bid selection. The choice of method depends on the complexity of the product, funding, design intent, schedule, risk allocation, and other important issues (Beard, Loulakis, & Wundram, 2001). Ultimately by using design-build, a shift towards a more wholly integrated industry where achieving best value and continuous improvement through team integration is of high importance (Naoum & Egbu, 2015).

3.3 Call for change towards supplier integration and early supplier involvement

Cooperation and coordination in construction project teams have been attracting the attention of practitioners and academic researchers alike since the late 1980s. Project team integration is inevitably associated with an ongoing concern in the construction industry to overcome cultural inconsistencies, distrustful relationships and paradoxes associated with the ‘design–construction divide’ that have been acknowledged as major obstacles to the successful and more efficient completion of construction projects (Cicmil & Marshall, 2005). Increased collaboration within the construction industry will be vital to achieving future gains and for the industry to deliver improvements on the clients triangulated factors of cost, time and quality (Naoum & Egbu, 2015). More use of design-build contracts, and more holistic contracts would increase incentives for innovation and - in the case of bundled contracts - reduce life-cycle costs and create a

sustainable built environment (see e.g.Kristiansen, Emmitt, & Bonke, 2005; Smyth, 2010). It is argued that design-build contracts create more room for innovation as the contractor has stronger incentives for finding new techniques (Borg, 2015).

Supplier integration has become increasingly important in the construction industry in a time that requires close cooperation between production planning, inventory control, quality inspection and purchasing (Song et al., 2009). Petersen, Handfield et al. (2005) argue that input from a carefully selected supplier facilitates better decision-making by the development project team, which again causes a better design and improved financial performance.

The industry is moving away from the traditional lowest-bid price method, to quality and performance based selection (Petersen et al., 2005). Eriksson and Westerberg (2011) suggest that cooperative supplier integration generally has a positive influence on project performance (cost, time, quality, environmental impact, work environment, and innovation). Song, Mohamed et al. (2009) argues that early contractor involvement leads to reduced project duration and total man hours. Their research improves the understanding of what contractors can bring to the design table and how this early involvement effort can influence construction schedule performance. Supplier integration influences efficiency and schedule attainment performance through a synergy effect (Danese, 2013a). There is also increased focus on collaboration between parties, often referred to as partnering and alliancing. Bresnen (2009) argues that supplier selection is a key success factor in partnering. And, positive effects such as better project performance with regards to time, cost and quality, and improved user satisfaction are said to be outcomes of closer collaboration between client and contractor.

Early supplier involvement is beneficial as more and more innovations in the industry come from suppliers (Jeroen et al., 2012). Managers seeking to reduce the concept to customer development time while increasing quality, should seek to make suppliers part of the team through co-location or frequent participation in team meetings (Perols, Zimmermann, & Kortmann, 2012; Ragatz, Handfield, & Petersen, 2002). Getting them involved early in the new product development

process becomes an issue of primary concern (P. E. Eriksson, 2010; P. E. Eriksson & Westerberg, 2011). Involving the supplier in the determination of appropriate technical metrics and targets for the project, and agreeing jointly with the supplier on these targets has been shown to be a key element in project team effectiveness (Petersen et al., 2005). Research shows that supplier integration has positive technology spillover effects, as client organizations tend to adopt more external technologies if they integrate suppliers (Perols et al., 2012; Ragatz et al., 2002).

3.3.1 New collaborative delivery models

There are different levels that describe ways of collaboration, and it is often referred to as partnering and alliancing. The Construction Industry Institute defines partnering as a long-term commitment between two or more parties in which shared understanding and trust develop for the benefits of improving construction (CII, 1991). However, research suggests that a cooperative climate characterized by trust and relational norms can develop even in a temporally delimited relationship (Ness & Haugland, 2005). Partnering represents a fundamental shift from the traditional adversarial relationships in construction (L. E. Bygballe, Jahre, & Swärd, 2010), and it creates opportunities such as increased productivity and reduced costs, reduced project times owing to early supplier involvement and team integration, and improved quality through the focus on learning and continuous improvement (P. E. Eriksson, 2010; Gadde & Dubois, 2010). Partnering development is not only a matter of learning new knowledge and adjusting existing working processes, but it also requires discarding old routines and behavior (Hartmann & Bresnen, 2011).

Many commentators have argued that collaboration can have a substantial positive impact on project performance, not only regarding time, cost and quality objectives, but also regarding more general outcomes such as greater innovation and improved user satisfaction (Mike Bresnen & Marshall, 2000; Meng, 2012). Since partnering implementation requires investments in time and resources, a suitable level of cooperation must be attained so that potential benefits exceed the costs (P. E. Eriksson, 2010). The use of incentives has been important in collaboration and helping to build trust between clients and contractors. It is

possible to create a ‘win–win situation’ in which both clients and contractors stand to gain from the performance benefits (Mike Bresnen & Marshall, 2000).

The cooperation, integration, and coordination of construction project teams have attracted the interest of construction practitioners and researchers the last thirty years (L. Bygballe, Swärd, & Vaagaasar, 2016). Considerable attention has been directed towards forms of client-contractor relationship and collaborative arrangements subsumed under the term partnering that move away from traditional ‘arms-length’ contracting and towards relationships based more upon cooperation and trust (Mike Bresnen & Marshall, 2000, 2010; P. E. Eriksson, 2010; Gadde & Dubois, 2010; Hartmann & Bresnen, 2011; Jacobsson & Roth, 2014; Laan et al., 2011). Projects have always required effective collaboration between the individuals and organizations that are brought together under various forms of project-based organization to achieve specific project objectives (Mike Bresnen & Marshall, 2010). Development of relationships of trust between client and contractor seems to be difficult in construction projects as they often engage in projects that are characterized by high complexity, uncertainty, and risks (Laan et al., 2011).

Partnering should be used in complex and customized projects with high uncertainty (risk), long duration, and time pressure. The higher the levels of these characteristics, the more cooperation, and less competition is required (P. E. Eriksson, 2010). According to Meng (2012), there is no doubt that strategic partnering is better than the traditional approach in improving project performance. Researchers argue that the key to understanding the relationship dimension in partnering projects is to focus on the everyday practice and the role of the mindset of involved actors throughout the project (L. E. Bygballe et al., 2010; Jacobsson & Roth, 2014).

Although many commentators point to the benefits of partnering, there are those that highlight the problems and limitations, and argues that there are no quick fixes that guarantee success (Mike Bresnen, 2010; Mike Bresnen & Marshall, 2000). Despite the high interest in partnering and alliancing, there has been comparatively little research that has set out to investigate systematically the

nature, feasibility, benefits and limitations of forms of client–contractor collaboration (Mike Bresnen & Marshall, 2000). Some research efforts are of a more critical nature since they have found that cooperation and its benefits are not easily obtained due to various barriers that arise when trying to implement partnering (P. E. Eriksson, 2010). Kadefors (2004) states that the mechanisms involved in establishing and maintaining trust, and cooperative relationships between clients and contractors in the construction industry are complex and difficult to manage purposefully. There is a need to acknowledge that the different parties in the relationship may have different aims in mind and will approach the relationship with different perspectives (M Bresnen & Marshall, 1999). Research by Gadde and Dubois (2010) argues that the expectations of a rapid shift towards strategic partnerships were unrealistic since this shift would require major modifications of basic conditions that has been developed over a long-time period. Hence, it is not surprising that the interaction processes between client and contractor organizations are often conflict-ridden, leading to unsatisfactory outcomes of construction projects. Setting realistic and sobering expectations regarding the strategic and difficult nature of change implementation may foster greater levels of readiness for the shift among construction project teams (Lines, Sullivan, Smithwick, & Mischung, 2015).

3.3.2 New supplier selection criteria

Supplier selection is the process of selecting the most appropriate supplier to deliver the project as specified so that the achievement of the best value for money is ensured (Singh & Tiong, 2005). Selection is a broad comparison of suppliers using a common set of criteria and measures. However, the level of detail used for examining potential suppliers may vary depending on a firm's need (Kahraman et al., 2003). The bid price is still the most important criterion in the selection of a contractor. Although tender conditions list many other evaluation criteria, clients tend to select a contractor with the lowest-bid price (Banaitiene & Banaitis, 2006). Researchers point out the need for focus on objective criteria (Ng, 2008; Singh & Tiong, 2005; Watt, Kayis, & Willey, 2010) and transparency in decision-making (De Boer, Labro, & Morlacchi, 2001). Selection criteria typically fall into one of four categories: supplier criteria, product performance criteria,

service performance criteria, or cost criteria. Some criteria may be impractical to evaluate during selection (Kahraman et al., 2003).

The objective of supplier selection is to identify suppliers with the highest potential for meeting a firm's needs consistently and at an acceptable cost (Kahraman et al., 2003). Construction clients are becoming more aware of the fact that the selection of a contractor based on the tender price alone is quite risky and may lead to the failure of the project in terms of time delay and poor-quality standards (Singh & Tiong, 2005). Although the public sector has a long tradition of using the lowest-bid as the award criterion for contracts, reliance on non-price criteria is increasing (Waara & Bröchner, 2006). To improve value for money and overall satisfaction, clients should engage the contractor with relevant technical ability, clear organizational maturity and proven risk management capability for the project (Doloi, 2009). The literature argues that supplier selection decision is a multi-criterion problem (Banaitiene & Banaitis, 2006; De Boer et al., 2001; Dulmin & Mininno, 2003; Kahraman et al., 2003; Mahdi, Riley, Fereig, & Alex, 2002; Ng, 2008; Singh & Tiong, 2005; Waara & Bröchner, 2006). Contractor selection in a multi-criteria environment is largely dependent on the uncertainty inherent in construction projects and subjective judgment of decision-makers (Singh & Tiong, 2005). It is a decision of strategic importance to companies. The nature of this decision is usually complex and unstructured (Kahraman et al., 2003).

The overall goal of selection is to identify high potential suppliers (Kahraman et al., 2003). As the modern construction projects increasingly become challenging with innovative design and complex procurement systems, traditional criteria for assessing a contractor's qualification may not be adequate in devising satisfactory outcomes for the multitude of stakeholders in projects (Doloi, 2009). When selecting a supplier, there should be two stages in the process of evaluation of suppliers: determination of qualification of suppliers, (whether a contractor meets minimum requirements of project implementation), and evaluation of selected bids of suppliers (Banaitiene & Banaitis, 2006). To achieve the goals of a construction project, qualified suppliers must be selected for execution of the construction work. Thus, their qualification must be evaluated by determining and

defining appropriate evaluation criteria (Banaitiene & Banaitis, 2006). The client should judge each supplier's ability to meet consistently and cost-effectively their needs using selection criteria and appropriate measures (Kahraman et al., 2003). Evaluation criteria for bids of contractors must be selected considering the size and complexity of a construction project (Banaitiene & Banaitis, 2006). Information may be difficult to obtain, complex to analyze, or there may not be sufficient time. The firm's criteria should be appropriate to its planned level of effort. Also, the firm may initially develop criteria or measures that they eventually find are inapplicable to some suppliers or certain products and services. Applying common criteria to all suppliers makes objective comparisons possible (Kahraman et al., 2003). Simply looking for contractors offering the lowest prices is not ''efficient sourcing'' anymore. It has been proved that the lowest price in tender bid has no credibility for contractors achieving success in projects (Doloi, 2009). Emphasis must be given to assessing technical strengths and management capabilities of the contractor in the context of underlying challenges in projects (Doloi, 2009). Criteria and measures are developed to be applicable to all the suppliers being considered and to reflect the firm's needs and technology strategy. It may not be easy to convert its needs into useful criteria because needs are often expressed as general qualitative concepts while criteria should be specific requirements that can be quantitatively evaluated (Kahraman et al., 2003). Ho and Nguyen (2007) argue that non-quantifiable criteria such as commitment to quality and ability to meet delivery due dates usually have much impact on the evaluation and selection process. However, it is difficult for decision-makers to evaluate contractor bids against inexact qualitative criteria (Yawei et al., 2005).

As stated above, there is a call for change in the construction industry, and topics such as supplier integration, early involvement, and improved supplier selection have received increasing attention. Due to these important aspects of improving contractor, an alternative procurement and project management method called Best Value Approach has been developed.

3.4 Best Value Approach (BVA)

American literature describes the Best Value Approach established by Dean Kashiwagi from Arizona State University as Best Value Approach/ PIPS (Performance Information Procurement System), while the Dutch call it Best Value Procurement (BVP). The reason for the name BVP in the Netherlands was that they thought it to be mostly a procurement tool, rather than both procurement and project management. For simplicity, this thesis will mainly use BVA rather than PIPS or BVP. The goal is to minimize the risk of non-performance and effort in new construction projects (D. Kashiwagi & Byfield, 2002). The approach was introduced in 1991 and has since then become a well-known procurement practice in the United States and the Netherlands, where both price and performance are considered instead of just price (Abdelrahman et al., 2008; D. Kashiwagi, 2011).

As mentioned, cost overrun is a common problem in the construction industry. Without controlling key cost influencing factors, construction companies will not be able to control the expenditure effectively, which will in turn increase project costs and affect overall profit (Cheng, 2014). According to Bos, Kashiwagi et al. (2015), the cause of the collusion in the industry structure is not the contractor's malicious intent, but the minimization of the contractor's profit margins to an extent that threatened their sustainability.

In addition, to improve the performance of projects it is necessary to identify the causes and costs of rework (P. E. Love & Li, 2000). The Lundvall–Juran curve (Figure 3) illustrates the traditional theory underlying cost of quality (COQ) and shows how cost and quality operate as a tradeoff.

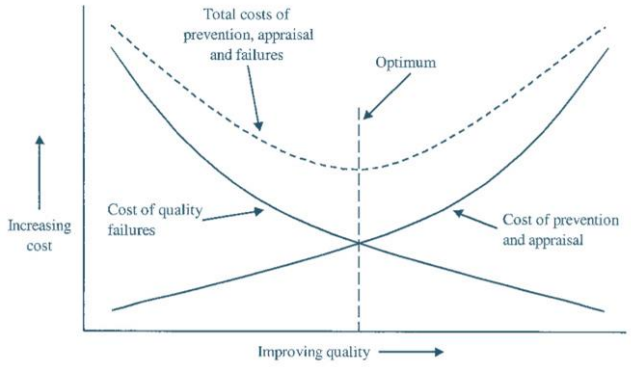


Figure 3: Optimization of quality and cost (Foster, 1996)

When considering the total cost of a construction project, it is important to include other factors than “construction” cost. By reducing the cost of quality, you can introduce the cost of failure. Studies carried out in business, industry and the public sector have shown that the cost of quality failures usually amounts to between 20 and 40% of an organization’s total costs (Maycock & Shaw, 1994). Krishnan (2006) emphasizes the importance of measuring the level of poor quality costs (PQC), to quantify the total failure costs by accumulating the values of both hidden and visual failure costs associated with the cost of quality (COQ). This is illustrated in the figure below (Figure 4).

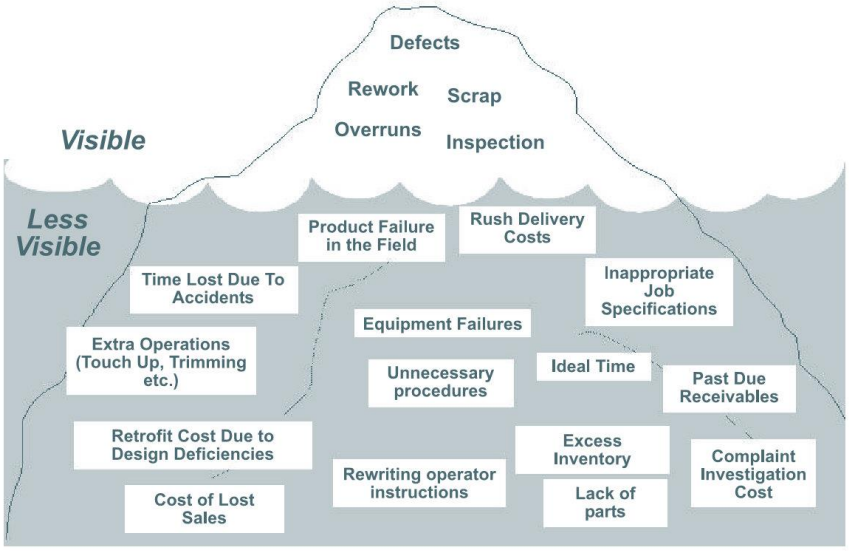


Figure 4: The Cost of Quality iceberg (Krishnan 2006)

Based on the issues above, there is a need to focus more on quality to reduce total cost. One suggestion could be to adopt a new approach towards contract award procedure by giving less weight to price and more weight to the capabilities and past performance of contractors (Odeh & Battaineh, 2002). Many non-priced attributes, such as faster construction and better quality, could increase the procured value considerably and reduce unwelcome adjustments through claims that contractors resort to compensate for unrealistic low bids (Ekambaram, Mohan, & Thomas, 2003). Involving suppliers early in the project, and agreeing jointly with the supplier on targets has been shown to be a key element in project

team effectiveness. Carefully selecting suppliers leads to improved decision-making, promotes the development of a better design and better financial performance (Petersen et al., 2005). Beach, Webster et al. (2005) has identified three reasons why organizations should reappraise the nature of the relationships they develop with their suppliers and customers: the potential collaborative benefits, the trend towards supply base reduction, and the emphasis being placed on best value (Beach et al., 2005). It follows that suppliers that ignore this trend and fail to focus on delivering best value are likely to find themselves increasingly isolated and competing in a shrinking market. However, this also depends on the willingness of clients to accept that best value, and not cost minimization, represents a more effective and efficient mean of achieving a project's goal (Beach et al., 2005). Collectively, the authors mentioned above argue that Best Value Approach could solve some of the construction industry's issues.

The objective of this transformation from the old practice of lowest-bid to best value is to increase the value and quality to the project (Abdelrahman et al., 2008). The main aspiration of the BVA is to accelerate the delivery and shorten the length of the tender procedure to maintain the competition, and to procure the best possible value (van de Rijt, Witteveen, Vis, & Santema, 2011).

3.4.1 The BVA concept

BVA can be described as a predominantly information-based approach which makes predictions about expected result based on performance (Duren & Dorée, 2008). Best value refers to the optimal outcome of a business process (Wang et al., 2013). BVA differs from other procurement and risk management approaches as it minimizes subjective decision-making of the client experts by early involvement and integration of contractors. It forces the contractor to compete based on value, quality risk management capability and price (D. Kashiwagi, 2011). Projects that have used the approach have experienced an acceleration of the project, and transaction times that have been cut in half (van de Rijt et al., 2011). The focus on timely delivery of the projects have led to offers from the contractors for reducing the building period. An objective of the procurement and

project management approach has been to achieve the best possible value for the projects (van de Rijt et al., 2011).

Kashiwagi developed BVA to tender and manage best value projects in the construction field (Duren & Dorée, 2008). A previous research study shows an increasing trend in the construction sector toward the use of various Best Value Approaches (Abdelrahman et al., 2008). Although the low-bid method is typically used to award contracts for most construction projects, the Best Value Approach has received considerable attention (Abdelrahman et al., 2008; Elyamany & Abdelrahman, 2010; Wang et al., 2013). BVA has been tested over 700 times, mostly in the Netherlands and USA, both in construction and other industries (D. Kashiwagi, 2011). It is used to successfully deliver commodities, professional services, non-construction services, and information technology (IT) services (Adeyemi, Kashiwagi, Kashiwagi, & Sullivan, 2009; D. Kashiwagi, 2011; K. T. Sullivan, 2010). The delivery of these services has been an issue for the last 20 years. The results of BVA tests show a 98% client satisfaction and no contractor caused cost deviation. It has reduced the client's risk and project management by up to 90%, and contractor have increased profits by up to 100% without increasing the clients cost (D. Kashiwagi, 2011; D. Kashiwagi, Kashiwagi, & Savicky, 2009).

To select the best contractor, BVA treats past performance as an important indicator to assess whether the contractor is likely to be successful. According to Kashiwagi (2011), systematic information gathering and processing is key. The way the approach is executed often differs between countries due to the various government procurement requirements (Wang et al., 2013). Some of the difference between the USA and the Netherlands is the scoring scales, the weight of the criteria, and the view on the approach as a strictly procurement method to mention some. Regardless of the national interpretations, the best value aims to identify the contractor which is an expert, and assigns quality control and risk management to the contractor (D. Kashiwagi, 2011).

According to Bosma, van der Ven et al. (2015), the approach utilizes the expertise of experts to replace the need for relationships and owner management, direction,

and control. Further, it places less value on traditional practices which emphasize relationships and working together with the client in a trust-based relationship. This is in line with the research done by Bos, Kashiwagi et al. (2015), that argues that BVA utilizes the expertise and not trust. Instead, it encourages contractors to "not trust" the clients, as the need to trust is minimized due to the transparency, clearly identified roles and accountability (Bos et al., 2015). However, Snippert, Witteveen et al. (2015) argues that the BVA uses the past performance information to establish verified trust, and that even though BVA does not acknowledge the development of trust on a more relational level this often occurs during the clarification phase (Snippert et al., 2015). Duren and Dorée (2008) argues that early involvement and creating own solutions increases commitment, which again promotes trust, and that trust creates a better basis for cooperation when using BVA. According to Laan, Noorderhaven et al. (2011), organizations in a project-based industry collaborate in ever-changing temporary combinations, making the issue of developing trust of special significance. Relationships depend on reciprocity norms that exist at the industry level and develop during project execution interaction, and are important for perceptions of trustworthiness. Higher levels of trust will most likely be beneficial in the case of unforeseen events, but the problem is that one cannot know in advance whether the trust will be needed or not (Swärd, 2016).

3.4.2 BVA implementation phases

When selecting a supplier through the BVA, the tender is divided into different phases called pre-qualification phase, selection phase, clarification phase, and the execution phase (van de Rijt et al., 2011). Each phase narrows down the number of suppliers until the most competent one is selected.

Figure 5: The BVA phases (adopted from Rijt el.al 2013, page23)

In the pre-qualification phase, the contractor and client are educated in the philosophy of BVA with the minimizing of decision-making by the client, the transfer of risk and control to the contractors, quality assurance, quality control, and risk management (van de Rijt et al., 2011). This is done by inviting all interested parties to participate in an independent course conducted by experts in the Best Value Approach. The pre-qualification phase is about preparing both the client and the contractor on how to execute the project with regards to choosing and educate key personnel (van de Rijt et al., 2011). Furthermore, the phase is used to formulate project goals, make project plans, and choose the tendering procedure to mention some. The contractor hands out the invitation to tender with project specifications. These specifications can be function based if the contractor is to compete on solution suggestions (van de Rijt et al., 2011). However, according to Kashiwagi and Byfield (2002), traditional pre-qualification is an example of subjectivity and should not be used at all in the BVA. As a traditional pre-qualification is based on limited information it leads to the need for the client to "make a decision" which should be avoided. The approach should minimize the need for technical decision-making and expertise of the client's technical representatives (D. T. Kashiwagi, 1999).

Following the pre-qualification phase is the selection phase. During the selection, contractors compete based on their level of expertise. This is determined by their past performance metrics, ability to identify risk, and capability of their key personnel (Rivera, Kashiwagi, & Kashiwagi, 2016). According to Kashiwagi and Kashiwagi (2011), the selection phase has five filters: past performance information, competitive ability to manage and minimize project risk, interview of key personnel, prioritizing the contractors, and doing a dominance check to ensure that the contractor provides the best value (Figure 6). The contractors submit their written tender consisting of price, documentation on past performance, risk evaluation, and additional value-adding elements. Best Value Approach incorporates other factors than just price into the selection process to improve the performance or to achieve other specific project goals. The low-bid concept is still a part of this selection process, but it is weighted with other elements to determine the best value that reflects quality, as well as cost issues (Scott, 2006). The contractors are filtered based on the tender documents and all acceptable tenders

proceed to the interview rounds with key personnel in the project. During the selection phase, the client's representatives assume the contractors are experts (D. Kashiwagi & Kashiwagi, 2011). The interviews are used to evaluate the competence of key personnel, and to ensure the tender they have proposed is valid, based on prior knowledge and feasible (Rijt & Santema, 2013). After an evaluation of tender and interviews, the client selects the contractor qualified for the next phase.

As mentioned above, the client's representatives assume the contractors are experts through the selection process. However, in the clarification phase, the client does not assume that the BV contractor is an expert anymore, and demand documentation and plans to minimize the risk (D. Kashiwagi & Kashiwagi, 2011; Rijt & Santema, 2013). As a result, the chosen contractor describes a picture of their tender, where the goal is to clarify and argue the choices that they made. The clarification phase is the most important phase of the BVA (D. Kashiwagi & Kashiwagi, 2011). Here, the contractor should show their value through dominant

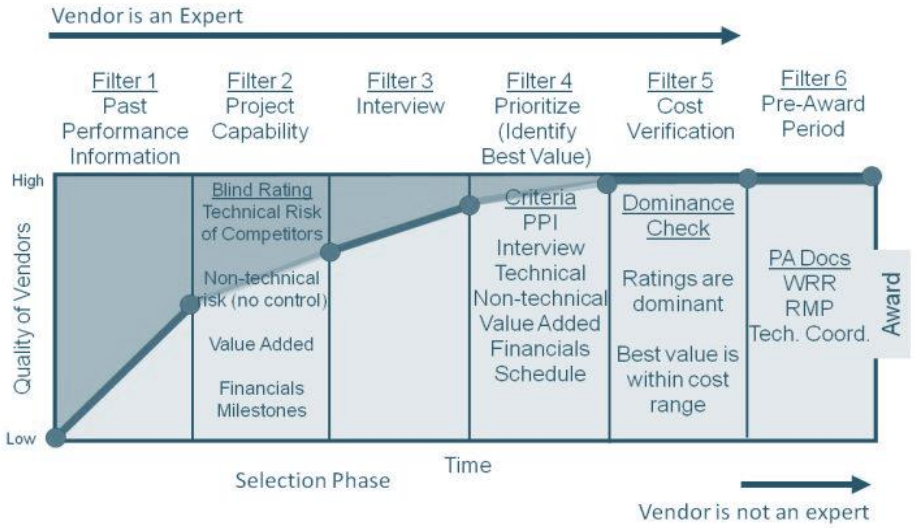


Figure 6: The five filters in the selection phase (Kashiwagi & Kashiwagi, 2011)

expertise and technical competence. Contractors should explain as experts how they will minimize both risk and cost, thus provides the best value for the lowest cost (Rijt & Santema, 2013). According to Kashiwagi and Kashiwagi (2011), if done correctly, the clarification phase should be used to clarify how the contractors will deliver what they have proposed. It is also the time to verify the technical competence of the contractor.

The aim is to minimize the need for technical decision-making in the selection process, and maximizing the need for the Best Value contractor to prove they are an expert in the clarification phase. The paradigm forces contractors to show dominance in the performance, which minimizes the need for any client technical decision-making during selection. The risk is shifted to the contractors to show value through dominant expertise, knowing that experts minimize both risk and cost, thus providing the best value for the lowest cost (D. Kashiwagi & Kashiwagi, 2011; Rijt & Santema, 2013). The contractor should be able to propose measures for risk minimization during the execution of the project (van de Rijt et al., 2011). If the selected contractor can convince the client of their competence, the contract is signed at the end of this phase. If the client is not convinced, they can contact the second-best contractor from the selection phase (Rijt & Santema, 2013).

The last phase is the execution phase. It is important that both client and contractor stick to the BVA principles during the execution of the project. The evolution of the approach is currently changing the procurement model and the procurement function, from the selection of Best Value contractor and then tossing the contractor to project management, to the responsibility of ensuring that the contractor can deliver the Best Value deliverable that they were contracted to do. The Best Value expert should be using the clarification period and a weekly risk report that tracks the milestone schedule to create transparency so that project management can assist the contractor in being successful. As mentioned the need to trust should be minimized due to the transparency, which clearly identifies roles and accountability (Bos et al., 2015). The contractor is the expert and has already proven this in the earlier phases. Therefore, there should be minimal micromanagement by the client from this point out, but the client should contribute with their expertise and point of views when needed or required, without taking over and controlling the project. Weekly reports from the contractor on progress, risk identification and risk ownership contribute to the necessary openness between the parties. This creates responsibility from the contractors and leads to an efficient work environment for all the involved parties (Rijt & Santema, 2013).

The table below (Table 6) shows a brief description of the four phases of BVA.

	Name	Description
Phase 1	Pre-qualification phase	Identify key personnel, educate on the approach, formulate the project goal, develop project plan, choose tendering procedure, hand out invite to tender.
Phase 2	Selection phase	Submit written tender (price, performance documentation, risk evaluation and value adding), interview key personnel, evaluation of tender and interviews, select contractor qualified for next phase.
Phase 3	Clarification phase	Detailed description of tender by contractor, clarification, demonstration of expertise and technical competence, contractor provide risk minimization proposal, the phase ends with tender awarding.
Phase 4	Execution phase	Contractor as the expert, execute the project with minimum client control, weekly reports on progress and risk.

Table 6: The four phases of BVA

3.5 Conditions and challenges when using BVA implementation process

3.5.1 Conditions in organizational change

It is necessary to focus on how a change occurs, rather than just the outcome of a change (Boyatzis & Boyatzis, 2006). When implementing change, it is important to consider prerequisites for attaining the goal, such as the functions that must be fulfilled, the accomplishments that must be achieved, and the organization's environment. Some of these constraints are embodied in prerequisites defined by institutions and other stakeholders (Van de Ven & Poole, 1995). According to van de Rijt, Witteveen (2011), BVA had to be adjusted to fit the Dutch jurisdiction. The European Union’s law sets several constraints on the approach due to strict competition laws and regulations. This prerequisite need to be considered when planning to implement the approach. The construction industry in the Netherlands has similar rules and regulations as Norway, and the adjustments made to the approach in Netherland can mostly also be applied in Norway.

Implementation of new practices in procurement, contracting, and management of construction projects requires effort to assist members learning new approaches while simultaneously disengaging from traditional practices (Lines, Sullivan,

Smithwick, et al., 2015). According to Sullivan (2010), the typical goal of a change is to improve internal process efficiency, and to improve performance and consistency in their management of hired external construction firms. Despite a clear enthusiasm for change within the sector, difficulties are often reported from the implementation of such (Mike Bresnen, Goussevskaia, & Swan, 2005)

According to McManus and Wood-Harper (2003), gaining commitment to change requires relinquishing ownership and encourage it to become the property of the users, and the project manager to find the means and processes that will foster an environment in which team members will be motivated to work towards the change. Further, it requires keeping people loyal to the implemented change, and constantly striving for its attainment, even during periods of adversity. For organizations, the adoption of a new approach requires comprehensive change, including significant modifications to both work processes and existing organizational structure. For a change initiative to be successful, the modification must be thorough, and needed change must be correctly identified in the delivery cycle to implement this type of paradigm shift (Migliaccio, Gibson Jr, & O'Connor, 2008).

Providing organizational members with appropriate change-related training should not be overlooked and has the benefit of improving organizational members' feelings of participation, self-efficacy, and comfortable with the change effort. Internal change agents must be formally designated and prepared for high levels of engagement at the project level of change implementation. This provides change-related support to organizational members, communicates the organization's strategic commitment to change, and keeps the leadership in touch with the emotional responses of their personnel (Lines, Sullivan, & Wiezel, 2015).

3.5.2 Challenges in implementation

On an organizational level, the implementation of BVA leads to a shift in power from the client to the contractor. According to Boyatzis and Boyatzis (2006), organizational change needs to occur on a personal level and may be in a person's actions, habits, or competencies. The responsibility of quality control shifts to the

contractor, and contractor leadership is relied upon with usually less information flow to the client (K. T. Sullivan, 2010). As a result, there needs to be a change on a personal level within the client organization. The people involved should believe in the feasibility of the change and there need to be a personal desire for change. People can change in desired ways, but not without intentional efforts. Without intentional efforts, the changes are slow, result in unintentional consequences, and diminish the enthusiasm for the change (Boyatzis & Boyatzis, 2006).

One major cause of change failure is resistance from organizational members where resistance to change is defined as any dissenting actions that slow, oppose, or obstruct a change management effort (Lines, Sullivan, Smithwick, et al., 2015). In the table below (Table 7), different types of resistance are described. The approach used to implement change is important to consider. Underestimate the amount of time and effort required to accomplish the change make unrealistic expectations that may lead to resistance (K. T. Sullivan, 2010).

Resistive behavior types

Types of resistive behavior	Definition of the resistive behavior
Reluctant compliance	Doing the minimum required, lack of enthusiasm, guarded and doubtful
Delaying	Agreeing verbally but not following through, stalling, procrastinating
Lack of transparency	Hiding or withholding useful information during implementation
Restricting education	Avoiding or restricting the spread of the change message
Arguing & open criticism	Verbally opposing and/or finding fault with the change implementation
Obstructing & subverting	Openly sabotaging, blocking, undermining the change implementation
Spreading the negative word	Spreading negative opinions and rumors, appealing to fear in resistance
Termination	Voluntary or involuntary removal from the project or organization
Reversion	Changing back to traditional practices during the implementation
Misguided application	Changing the implementation beyond the stated process, goals, methods
Forcing the change	Striving for perfection at expense of implementation effort
External influence	Behavior in response to negative feedback from external sources

Table 7: Resistive behavior types (Lines, Sullivan, Smithwick, et al., 2015)

Lines, Sullivan et al. (2015) identifies six change management factors that contribute to minimizing resistance to change, including certain aspects of project scope, size and duration, organizational expectations of change implementation speed, the establishment of formal change agents, and the level of change agent involvement with implementation activities. In addition, there is a directly proportional relationship with change message delivery (in the form of change-related education and training received by organizational members) and change management success (Lines, Sullivan, Smithwick, et al., 2015). Implementing change often impacts relations of power, work tasks, and professional identity of individuals affected. Consequently, the implementation of new management initiatives is not a politically neutral act, and is often introduced with direct challenges to existing value systems and power structures in mind (Newell, Bresnen, Edelman, Scarbrough, & Swan, 2006).

Another cause introduced by Carroll, Patterson et al. (2007), is implementation fidelity. The concept is often used in the medical field (Hitt et al., 2006; Penuel & Means, 2004; Resnick et al., 2005), and refers to the degree to which an intervention or program is delivered as intended. Only by understanding and measuring whether an intervention has been implemented with fidelity can researchers and practitioners gain a better understanding of how and why an intervention works, and the extent to which outcomes can be improved. Implementation fidelity is an important source of variation affecting the credibility and utility of research (Carroll et al., 2007).

3.6 Theoretical framework summary

When formulating the research question, an assessment of the theoretical background was used as a basis to discuss: *"How can a Best Value Approach aid construction clients in supplier selection, and what are the potential benefits and challenges?"* The research on this change in supplier selection is based on a case study on a pilot project using the BVA. A range of insight from the literature has been combined to get a better understanding of drivers for the improvement in the supplier selection, and these drivers are used in the research. There was a need to combine several insights since little research has the same focal point as this thesis.

The traditional contracting method in construction has often resulted in a separation of design and build which hinders knowledge integration and diminishes the contractors influence on designer decisions. When there is a lack of contractor's input in the design, implementing the design can result in schedule problems, delays, disputes, and harm the overall project performance (Song et al., 2009). This call for change has led to firms changing their construction projects from the traditional separation from design-bid-build to design-build (Borg, 2015; Naoum, 2003; Naoum & Egbu, 2015; Pakkala et al., 2007).

More innovations in the industry come from suppliers, hence early supplier involvement can be highly beneficial to a construction project (Jeroen et al., 2012; Song et al., 2009). Considerable attention has been directed towards forms of client-contractor relationship that move away from traditional 'arms-length' contracting and towards relationships based more upon cooperation and trust (Mike Bresnen & Marshall, 2000, 2010; Jacobsson & Roth, 2014; Laan et al., 2011). To achieve the aims of a construction project, improve value for money and overall satisfaction, clients should select contractor with relevant technical ability, clear organizational maturity and proven risk management capability for the project to ensure qualified suppliers must be selected for execution of construction works (Banaitiene & Banaitis, 2006; Doloi, 2009). When introducing a change, it is important to also consider the challenges associated with the change. For organizations, adoption of a new approach requires comprehensive change, including significant modifications to both work processes and existing organizational structure. For a change initiative to be successful, the modification must be thorough, and needed change must be correctly identified in the delivery cycle to implement this type of paradigm shift (Migliaccio et al., 2008). In addition, it is important to include the prerequisites and conditions such as national law, which set several constraints on the change.

By combining the main concepts from each area, a framework was created to use in the empirical setting:

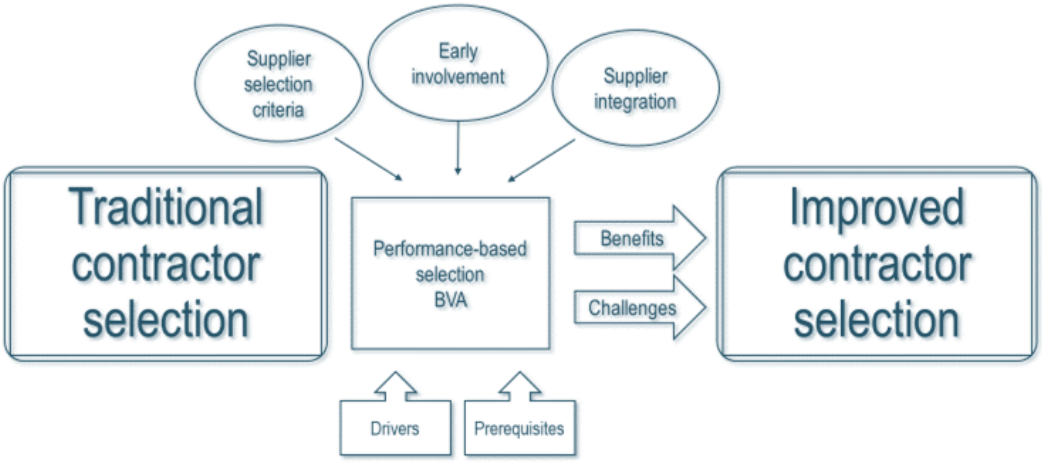


Figure 7: Framework

Through the theoretical discussion, three main areas were identified as affecting changes in the contractor selection; supplier selection, early involvement, and supplier integration. The theory argues that through an application of these areas, it is possible to achieve improved supplier selection. In addition, the characteristics of the industry set the foundation for what drives the need for change. Further, some prerequisites were identified which need to be considered when implementing this type of change. This framework will be used as a basis when investigating the empirical setting through a case study on the supplier selection approach, Best Value Approach.

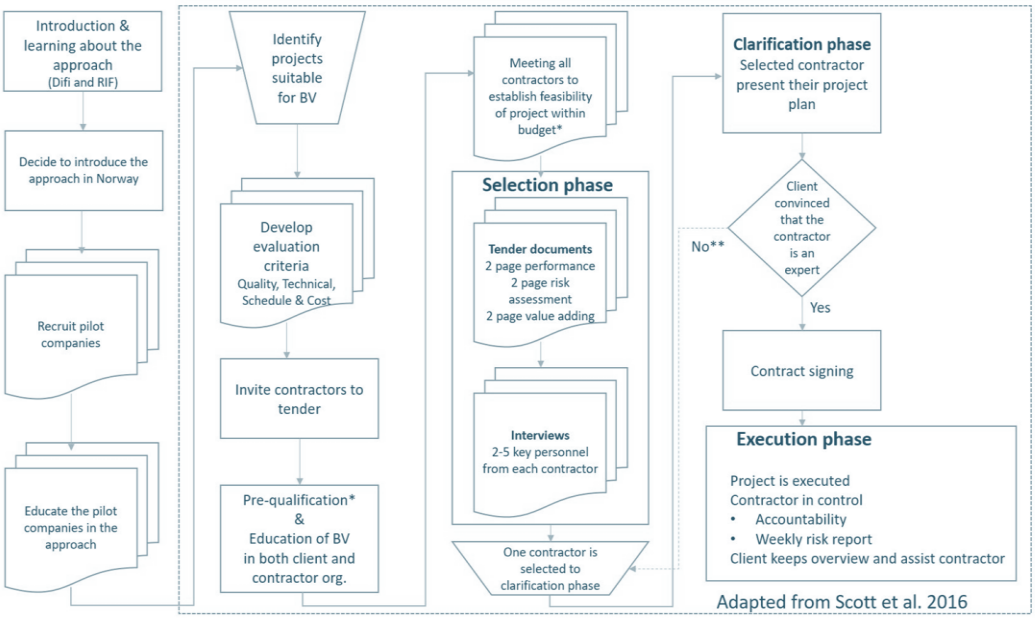
CHAPTER 4 - Empirical findings and analysis of the case study

This chapter presents the empirical findings and analysis of the case study in relation to the primary and sub-questions. The objective of this study was to understand what it takes to change the traditional procurement in the construction industry using an alternative contractor selection approach, and the research question was, *"How can a Best Value Approach aid construction clients in supplier selection, and what are the potential benefits and challenges?"* The first section will describe what initiated the adoption of BVA and how the introduction was conducted. Further, we describe the implementation process and the different stages of the approach. This is analyzed in relation to the framework presented in chapter 3. The analyzes is based on observations, interviews, conversations, and documents, and is collected from both the Nye Veier's and all the involved contractor's view. We structured the presentation of the analysis based on the implementation process and analyzed it in relation to drivers, the level of supplier involvement and integration, supplier selection criteria, and the benefits and challenges that occur during the process. In addition, interviews, presentation, and conversations with both the founder of BVA and a Best Value expert from the Netherlands were used to supplement data collected during the pilot project.

4.1 Background

The public procurement department in Difi (the Norwegian Agency for Public Management and Government) is a strategic agency that looks holistic on procurement in the public sector. Related to public construction they aim to improve project management, competition and reduce the conflict level in public construction projects, by systematizing, analyzing, and conveying knowledge, and are an active driver for change and renewal (Difi, 2016). Difi has conducted a thorough research on the Best Value Approach (BVA), which they believe will suite the Norwegian market. In 2016 they initiated a test of the approach using pilot projects (Difi, 2016). As part of an initiative, several clients in the public construction sector were invited to be part of a pilot project to evaluate the new procurement and project management approach in a range of different projects.

Figure 8 illustrates the entire process we observed from Difi's initiation to the execution of the pilot project.



* Not in accordance with the Dr. Kashiwagi recommendation's

** Go to the contractor that scored second best

Figure 8: The implementation process of BVA

The case studied in this thesis was the implementation of this new approach in Nye Veier (NV), a large Norwegian highway construction company, which conducted the first of the pilot projects. It is a part of a cluster of pilot projects that will test and evaluate the success of BVA in cooperation with Difi. The project is not only the first one in Norway to be executed using BVA, but also one of the largest project of the pilots. NV's organizational structure is shown in figure 9.

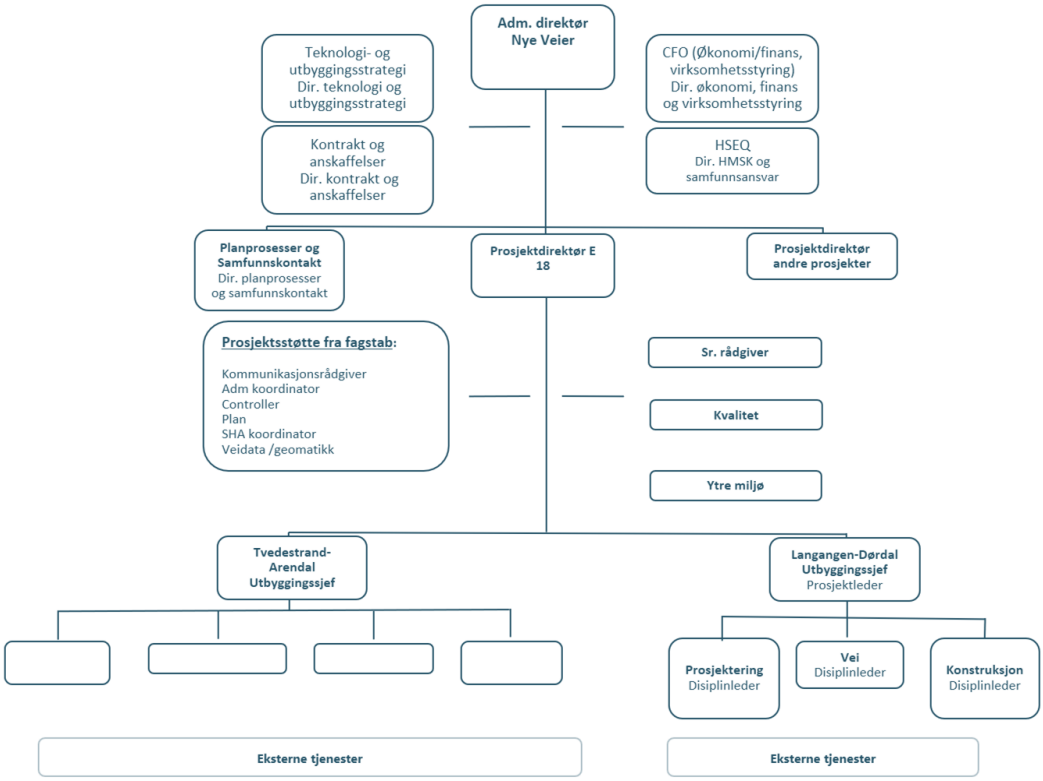


Figure 9: Nye Veier's Organizational Structure

Nye Veier (NV) is a fully state-owned company, which tasks include planning, building, operating, and maintaining key main roads. By ensuring comprehensive and cost-effective development and operation of traffic-safe highways they aim to be a slim and efficient construction organization. The company's vision is to build good roads, smart and quickly (Nye Veier, 2017b). Their aim is that the infrastructure will quickly boost business competitiveness, provide the public with more efficient, predictable, and safer road transport. This, in turn, will create added value, in addition to development in the traditional sense. Corporate Social Responsibility and HMSK (health, environment, safety, and quality) is central to New Veier's business - both in own operations and in relation to suppliers. The ethical standards of all their partners are high and they are highly dedicated to fulfilling their zero vision of injuries, accidents, and unresolved conflicts. Further, they work towards specific emission targets for CO2 up to year 2030, such as emissions from infrastructure construction will be reduced by 40%, and emissions from operation and maintenance will be reduced by at least 50% (Appendix 3). Due to their mandate and aims, the procurement department and the project management at Nye Veier were motivated to get acquainted with new methods to improve tendering and executing their projects.

As a newly formed company, NV's mandate encourages the use of alternative methods which enabled them to swiftly act to identify a suitable pilot project. After a thorough consideration, of all upcoming projects, Nye Veier selected one to use as a BVA pilot. The project was to build a new highway (E18) between Rugtvedt and Dørdal in Telemark, Norway. A new 18 km four-lane highway which will replace the existing road (Nye Veier, 2017a). The project has a budget of approximately two billion Norwegian Kroners, and is part of one of the largest current road projects in Norway. Our study explores how Nye Veier implemented and used the Best Value Approach to select the contractor in this project.

During the startup of the pilot project, the procurement and legal team at NV developed all the criteria that were needed together with a Dutch Best Value expert, from Best Value Group. They also started to educate their own employees on the new approach. NV decided to combine the Best Value Approach with a design-build delivery method, which is the most commonly used combination in USA and the Netherlands. When NV had identified the pilot project, developed the criteria and got a better understanding of the approach, they invited contractors to tender. The announcement included information about the tender process that was going to be used and an encouragement to the contractors to educate themselves on the new approach.

NV used pre-qualification criteria like the ones used in traditional tender processes rather than allowing all interested parties to deliver an offer. After the initial filtering, four contractor groups, consisting of builders and consultants, were invited to an individual meeting, where the feasibility of the project was discussed regarding the budget roof. Three of the contractor groups, hereafter referred to as the contractors, decided to continue the process, and sent in tender documents consisting of six pages as the first stage of the selection phase. NV decided to invite all three of the contractors to the next round, interviews, based on these tender documents. In the interviews, three key personnel from each contractor was interviewed by one interviewer for an hour each. The interviews consisted of questions to determine the competence of these individuals as key personnel, and was evaluated by a board and recorded as part of the

documentation for a potential contract. The evaluation team from NV consisted of five members which assessed each candidate individually and gave scores. Based on the accumulated evaluation, one contractor was deemed as the best candidate (the expert) and was invited to be part of the next stage of the tender process, the clarification phase.

In clarification phase, the contractor took charge of the process and developed detailed plans on how they were to execute the project they were to deliver in a comprehensive way. The contractor was required to show that they had planned all steps of the execution, and that they had considered all the major risks. Based on this demonstration and discussion regarding what the delivery was to include they were awarded the contract. If the contractor had not been able to convince NV of their competence in this phase, NV would have had to contact the next best candidate. The final stage of this process has not been concluded at the time of this study, which is the execution phase. The contractor send weekly risk rapports to NV, and they have monthly meetings to ensure that the plan presented in the clarification phase is being carried out satisfactorily. Through the risk report accountability becomes transparent, as all deviation is logged and assigned a cause (uncontrollable e.g. weather, deviation by contractor or deviation by NV).

4.2 The motivation for choosing BVA

NV referred to their mandate to build faster, cheaper, and better through new and innovative methods, as a main motivation to deviate from the traditional contractor selection. NV is a newly formed company founded to challenge the traditional road construction industry in Norway, therefor they recruit project personnel with an interest in innovation and change. The majority expressed curiosity and enthusiasm through participation in discussions, and eagerness to ask questions and take notes. One of the key personnel in NV stated that “this approach suits our vision to involve contractors at an early stage.” An important aspect which motivated NV was the problem with cost overruns due to change orders, poor quality, and the cost of failure. They believed that involving the contractors early encouraged both ownership of the project, involvement, and balanced risk management. This was also mentioned as a good way of reducing

the occurrence of conflicts, which often occur when change orders, poor quality, and failures take place. Further, they expressed that engaging the entrepreneurs and advisors in an early phase contributed to more rational solutions which have in the past lowered the costs. The procurement process already shows signs of providing cost-efficient and good solutions according to representatives from Nye Veier (NV). They also mentioned that the BVA way of bidding significantly contributes to achieving their goal of streamlining road construction and getting safer roads for their investment. In addition, NV said that by using the design-build method, the cost of changes due to the separation between design and build could be reduced. Therefore, the potential cost savings were found to be one of the main drivers.

4.3 Preparation and planning for BVA in Nye Veier

To implement BVA, NV needed to learn about the process by undergoing official training and certification. This was done partly separate and partly through workshops organized by NV for all participants. The preparation focused on educating the actors in the BVA and understanding the adjustments that were needed to implement the approach in Norway. During the planning, the schedule was developed with deadlines and milestones (Appendix 4). In addition, forming of criteria, evaluation documents, and instructions were needed. Nye Veier had several initiators from management and the legal department. They were eager to learn during the meetings and were actively involved in making the preparations needed to carry out the approach. The enthusiasm was clear during the first internal education, where actors had read up on the material beforehand and had specific questions about how they would solve different issues in accordance with the approach. NV participated in certification courses to be able to carry out the pilot project in accordance with the BVA requirements. In addition, they hired a specialist from Best Value Group in the Netherlands to support them during the entire process. NV stated that this assured that they followed the approach correctly.

From the beginning, we observed enthusiasm and an eagerness to get started from NV's perspective. This eagerness to start became a challenge during the process

when they initiated processes before they were fully planned, resulting in some aspects being postponed. One example which was observed later in the process was when a participant asked a question, one of NV's key personnel answered; "I do not know what the BVA requirement says about this, but we can get back to it later." Due to little time and several other tasks, the education in BVA obtained by most of NV's personnel was limited. Some individuals seemed insecure about the approach, which made it hard to obtain enough knowledge. The new way of working caused some uncertainty, which was enhanced by a lack of clear communication in certain situations. In this case, there was uncertainty among all parties during the initial gatherings and it was expressed several times that this was new to everyone.

We observed some resistance among NV's key personnel during the process. There were individuals that appeared to be reluctant to learning something new or appeared to be uninterested. These individuals were either not paying attention during education, or working on other assignments during presentations rather than paying attention. Several of these showed signs of reluctant compliance and often did the bare minimum. Certain individuals seemed interested during the education, but acted differently when executing, either due to forgetfulness or an inner resistance of letting go. There was little to no proclaimed resistance, however, a few individuals communicated a lack of belief in the expected results.

When NV was to implement a different tender process, there were several conditions that needed to be considered. The Norwegian public procurement laws had to be thoroughly considered in all parts of the process, and especially the competition laws. During the preparation, the legal team had to go through the entire process and assemble all necessary legal documents to ensure that all public procurement laws were followed. The legal implication of BVA was also considered by Difi, which did a thorough investigation of the feasibility of aligning BVA with Norwegian laws (Appendix 5). The main concerns were the competition law that prevents negotiation on price, especially when considering the value adding services. In addition, the objectivity of the interview process and the legal foundation for changing to the second-best contractor if the first one did not prove qualified during clarification phase was investigated. Both the

Norwegian laws and the BVA requirements needed to be followed during the implementation, which both the client and the involved contractors expressed as a concern.

4.4 The BVA implementation process

4.4.1 BVA Pre-qualification phase

The tender process was initiated by a pre-qualification, which was conducted similarly to that of a traditional contracting. According to Dr. Kashiwagi, this phase should only be used to encourage education on the approach with no elimination of candidates. However, NV chose to use the more traditional practice, by doing the first filtration in this phase, ending up with three contractors. The criterion used in the prequalification was adopted from the BVA and was like the ones that should be used in the selection phase. The focus was on meeting the minimum financial requirements by NV, tax declarations, possible criminal records, and company certificate. In addition, the use of performance metrics such as health, environment, and safety (HMSK), H1-value (work accidents), social responsibility, and contractor performance line (previous relevant project performance) was conducted. A representative from NV mentioned that this was done because they were still uncertain about the approach at this stage, and wanted to ensure that some off the safe guards and known filters were still in place.

The construction industry market in Norway is quite small, which sets some limitations to the number of contractors capable of executing a project of this scale. An important condition being able to select the best suited contractor for the pilot project, was the number of contractors to choose from. Few large actors in the market combined with an expansive political approach to road construction in Norway (Nasjonal Transportplan) made the available contractors limited, and made the process of acquiring the most competent contractor crucial. Therefore, another important condition was to have enough contractors in the process to use BVA as a suited approach. In addition, several of the contractors were concerned that due to the quite small industry, it could be hard not to identify which offer

came from which contractor. The contractors expressed a concern that NV's objectivity would suffer from this.

The pre-qualification documents were evaluated mainly through a weighted score of 60% on past performance, 30% on health, environment, and safety (HMSK), and 10% on corporate social responsibility (CSR) (Appendix 3). Metrics such as how many relevant projects the key personnel had participated in and performance, time deviation, accidents, and conflicts related to the specific projects were used. Previous employers scored the contractors based on similar criteria was also used. Based on these criteria, the nine initial candidates were reduced to four contractor groups that became pre-qualified and was invited to become part of the tender process.

A challenge in some of the construction companies was the different configuration of organizational structure needed to use the BVA. Due to the design-build project delivery method the contractors had to form alliances with consultants (project planners) to deliver a fully integrated product. This created new organizational structures and changed the dynamic between the planners and builders within the contractor organizations. This reduced the power of the consultants and made them feel “downgraded” in the hierarchy. As a result, the project planners showed some reluctance to see the entire project perspective. In addition, some of the construction workers got a key role in the tender process since they needed to be actively involved in the planning and the interviews to win the bid. As a result, tasks that were previously assigned to a tender team was shifted to the construction workers, which made new demands on the contractor organization.

The process started with a meeting with each contractor, where the maximum budget was discussed to ensure the economic feasibility of the project. Nye Veier wanted to initiate the process with an open communication manner and stated that they believed that the BVA would encourage a transparent process that hopefully would lead to less conflicts at the end of the project. NV emphasized that one of their “zero vision” goals were zero unresolved conflicts at project completion. All contractors were informed of the process and schedule of the tender process and

encouraged to future educate themselves on BVA individually. During the initial pre-qualification meeting, a key participant in one of the contractor companies emphasized that they were motivated by the opportunity to influence their working environment in a different way. He stated, “we get to use our competence more fully, and it is fun to get new challenges and opportunities.” Further, he expressed that this is a necessity since the construction industry is changing. Several of the contractors underlined that this project motivated them to be well prepared, and they stated that they were using a lot of resources on educating themselves in the BV Approach. They believed that the focus on past performance rather than just price gave them a competitive advantage and was the only way to ensure quality in the future.

The contractors had to gain knowledge about BVA, and to some extent even more so than NV, since they were the ones to carry out the project. According to Dr. Kashiwagi, a key step for the contractors is to identify the expert in their organization and to understand how to utilize these experts. He mentioned that it is a challenge to identify them and it is not normally done well within the contractors’ companies. The key personnel had to be identified and determined at a very early stage. This provided them with a small timeframe to prepare themselves and obtain knowledge about this specific project. However, there was a clear enthusiasm for the process from all the contractors, showed by their eagerness to take notes, good questions during the presentations, participation during discussions and by their commitment to seeking out additional information from several sources.

4.4.2 BVA Selection phase

After the pre-qualification, where four contractors were invited to tender, the process entered the second phase (selection phase). Out of the four pre-qualified contractors, only three chose to attend the tender process. In the selection phase the contractors were asked to first deliver tender documents, and then three key personnel from each contractor company had to attend an interview. In the selection phase, a filtration was conducted based on the interviews, tender

documents, and price to end up with one contractor which moved on to the next phase (Appendix 7).

Documentation

The first part of the selection phase consisted of a document containing the price offer, and a six-page tender document, including the contractor's proof of performance, their project risk assessment and their value adding suggestions (Appendix 8). These documents were delivered separately to be evaluated independently of each other. The price was delivered on the basic offer with additional costs linked to the value adding suggestions.

Nye Veier found the six-page tender, easy to evaluate and compare, and they got a better understanding of the capabilities when other criteria than price were introduced. They argued that it provided a good overview, and shifted the focus towards risks, solutions, and process rather than a sales pitch. The value adding pages of the tender documents were a good source for innovative ideas in the project, and gave the contractors an opportunity to present their expertise. NV saw that by selecting a competent contractor with relevant experience, they could use knowledge from previous projects to develop new and innovative solutions. Further, NV argued that by using competent contractors, there was a better balance between quality and price which encouraged the industry to build better. However, some of NV's personnel expressed that they found it unnerving to choose a contractor with more limited information compared to the traditional tender documents.

The contractors expressed that is was hard to limit the document to six pages and challenging to present details and solution on the restrictive sheet space. However, they mentioned that they had learned a lot by being forced to be concrete. Several contractors mentioned the uncertainty around what the price given should entail. In addition, the contractors found it difficult to interpret some of the tender parameters such as the weighting and how to prove past performance. The risk parameter presented a challenge as it was not only to be minimized, but to be identified as a possibility for NV which they had not recognized themselves.

However, they mentioned that by dedicating two of the six-page tender document to value adding suggestions they were encouraged to use the knowledge they obtained in previous projects. This gave them an opportunity to present solutions they had identified, but not had the occasion to execute earlier. Overall, they experienced the process was faster, and that expectations were clarified earlier.

The time and money needed to educate the key personnel in the contractor's organization and create a different set of tender documents, was an investment that needed to be considered when the contractors decided to get involved in the pilot project. The compensation for the tendering did not cover all the costs involved and entails an uncertainty for the contractor's organization, as there was no guarantee that the investment would pay off. According to the contractors, the hours spent on creating the six pages of the tender also took considerable more time than they foresaw, due to the difficulty of being short and concrete while communicating what they were offering. As a result, the strain on the contractor's time and resources could be an entry barrier and prevent some actors from entering the tender competition. However, one of the key contractor participants stated that "even though we used a lot of resources, learning the approach, we estimate a saving of several hundred thousand NOK in developing the tender documents due to less writing and documentation."

Interviews

Nye Veier stated that they expected the contractors to acquire knowledge about BVA before the joint gatherings they had, and especially before the interview rounds. They demanded that the contractor was prepared to answer how they would carry out the project in accordance to the BVA. Also, there was expectations regarding the ability to prove the quality through certification- and tender documents and during the interviews. It became clear during the interview rounds who was well prepared and who the interviewee struggled to get concrete answers from.

The in-depth interviews consisted of key personnel from each contractor, an interviewee and five evaluators from NV. The aim was to get an overview of the

contractor's organizational structure and talk to the personnel with key roles in the project. Three individuals from each contractor explained their role in the organization, past performances, and their perception of how the project should be carried out following BVA. A sample of interview questions that were used can be found in appendix 9. It was obvious that most of the possible contractors had clear support from the management, and further along in the process the positivity and enthusiasm of implementing a new approach were evident from nearly everyone involved. In sum, there seemed to be a willingness to change within the contractor organizations shown by their adjustments to meet the demands of the project implementation.

All the involved contractors stated that they found it new and exciting to communicate in a different way, and felt that they were allotted enough time to show their competence during the interviews. Both NV and all the contractor representatives felt there was an open dialog between the parties from the start. In addition, NV's evaluation team commented that by using several people to listen and evaluate, and everyone giving individual scores, they got more shades and opinions. The contractors questioned the objectivity of the interviews. However, NV mentioned that during the interviews, the evaluation team was too focused on documenting the answers to let personal opinions affect the score.

Several representatives from the contractors praised NV for their interpretation of the interview process which was slightly different from the manual description with more focus on past performance than the six-page tender document. The key personnel from the contractor companies had to use a lot of time reading up on the approach and taking courses. Some of the contractors even hired BVA experts from the Netherlands to guide them through the process as well. The contractors felt some pressure before the interviews regarding the number of questions concerning the approach and the level of knowledge required. They also mentioned that it was hard to prepare for the unknown and that it was a bit uncomfortable to answer questions on behalf of all the contractor collaboration partners, due to the tape-recorder that was used during the interviews. In addition, they indicated uncertainty around the use of the tape-recorder and how binding statements in the interview were. Some of the representatives from the contractors

were unaware of the tape-recorders beforehand which made them more nervous, however, this was informed prior to the interviews. Furthermore, one of the contractors felt that there was resistance against international actors. However, NV stated that they were open to international contractors, but the key personnel and the communication would have to be in Norwegian.

Several of the interviewees from NV reported that they felt they got a better understanding of the contractors' cooperation, attitude, and experience. This made it easier to separate the different organizations and especially the separation between theorists and practitioners became clear. However, they mentioned that it demanded a lot of concentration from the evaluation team to get all the shades and that it was too many criteria and boxes to fill-in in the evaluation sheet. This made it hard to separate and give points correctly, and evaluate competences, especially if they answer vaguely. NV even changed the scale to make it more logical than the original scale. But overall, NV expressed that the interviews were a positive experience and they were pleased with the questions and the interview execution. Both NV and all the contractors agreed that BVA is a more open and honest way of selecting a contractor.

At the end of this phase, NV had to evaluate the three potential contractors' tender documents, the price bid, and the interviews. Dr. Kashiwagi emphasized that the time, money, and non-technical metrics should be used to evaluate and made simple to create understanding. The scale used by NV was their own interpretation, rather than using identical score range too USA or the Netherland's. NV said that this was due to the difficulty they had with understanding the logic behind the range. The best performance in each category was adjusted up to the full score, and was declared the winner of that criteria. The price was not revealed to the team that evaluated the other criteria, and only scored by the procurement officer.

4.4.3 BVA Clarification phase

According to the founder of BVA, Dr. Kashiwagi, the two remaining phases, clarification, and execution phases, are the most important ones. After choosing one of the contractors, the clarification phase started. In this phase, the focus was on the contractor presenting a detailed plan for how they intended to execute the project. The purpose was to relate the expertise to the specific context, and ensure that all aspects are thoroughly premeditated. NV pointed out that one of the main reasons they wanted to implement BVA was to get the contractors involved in the process earlier. They experienced that by involving the contractors in developing the solution, they could draw on each other's experience and come up with new and exciting ideas. The risk identification is an example of this, when four risks were increased to sixteen through discussions and collaboration. Through early involvement and better communication, both NV and contractor saw the benefits of less misunderstandings or conflicts. In addition, the contractor expressed the benefit of cooperation between the designers and builders when developing a solution, as this draws on both the technical experience of the project planners and the practical experience of feasibility that the builders have.

Throughout the clarification process, we observed in the meetings how the relationship between NV and contractor evolved. NV mentioned that the interview process gave a better understanding of the contractor's competence as well as foster more trustful relationships. As the process progressed, it was observed that many of the key personnel had common reference points due to the small industry which made communication and trust building easier. Dr. Kashiwagi stated that the development of relationships and trust often happens during the process, however, it needs to be a continuous focus on proving expertise and not a slacking on weekly reports due to trust.

One issue expressed by the majority of contractor participants, was NV's statement that they would follow the BVA requirements as long as it was feasible. Despite NV's enthusiasm and eagerness to start the project, the lack of fidelity guarantee created some uncertainty. This also challenged the understanding of the approach, as the contractor's perception was that it would be followed 100% at all times. Moreover, there was a change from the NV's side during the clarification

phase when some of the key initiators that was presented in the beginning of the project became absent. This became a problem in some situations when the contractor had questions which should have been answered by these initiators. This caused some confusion and deviation from the BVA basic requirements. However, both NV and the contractors were positive from the start and throughout the whole process. The majority were positively surprised and optimistic of the outcome. One of the key personnel from one contractor company stated during the interview that "I am very positive towards this approach and I believe that this will benefit all parties involved". The attitude towards new ways of working seemed to affect the end result, and it was probably an advantage that NV and the chosen contractor believed that this approach would benefit them both.

The dynamic between Nye Veier and contractor was shifted when implementing the approach. The clarification phase represented the stage when the contractors were supposed to assume responsibility and control of the process. NV's role in this phase was with less focus on technical solutions and more on determining competence. One of the main participants from NV said, "The clarification process is very difficult, as it is hard to agree on the details without micromanaging." There seemed to be some uncertainty due to lack of proper knowledge and actors seemed afraid to show their ignorance on certain aspects of the approach. There was still some uncertainty towards which details could be discussed and to which extent NV could interfere. The negotiation aspect seemed to be a challenge during the implementation, as it became tempting to discuss changes to the deliverables during the clarification phase rather than listening to the presentation of the product. The contractor had to remind NV that the value adding's was a yes or no decision rather than a negotiation.

For the contractor to shift to this new approach, some adaptability was required. However, the level of adaptability that NV expected was a discussion within the contractor group. It was a challenge for the contractor to both follow the BVA and listen to the NV's requests. The price and tender documents handed in by the contractors was based on one solution, and it became difficult to relate the offered price if NV changed their preferences. This was a concern expressed by the

contractor, and caused uncertainty regarding how this should be handled in accordance with the BVA principles. It was thus evident that good preparation and a thorough understanding of the approach was needed to execute the clarification phase.

Both NV and contractor company indicated that it was difficult to change and facilitates for the shifting power distribution. It appeared to be some general reluctance to change which came across as being caused by a fear of transferring responsibility to the contractor. Throughout the implementation, there were situations when lack of compliance was not corrected and micromanagement from the NV was tolerated. This was a communication barrier as the contractor was uncertain of the level of correction they could do, and NV was uncertain of their level of interference before it turned into micromanagement. While most of the key personnel from NV chose not to interfere when the contractor presented their implementation plan, others interrupted on several occasions. The question in mind was also to which extent NV micromanaged intentionally or by forgetfulness. This sign of micromanagement and falling back to old routines was an insecurity for the contractor and a challenge to know what and how much to tolerate. A contractor representative mentioned that NV changed details in the contract late in the process. On several occasions, he had to state, “remember that we have to follow the BVA requirements.” There is a fine line between giving suggestions and presenting solutions on how the project should be executed. The further along the process, the more evident it became who chose to ignore some aspects of BVA and preferred to do tasks in the traditional way.

4.4.4 BVA Execution phase

According to Dr. Kashiwagi, this is one of the most important phases in the BVA, but many actors think the process is finished once the contractor is chosen. Unfortunately, due to the limited period of this study most of this phase occurred after the study was completed. Hence, the analysis of this phase is mostly based on the initial part of the execution and the actors’ expectations. The BVA requires the contractors to take the lead in both planning and development. As a result, the contractors have an opportunity to engage in the newest techniques and to be in

the forefront of innovation within the field. The approach provided them with more autonomy, which let them operate as experts and gave them freedom to suggest the best solutions in their opinion. The contractors expressed that this was one of the main reasons why they were eager to try out this approach. It also opened for a better use of the contractor's knowledge and resources to get the best result, which was a factor they stated as important to them. The representatives from the contractors all showed enthusiasm through clearly positive attitude and an eagerness to execute BVA. Findings therefore highlight that the main driver for the contractors to engage in this process were the freedom to operate as experts and innovate rather than only following the NV's instructions. Nye Veier expressed their satisfaction with the approach with regards to the faster contractor selection and confidence that the contractor acts as the expert. A contractor representative stated, "we believe that both parties gained a more favorable contract by using this approach." As mentioned earlier, both NV and contractor were satisfied with the communication and open dialog between them, and into the execution phase, the contractor stated that this was still the situation. Both parties participated in meetings every other week, but the meetings were reduced in number and length to be more efficient. In addition, the contractor sent a weekly risk report to NV to update on the progress in accordance with the schedule.

4.5 Summary

During the observations, interviews, and conversations we found that the BVA was initiated mainly due to NV's mandate to build faster, cheaper, and better roads. As a result, they were eager to get involved in Difi's pilot project, using BVA in Norway for the first time. NV was motivated by their belief that the approach could contribute to reducing costs and conflicts, in addition to facilitate for a more innovative environment. The preparation and planning was an important part of the implementation. The focus was on learning as much as possible about BVA, and educate key personnel. Both the NV and all the contractors expressed enthusiasm towards the change, however, there was some resistance from individuals within NV. The preparation needed in the contractor organizations required use of more resources than traditional tender processes,

both due to educational requirements and executing new tasks. We found that the pre-qualification was executed in a manner more similar to the traditional tender procedure, rather than in the spirit of the BVA. However, the criterion used in the prequalification was adopted from the BVA and was quite similar to the ones that should be used in the selection phase. Due to the format of the tender documentation, which were only allowed to be six pages, NV found them easy to evaluate and a great overview of the contractor's competence. On the other hand, the contractor found the documents hard to produce, due to the limited space. However, they found it educational and a good opportunity to be more innovative. We observed a level of infidelity to the approach in terms of NV's development of the interview guide and creating their own rating scale. All parties perceived the interview as being a good way for the contractor to elaborate their tender documents and for NV to understand the contractor's competence. Once the expert contractor was identified, they were charged with the task of presenting a plan for the execution to verify that all steps were thoroughly planned. One of the main issues observed in this phase, was the resistance of some of NV's key personnel to hand over the reins and the tendencies of micromanagement. This was a concern expressed by the contractor, as well as insecurity regarding their position to protest it. In the initial part of the execution, NV and contractor worked on finding a balance between autonomy and reporting to achieve trust based on transparency.

CHAPTER 5 - Discussion

This chapter discusses our empirical findings in relation to the theoretical framework. We made a thorough comparison where we combine the different areas of our findings, and the relevant issues in the literature. As both the literature and the case study analysis revealed several aspects that affect change implementation, we had to narrow the topics down to the most relevant aspects and our main findings. In addition, there are topics within the BVA that were not analyzed and discussed in this thesis as it was several interpretations and adjustments to the approach. To better answer our research question and to limit the study, we developed the sub-questions as a baseline for both the analysis and the discussion. To understand, not only how the actors perform the change, but also why they wanted it, we decided to investigate what drives alternative supplier selection. In addition, it is important to understand how the BVA process selects contractors and how the implementation can aid in supplier selection. To comprehend what the challenges were during the implementation we decided to consider what the required conditions and challenges were during an implementation process.

5.1 Drivers for an alternative approach to supplier selection in the construction industry

In our study, we found that one of the main drivers for NV's initiative to implement BVA is rooted in the company's strategy and their attitude towards innovative thinking. They are a newly formed company founded to challenge the traditional road construction industry in Norway, therefor they recruit project personnel with an interest in innovation and change. The literature shows that there has been a rapidly increasing interest in implementing performance-based contracts and long-term contracts with the integration of design, construction, and maintenance in the construction sector (Borg, 2015). Due to the recognition of the need to integrate the design and build process, an increasing number of firms are changing their construction projects from the traditional separation of the two fields (design-bid-build) to projects where the design is integrated into the building tender (design-build) (Borg, 2015; Naoum, 2003; Naoum & Egbu, 2015;

Pakkala et al., 2007). As a result, the newness of the Best Value Approach in combination with the design-build delivery method suited NV's mandate to challenge the traditional methods.

NV's mission is to build faster, cheaper, and better. During an interview with one of the key personnel, it was stated that through this mission they want to operate as an innovative organization, which is one of the main drivers for implementing BVA. It is argued that design-build contracts create more room for innovation as the contractor has stronger incentives for finding new techniques (Borg, 2015). Further, Odeh and Battaineh (2002) argue that by adopting a new approach to contract award procedure, giving less weight to price and more weight to the capabilities and past performance of contractors, might solve the issues with cost overruns and delays. NV wished to continuously improve factors such as cost, time, and quality. Eriksson and Westerberg (2011) suggest that cooperative supplier integration generally has a positive influence on project performance. One of NV's key personnel stated that this was also the main driver for implementing BVA, as they could see the possibilities of reducing cost and time, and increase quality. This is also in line with Jeroen, Hans et al.'s study (2012) which finds that early supplier involvement is beneficial as more innovations in the industry come from suppliers. One of the contractor's key representatives stated that they had similar drivers as NV. As they experienced the changing industry, they wished to operate as a more innovative company by shifting from the traditional practice to an approach where they can utilize their competence and operate as experts.

5.2 The perceived benefits of BVA

Several of the interviewees from NV expressed that they got a better understanding of the capabilities when other criteria than price were introduced. To select the best contractor, BVA treats past performance as an important indicator to assess whether they are likely to be successful (D. Kashiwagi, 2011). According to the contractors, it is hard to document these past performances, especially on limited tender document space. However, they all agree with the literature which claims that based on the issues related to high total costs in the

industry, there was a need to focus more on quality and past performance. Odeh and Battaineh (2002) suggest adopting a new approach to contract award procedure by giving less weight to price and more weight to the capabilities and past performance of contractors. As BVA focus mainly on past performance, the approach was well suited for NV's project.

During the implementation process, the NV representatives stated that the approach already showed signs of providing cost-efficient and good solutions. The literature argues that by selecting contractors on attributes, such as faster construction and better quality, it could increase the procured value considerably and reduce unwelcome adjustments (Ekambaram et al., 2003). Through an open dialog between NV and the contractor, issues that occurred were discussed and solved continuously, reducing potential delays. We observed that NV and the selected contractor were ahead of their time schedule with regard to both project plans and milestones. This is in line with the BVA, which should aid in the acceleration of the project and the transaction time could be cut in half (van de Rijt et al., 2011). According to Song, Mohamed et al. (2009), early contractor involvement leads to reduced project duration and total man-hours, and it was said by some of the contractors that they experienced the process as faster and more efficient.

It was observed that NV had high focus on communication and transparency, and they believed in the benefits of increased collaboration and supplier integration to achieve this. NV expressed their belief in the benefits of close cooperation with the contractors and involving them early to be able to take advantage of each other's knowledge. The contractors were also positively surprised that the project expectations were clarified early in the process. According to Bresnen and Marshall (2010), projects have always required effective collaboration between the individuals and organizations that are brought together under various forms of project-based organization to achieve specific project objectives. Involving the supplier in the determination of appropriate technical metrics and targets for the project, and agreeing jointly with the supplier on these targets was shown to be a key element in project team effectiveness (Petersen et al., 2005).

NV mentioned that the interview process gave a better understanding of the contractor's competence as well as foster more trustful relationships. Both NV and contractor experienced the BVA as a good way to achieve an open and honest dialog, which made the collaboration easier. Swärd (2016) argues that signs of trust can be identified by open communication, and a willingness to relax rigid monitoring procedures. According to research by Bygballe, Swärd et al. (2016), trust was mentioned as an antecedent for using more direct communication and personal contact. The BVA introduces the concept of past performance information to establish verified trust. A notable observation in this respect is that BVA emphasizes the importance of past performance, and does not acknowledge the development of trust on a more relational level. However, the development of trust on a more relational level occurs during the clarification phase (Snippert et al., 2015). As mentioned the open dialog between NV and contractor during the tender process concerning issues that occurred were discussed and solved continuously, reducing potential delays. Through early involvement and better communication, both NV and contractor saw the benefits of fewer misunderstandings and conflicts. However, the research done by Bos, Kashiwagi et al. (2015) shows that BVA utilizes the expertise and not trust. Instead, it encourages clients to rather continually request proof of their expertise through weekly reports. This is in line with the Dutch literature which argues that the need to trust is minimized due to the transparency, which clearly identifies roles and accountability (Bos et al., 2015). In sum, we found that trust became an important factor in facilitating better communication, despite the emphasizing in the BVA literature on the focus on documentation rather than trust. NV chose to implement this approach to improve decision making and communication, which is often associated with trust (Swärd, 2016). Research offers strong support for the belief that input from a carefully selected supplier facilitates better decision making by the development project team. This improved decision making, in turn, promotes the development of a better design and better financial performance (Petersen et al., 2005).

The six-page tender documents were previously mentioned in relation to innovation. However, it was also mentioned by NV with regard to identifying the best contractor for the project. The six-page tender document was delivered to NV during the selection phase with three common criteria; value adding's, risk

management, and past performance. NV's evaluation team confirmed that due to these common criteria, they found the evaluation of the tender documents easier than the traditional tender documents. Applying common criteria to all suppliers makes objective comparisons possible (Kahraman et al., 2003). In addition, it was less time-consuming and more accurate to evaluate these pages compared to a traditional large tender document. According to Kahraman, Cebeci et al. (2003), the objective of contractor selection is to identify contractors with the highest potential for meeting a firm's needs consistently and at an acceptable cost. This is in line with NV's statement of this being one of their main drivers for implementing BVA. To improve value for money and overall satisfaction, NVs should engage the contractor with relevant technical ability, clear organizational maturity, and proven risk management capability for the project (Doloi, 2009). Also, applying common criteria to all suppliers makes objective comparisons possible (Kahraman et al., 2003). The two first phases of the approach, pre-qualification and selection phase, was used by NV to determine whether a contractor met the minimum requirements of project implementation, and to evaluate the selected bids of contractors. This is in accordance with the research by Banaitiene and Banaitis (2006), who argues that these two stages in the process of evaluation should be used in contractor selection. As NV found the evaluation of the six-page tender straightforward, the contractor, on the other hand, found it challenging. This was because they were forced to write short and concrete, which has not been the case in the traditional tender documents. However, they said it was educational and that they learned how to briefly describe their past performance and quality assurance. Also, they appreciated the possibility to elaborate what was in the tender during the interviews, and the time they were given to describe their competence.

This study showed that the value adding pages of the tender document were an important source for innovation. By dedicating two of the six tender document pages to value adding suggestions, they were encouraged to use the knowledge they obtained in previous projects and gave them an opportunity to present solutions they had identified, but not had the opportunity to implement previously. Some of the contractors expressed their enthusiasm over the fact that this approach gave them the opportunity to execute their new and exciting ideas.

According to Scott (2006), BVA documents offer a framework for clients to take advantage of innovative proposals from the industry. These innovations may result in cost savings, time savings, or even higher quality products. Further, the literature argues that the objective of the transformation from the old practice of the lowest bid to best-value was to increase the value added to the project (Abdelrahman et al., 2008). Our findings indicate that the value adding pages was a great source for innovation and better building processes, which is in line with one of the main objectives of the BVA; to achieve the best possible value for the projects (van de Rijt et al., 2011).

5.3 Identified challenges during the implementation process

Overall, the findings suggested that a lack of knowledge and proper education caused insecurity and hindered implementation fidelity. One finding was that due to a short time frame in addition to several other tasks and roles, the education obtained by most of NV personnel was limited. By conferring prior literature, we found that the degree to which an intervention or program is delivered as intended can be of great significance to the result of a pilot (Carroll et al., 2007). Only by understanding and measuring whether an intervention has been implemented with fidelity can researchers and practitioners gain a better understanding of how, why and if an intervention works, and the extent to which outcomes can be improved (Carroll et al., 2007). Our study showed that the lack of proper understanding of the approach made members of NV organization deviate from the framework and that the ownership of the approach rested on a few members. The contractors also had to attain knowledge about BVA, and to some extent even more so than NV as they were the ones to carry out several parts of the project. As a result, they seemed to get a better understanding of the approach and became more dedicated to the change. This confirms that gaining commitment to change required a proper understanding, relinquishing ownership, and encouragement to making it the property of the users, so the team members would be motivated to work towards the change, keep loyal to the implemented change, and constantly strive for its attainment, even during periods of adversity (McManus & Wood-Harper, 2003).

The contractors indicated that the time and resources needed to accomplish the change had been a common concern. The investment in time, money and resources was carefully considered before entering the pilot project, as the compensation for the tendering did not cover all the costs involved. It was important to consider the initial investment needed in education on the approach, before implementing the change. Our observations indicated that the contractors differed greatly in how much time and resources they had used on BVA education. Underestimating the amount of time and effort required to accomplish the change, make unrealistic expectations that may lead to resistance (K. T. Sullivan, 2010). According to the contractors, the hours spent on creating the six-pages for the tender took considerable more time than they foresaw, due to the difficulty of being short and concrete. The underestimating of time may lead to resistance, which is further identified in the literature as one major cause of change failure from organizational members (Lines, Sullivan, Smithwick, et al., 2015). Even though we observed resistance from some of the actors involved, we are not able to evaluate the result due to the timeframe of this study. Therefore, we are not able to conclude if this became a problem or not. Further on, the literature shows that implementing change often impacts relations of power, work tasks, and professional identity of individuals affected (Mike Bresnen et al., 2005). The observation made is in line with this description, as for some individuals expressed difficulties with adapting and changing their daily routines, and these persons were important resources to participate in the project. It is also confirmed by Jeroen Van de Rijt from Best Value Group that it is a common challenge that individuals may fall back into old routines and prior conditions. According to Boyatzis and Boyatzis (2006), organizational change needs to occur on a personal level and may be in a person's actions, habits, or competencies. Without intentional efforts, the changes are slow, result in unintentional consequences, and diminish the enthusiasm for the change. It is difficult to argue if the observed reversion or resistance was due to lack of interest, fear of giving up control or forgetting the approach during familiar tasks. Either way, both literature and observations in this study argue that this is a challenge for all parties when implementing a change to this extent.

Our findings indicate that incomplete information resulted in some issues being pushed ahead in time. When asked a question, one of NV's key personnel answered; "I do not know what the BVA requirement says about this, but we can get back to it later." Also, the absence of implementation initiators during the process caused uncertainty in discussions and decision-making. This is consistent with the literature stating that some main problems facing an implementation process are a lack of integration; lack of effective communication; uncertainty; changing environment; and changing priorities and expectations (Naoum & Egbu, 2015). Further, it became apparent that it was a challenge finding the right balance between sharing information and taking control of the process. NV felt uncertain with regards to the level of interference in the contractors' solution. And on the other hand, the contractors felt uncertain of how much interference and correction to tolerate before it became a matter of micromanagement by NV. It was addressed by Jeroen Van de Rijt that it is a common challenge that individuals may fall back into old routines and prior conditions. Danese (2013a) argues that poor communication can cause a fundamental weakness in the interface between client and contractor, undermining clients' efforts to achieve increased levels of contractors' performance. Consequently, supply uncertainty increases which can hinder a good implementation process.

Empirical findings during the clarification phase showed that the change in power distribution caused by the implementation led to some friction between the different actors. The dynamic was shifted both internally within the contractor organization and in the relationship between NV and contractor. Bresnen, Goussevskaia et al. (2005) confirm that implementing change often impacts relations of power, work tasks, and professional identity of individuals affected. Consequently, the implementation of new management initiatives is not a politically neutral act and, is often introduced with direct challenges to existing value systems and power structures in mind (Mike Bresnen et al., 2005). In our study, this became apparent when observing how NV found it hard to let go of the control during the clarification phase, as they have been the ones in charge of all aspects, in the traditional approach. According to Jeroen Van de Rijt in Best Value Group, this phase should allow the contractors to present their total solution with minimal interruption from the client. The resistance to letting go may be due

to habit or a fear of losing power and influence. It is also confirmed by Jeroen Van de Rijt that one of the most common challenges for the client during an implementation is that they like to be in charge and making the call. He also pointed out that the client often tries to transfer risk rather than control. In addition, project planners within the contractor organizations group mentioned that they felt that the reduction of autonomy and power in the project made them feel "downgraded" in the hierarchy. In traditional contracting, the project planners were employed directly by the client with relatively free reign, in contrast to the design-build project delivery method where they were part of the contractor organization. Thus, despite a clear enthusiasm for change within the sector, difficulties are often reported in implementation (Mike Bresnen et al., 2005).

5.4 Prerequisites for BVA

Early in the process, we observed that NV had done a lot of preparation before the initial meetings to best convert their traditional documents and routines to the new approach. In addition, they used a lot of time together with the Best Value expert to develop project goals, which communicated their purpose for the pilot project. According to Van de Ven and Poole (1995), when implementing change, it is important to consider prerequisites for attaining the goal, such as the functions that must be fulfilled, the accomplishments that must be achieved, the organization's environment and resources constrain what it can accomplish. Some of these constraints are embodied in prerequisites defined by institutions and other stakeholders.

Our findings showed that the Norwegian public procurement laws had to be thoroughly considered in all parts of the process, and especially the competition laws. This prerequisite needed to be considered before implementing the approach. During the preparation, the legal team had to go through the entire process and assemble all necessary legal documents to ensure that all public procurement laws were followed. In the past, the BVA also had to be adjusted to fit the Dutch jurisdiction. The European Union laws sets several constraints on the approach due to strict competition laws (van de Rijt et al., 2011). Negotiation during the clarification phase was found to be one of the main concerns of Difi's

legal assessment of the method (Appendix 5) as the competition law prevents negotiation on price. This was one of the three main concerns of the assessment. Our findings indicate that this became a challenge during the implementation as the contractor had to remind NV that the value adding's was a yes or no decision rather than a negotiation. According to Jeroen Van de Rijt in Best Value Group, one of the most common mistakes clients tend to do during the clarification phase is the tendency to negotiate. In addition, the case indicated that objectivity in the contractor selection was a concern by the contractors. This is due to the small Norwegian industry, which made it easy to identify which offer came from which contractor. Researchers point out the need for focus on objective criteria (Ng, 2008; Singh & Tiong, 2005; Watt et al., 2010) and transparency in decision-making (De Boer et al., 2001). The objectivity concern was also raised in the legal report by Difi (Appendix 5). However, according to NV, the number of parameters that needed to be documented during the evaluation made it easier than expected to remain objective. Hence, the implementation of BVA required the constant awareness of the Norwegian laws and regulations, in addition to the BVA requirements.

During the implementation process, we observed that both NV and contractors were well prepared and had gained knowledge about BVA. However, the development showed signs of deviation from the approach, which according to Carroll, Patterson et al. (2007) makes it hard to measure the result of the intervention. One of the contractors' main concerns was NV's requirement of adaptability to their preferences and the tendencies of overriding their implementation plan. The literature shows that implementation of new practices in procurement, contracting, and management of construction projects requires effort to assist members learning new approaches while simultaneously disengaging from traditional practices (Lines, Sullivan, Smithwick, et al., 2015). One of NV's key personnel confirmed later in the process that some of the involved personnel in the project struggled with letting go of old routines and practices. It can be argued that the contractors perceived this due to their thorough preparation and understanding of the approach. According to Boyatzis and Boyatzis (2006), the people involved in a change should believe in the need and feasibility of the change. People can change in desired ways, but not without intentional efforts.

We observed that despite the agreement that the approach would be beneficial for both parties, it was difficult for some to adapt and follow the requirements to achieve a proper implementation process.

Fidelity to the approach was observed to be a challenge for NV in several stages. Throughout the implementation, small and large deviations from the approach occurred, such as changing scales, diverging from interview guides, and forget recommendations from the BVA experts. One example was that both NV and the contractor were so eager to start the work that they began several tasks before the contract was signed. Jeroen Van de Rijt emphasized that the clarification phase was supposed to be preplanning of the contract and execution, not a time to carry out the work. Lines, Sullivan et al. (2015) argue that providing organizational members with appropriate change-related training should not be overlooked and has the benefit of improving organizational members' feelings of participation, self-efficacy, and comfort with the change effort. Internal change representatives must be formally designated and prepared for high levels of engagement at the project level of change implementation. Our perception was that this was evidently from all parties involved and the effort was genuine from the beginning.

Our study shows that NV, as the initiator, had clearly communicated support from the management. However, as a newly formed company, they lacked the capacity needed to use the time required to implement the changes internally to get the full dedication of initiators. The management support was also evident in the contractor organization as key personnel were given the authorization to answer detailed questions on execution, as well as agreeing to adjustments. For organizations, the adoption of a new approach requires comprehensive change, including significant modifications to both work processes and existing organizational structure. For a change initiative to be successful, the modification must be thorough, and needed change must be correctly identified in the delivery cycle to implement this type of paradigm shift (Migliaccio et al., 2008). This became evident in the case when the initial high focus on the implementation was pushed aside by all the everyday tasks that require the full focus of the tender team. Therefore, there was a need for continuous reminders, to keep the focus on the change in the forefront. Internal change agents must be formally designated

and prepared for high levels of engagement on the project level of change implementation. This provides change related support to organizational members and communicates the organization's strategic commitment to the change (Lines, Sullivan, Smithwick, et al., 2015; Lines, Sullivan, & Wiezel, 2015). This is in line with the case findings were the focus on the new approach differed greatly depending on the presence of the internal change agent. In sum, the organizational structure needed to be adjusted to meet the demands of the project implementation.

During the process, we observed that there was an open communication about the newness of the approach, and that NV was both internally and externally aware that this was a learning process for all actors. This reduced the anxiety level on both sides and made the process less formal. The literature emphasizes that there is a direct proportional relationship with change message delivery (in the form of change-related education and training received by organizational members) and change management success (Lines, Sullivan, Smithwick, et al., 2015). This case showed that the level of knowledge obtained by the contractors exceeded NV's level. Some might argue that this is the way it should be, as the contractor is the expert and the ones to carry out the project. However, the literature argues that in order to learn a new approach and disengage from traditional practices, it requires an effort from all parties involved (Lines, Sullivan, & Wiezel, 2015). Our findings indicate that the efforts put down by the contractor group exceeded that of some of NVs representatives in regards to learning and continuous dedication.

In sum, to successfully implement this change it can be benefited to consider the adjustments needed to withhold Norwegian public procurement laws, and how fidelity will affect the conclusions that can be drawn on how successful the approach was. Further, the changes needed in the organizational structure, and what is required of the participants in relation to learning the approach should also be considered.

CHAPTER 6 - Conclusion

The thesis aims to answer the research question, *"How can a Best Value Approach aid construction clients in supplier selection, and what are the potential benefits and challenges?"* to get insight into what kind of knowledge can be gained by studying an implementation process.

This was done by exploring how an alternative procurement approach to the traditional low-bid approach can aid in supplier selection in the construction industry. The literature seems to agree that there is a need for change within the construction industry to reduce cost, delays, and conflicts. This study has investigated the role of procurement in changing the parameters for supplier selection, and what it takes to implement the changes needed to adapt to alternative procurement approaches. Due to the vast number of procurement theories and approaches available, this thesis was narrowed down to one new approach called Best Value Approach. The aim of this study has been to contribute to the theory by exploring both benefits and limitations when implementing the BVA Through a thorough analysis of the three first stages of the process, we identified several contributing aspects which resulted in our findings. Our research contributes in four key areas:

The first area concerns the main drivers for alternative supplier selection, which is based on the theory of increasing interest in implementing performance-based contracts and the need to integrate the design and build process in the industry (Borg, 2015; Naoum, 2003; Naoum & Egbu, 2015; Pakkala et al., 2007). It was argued that design-build contracts create more room for innovation, as the contractor has stronger incentives for finding new techniques. It became apparent through our study that this innovative thinking was the main driver for both NV and the contractor. The contractor wished to operate as a more innovative company by shifting from the traditional practice to an approach where they can utilize their competence and operate as experts. According to NV, implementing a new approach such as BVA is a part of their company strategy to operate as an innovative organization. Further, NV wished to continuously improve factors such as cost, time, and quality, which according to the literature can be improved by

giving less weight to price and more weight to the capabilities and past performance of contractors.

The second area of contribution concerns the perceived benefits of implementing a performance-based supplier selection approach in terms of costs, communication, trust, and decision making (e.g. Bosma et al., 2015; L. Bygballe et al., 2016; Ekambaram et al., 2003; D. Kashiwagi, 2011; Petersen et al., 2005; Rivera et al., 2016; Snippert et al., 2015; Song et al., 2009; Swärd, 2016; van de Rijt et al., 2011). Our findings indicate that the approach enables NV to get a better understanding of the contractors' capabilities. According to the founder of BVA, Dean Kashiwagi, the approach treats past performance as an important indicator to assess whether they are likely to be successful. Further, the theoretical findings indicate that performance criteria selection and early contractor involvement reduce unwelcome adjustments, project planning duration and cost. Our study found that the approach already showed signs of providing cost-efficient and good solutions before project completion. The focus on open communication and transparency contributed to a positive and constructive environment with emphasis on collaboration rather than opponents. NV mentioned that the interview process fostered a more trustful relationship. Some researchers argues that trust can aid in fostering open communication (Swärd, 2016), however theory on BVA argues that the need to trust is minimized in this approach due to transparency, which clearly identifies roles and accountability. In our opinion, documentation forms a better foundation of justified trust rather than blind trust. BVA introduces the concept of past performance information to establish verified trust. NV chose to implement this approach to improve decisions making and communication. Research offers strong support for the belief that input from a carefully selected supplier facilitates better decision making, and this promotes the development of better design and better financial performance. Our findings also identified several benefits associated with the six-page tender documents in relation to introducing innovative ideas, identifying the contractor with the best capabilities for the specific project, and evaluate the contractor's understanding of the project risks. Our findings indicate that the value adding pages were a great source for innovation and better building processes, which is in

line with one of the main objectives of the BVA; to achieve the best possible value for the projects.

The third area of contribution concerns the identified challenges during the implementation process which prior research connects to implementation fidelity, resistance, adaptability, and lack of communication (e.g. Boyatzis & Boyatzis, 2006; Mike Bresnen et al., 2005; Carroll et al., 2007; Danese, 2013a; McManus & Wood-Harper, 2003; Naoum & Egbu, 2015; Rijt & Santema, 2013; K. T. Sullivan, 2010). Our research supports the literature which states that to gain an understanding of whether an intervention worked and to what extent, there need to be assurance of implementation fidelity and proper understanding on what is being implemented. This is in line with our observations where the lack of proper education and knowledge of the approach caused insecurity and hindered implementation fidelity. Key participants of NV's organization deviated from the BVA framework due to lack of understanding and proper education. The participants that gained understanding and thereby commitment to the change, were more motivated to works towards the change and achieve implementation fidelity. The necessary knowledge and education at the preparation stage required investment in time, money and resources and was one of the contractors' main considerations before entering the pilot project. It was confirmed by some key participants that it was indeed costlier and more time consuming than anticipated. Underestimating the amount of time and effort required to accomplish the change, may lead to resistance which was observed during the research where the lack of time to learn the approach properly causes resistance. It is difficult to argue whether the observed reversion or resistance was due to lack of interest, fear of giving up control or forgetting the approach during familiar tasks. Either way, both literature and observations in this study argue that it is a common challenge for all parties to adapt and change daily routines when implementing a change to this extent.

Another challenge identified during this study was the incomplete information obtained by the actors on the approach, combined with the absence of implementation initiators during parts of the process. This resulted in issues being pushed ahead in time and caused uncertainty in discussions and decision-making.

These findings are consistent with the literature stating that some main problems facing an implementation process are the lack of integration; lack of effective communication; uncertainty; changing environment, and changing priorities and expectations. In addition, the study found that the balance between information sharing and interfering was hard to juggle for NV representatives, which caused uncertainty among the contractors on where to draw the line. It has been argued that poor communication can cause a fundamental weakness in the interface between the client and the contractor, undermining the client's efforts to achieve increased levels of contractors' performance. Furthermore, findings showed that the change in power distribution caused by the implementation led to some friction between the different actors. The dynamic was shifted both internally within the contractor organization and in the relationship between NV and contractor. In our study, this became apparent when observing how NV found it hard to let go of the control during the clarification phase. Implementing change often impacts relations of power, work tasks, and professional identity of individuals affected. The resistance of releasing control may be due to habit, or a fear of losing power and influence. Thus, despite a clear enthusiasm for change within the sector, difficulties are often reported in implementation.

The fourth area of contribution concerns the prerequisites when implementing a new approach in relation to change management and successful change initiative (e.g. Lines, Sullivan, Smithwick, et al., 2015; Migliaccio et al., 2008; Rijt & Santema, 2013; Van de Ven & Poole, 1995). It is apparent through our study that public procurement laws, fidelity to the approach and management support were important prerequisites to conduct the project in accordance with the BVA requirements. The literature confirms the importance of considering the prerequisites for attaining the goal when implementing a change, such as a new procurement approach. The first prerequisite identified in our study was the adjustments in legal documents and procedures to ensure compliance with both national laws and the approach. The legal team at NV had to review the entire process and assemble all necessary legal documents to ensure that all public procurement laws were followed. Our research shows that compliance became a challenge, and the contractor had to remind NV that per the regulations and the approach negotiations were prohibited.

An additional important prerequisite was the level of fidelity to the approach and the tendencies to deviate from it. It requires effort to assist members in learning a new approach while simultaneously disengaging from traditional practices. Our study showed that one of the contractor's main concerns was NV's ability to separate from the traditional mindset. It was evident throughout the process that the approach would be beneficial for both parties, however it was difficult for some to adapt and follow the requirements to achieve a proper implementation process. The approach requires internal change representatives to be formally designated and prepared for high levels of engagement during the change implementation, which is in line with our observations where the effort by all parties were more successful when change representatives were present.
Finally, this research shows management support from both NV and contractors organization. The literature confirms that for the change initiative to be successful, the modification must be thorough, and needed change must be correctly identified in the delivery cycle to implement this type of paradigm shift. The initial high focus on the implementation was occasionally pushed aside by everyday tasks and there was a need for continuous reminders to keep the attention on the change in the forefront. The focus on the new approach differed greatly depending on the presence of the internal change agent from NV's side, and these representatives were reassigned to new projects before project completion, causing a reduction in compliance. The directly proportional relationship between change message delivery and change management success became apparent in our study, as there was an open communication about the newness of the approach and that NV was aware that this was a learning process for all actors. This led to an open dialog on how to interpret the approach. In addition, even though there was a higher level of education conducted by the contractor than NV, the knowledge gained by both parties contributed to a positive implementation process.

6.1 Recommendations to practice

Our study has revealed some key issues, which we suggest companies and managers should consider when implementing BVA. The theory of change management is vast, and only a small portion has been reviewed in this thesis. As a result, this is not a full guide on all aspects to consider when implementing change, but some areas were found in this particular case:

- It is important to have a clear understanding of what drives the desire to use BVA, and identify how the approach can aid:
    - Innovation: this requires that the contractors get room to suggest other solutions without too many limitations set on the project prior to their involvement. Using the value adding pages and the clarification phase to get the full value of the contractor's expertise.
    - Early involvement: this requires open communication and transparency.
    - Reducing cost and delay: this requires an understanding of what is causing the cost and delay. The major risk in the project is caused by the client, and not the contractor (Kashiwagi Solution Model Inc, 2017).
    - Education: this means educate all key participants properly on the approach, and ensure that implementation initiators are involved in all parts of the process. There is a directly proportional relationship with change message delivery (in the form of change-related education and training received by organizational members) and change management success (Lines, Sullivan, Smithwick, et al., 2015).
    - Understanding: take the time needed to get a good understanding of the amount of time and effort required to accomplish the change make unrealistic expectations that may lead to resistance (K. T. Sullivan, 2010).
- Follow the approach in all aspects the first time, as the lack of fidelity and proper understanding may reduce the effect of the implementation and cause uncertainty. Only by understanding and measuring whether an intervention has been implemented with fidelity, can researchers and practitioners gain a better understanding of how and why an intervention works, and the extent to which outcomes can be improved (Carroll et al., 2007).

- The lack of fidelity by micromanagement causes the contractors to become uncertain, as the contractor gave a price based on their solution and not all the details NV wants to add and control. BVA requires a shift in power, as the contractor being the expert should be in control. The responsibility of quality control is shifted to the contractor, and contractor leadership is relied upon with less information flow to the client (K. T. Sullivan, 2010).
- The price in the tender was based on the contractor's solution, and not all the details NV wanted to add and control. Hence, the lack of fidelity, by micromanagement, causes the contractors to become uncertain.
    - This could cause conflicts, delays and cost overruns, as one of the main causes of delay is change orders by the owner during construction (Assaf & Al-Hejji, 2006).
- Adjustments to the approach could lose well-thought trough aspects of the methodology, which again could cause less than an optimal effect of the approach. It could also cause the outcome to be based on randomness rather than the approach. Implementation fidelity is an important source of variation affecting the credibility and utility of research (Carroll et al., 2007).
- Deviation from the approach makes it harder for all parties to get a common understanding of how the approach should be implemented. According to McManus and Wood-Harper (2003), gaining commitment to change requires relinquishing ownership and encourage it to become the property of the users, and the project manager to find the means and processes that will foster an environment in which team members will be motivated to work towards the change. Further, it will keep people loyal to the implemented change, and constantly strive for its attainment, even during periods of adversity (McManus & Wood-Harper, 2003).

6.2 Limitations and recommendations for future studies

During our data collection, some documents were classified as sensitive; thus we were not given access to these. In addition, we were not allowed to observe and listen to the internal evaluation and scoring after the interview, which prevented us from getting a holistic view of the results. This may have caused some incomplete research documentation on our part.

The nature of a master thesis, with both time and resource limitations, restricted the study to one case rather than a multiple case study. Thus, there are not enough observations to make general conclusions based on the data collected. However, the use of a single case enabled a more in-depth study on the particularities of the specific case. Another result of the time restriction on this research, was that we were not able to observe the result of the BVA, as the execution of the project occurred after our research was concluded. Therefore, no evaluation could be made of the effect of using the approach, or whether it was a successful approach.

As a result, a recommendation for future research could involve multiple case studies to compare and be able to generalize some of the findings. In addition, metrics and measurements could be used to evaluate the effect of implementing BVA on the project results with a longer horizon. The Norwegian technical university (NTNU) has developed measurements to track project success, which could be used to evaluate performance once the pilot projects have progressed to their final phases.

References

Abdelrahman, M., Zayed, T., & Elyamany, A. (2008). Best-value model based on project specific characteristics. *Journal of Construction Engineering and Management, 134*(3), 179-188.

Adeyemi, A., Kashiwagi, J., Kashiwagi, D., & Sullivan, K. (2009). New Procurement Approach in Graduate Education. *Manuscript submitted for publication. Association of Schools of Construction of Southern Africa. Livingstone: Zambia*.

Assaf, S. A., & Al-Hejji, S. (2006). Causes of delay in large construction projects. *International Journal of project management, 24*(4), 349-357.

Banaitiene, N., & Banaitis, A. (2006). Analysis of criteria for contractors' qualification evaluation. *Technological and Economic Development of Economy, 12*(4), 276-282.

Barlish, K. C., Nihas, S., & Kashiwagi, D. T. (2013). IMPLEMENTATION OF BEST VALUE IN INDIA.

Bartunek, J. M. (2012). How qualitative research on change can contribute to changing practice. *The Journal of Applied Behavioral Science, 48*(2), 272-277.

Baxter, P., & Jack, S. (2008). Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *Qualitative Report, 13*(4), 544-559.

Beach, R., Webster, M., & Campbell, K. M. (2005). An evaluation of partnership development in the construction industry. *International Journal of project management, 23*(8), 611-621. doi:10.1016/j.ijproman.2005.04.001

Beard, J., Loulakis, E. M., & Wundram, E. (2001). *Design-build: Planning through development*: McGraw Hill Professional.

Blaikie, N. (2007). *Approaches to social enquiry: Advancing knowledge*: Polity.

Borg, L. (2015). *Procurement Contracts, Innovation and Productivity in the Construction Sector: Five Studies.* KTH Royal Institute of Technology.

Bos, A., Kashiwagi, D., & Kashiwagi, I. (2015). Changes Required to Sustain a Best Value Environment. *Journal for the Advancement of Performance Information & Value, 7*(1).

Bosma, E., van der Ven, M., Kerkhoven, O., & Kashiwagi, D. (2015). A Large Dutch Engineering Service Adopts the Best Value Approach. *Journal for the Advancement of Performance Information & Value, 7*(1).

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative research journal, 9*(2), 27-40.

Boyatzis, R., & Boyatzis, R. E. (2006). An overview of intentional change from a complexity perspective. *Journal of Management Development, 25*(7), 607-623.

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

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

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

Bresnen, M., & Marshall, N. (1999). *Achieving customer satisfaction? Client-contractor collaboration in the UK construction industry.* Paper presented

at the Customer Satisfaction: A Focus on Research and Practice, Joint Triennial Symposium of CIB Commissions W.
Bresnen, M., & Marshall, N. (2000). Building partnerships: case studies of client–contractor collaboration in the UK construction industry. *Construction Management & Economics, 18*(7), 819-832.
Bresnen, M., & Marshall, N. (2010). Projects and Partnerships.
Bryman, A., & Bell, E. (2015). *Business research methods* (4th ed. ed.). Oxford: Oxford University Press.
Bygballe, L., Swärd, A., & Vaagaasar, A. (2016). Coordinating in construction projects and the emergence of synchronized readiness. *International Journal of project management, 34*(8), 1479-1492.
Bygballe, L. E., Jahre, M., & Swärd, A. (2010). Partnering relationships in construction: A literature review. *Journal of Purchasing and Supply Management, 16*(4), 239-253.
Carroll, C., Patterson, M., Wood, S., Booth, A., Rick, J., & Balain, S. (2007). A conceptual framework for implementation fidelity. *Implementation Science, 2*(1), 1.
Chen, Q., Xia, B., Jin, Z., Wu, P., & Hu, Y. (2015). Choosing appropriate contract methods for design-build projects. *Journal of Management in Engineering, 32*(1), 04015029.
Cheng, Y.-M. (2014). An exploration into cost-influencing factors on construction projects. *International Journal of project management, 32*(5), 850-860.
Cicmil, S., & Marshall, D. (2005). Insights into collaboration at the project level: complexity, social interaction and procurement mechanisms. *Building Research & Information, 33*(6), 523-535.
CII, C. (1991). In search of partnering excellence, in. *Bureau of Engineering Research, Construction Industry Institute, University of Texas Austin, TX*.
Clough, R. H., Sears, G. A., Sears, S. K., Segner, R. O., & Rounds, J. L. (2015). *Construction contracting: A practical guide to company management*: John Wiley & Sons.
Danese, P. (2013). Supplier integration and company performance: a configurational view. *Omega, 41*(6), 1029-1041.
De Boer, L., Labro, E., & Morlacchi, P. (2001). A review of methods supporting supplier selection. *European Journal of Purchasing & Supply Management, 7*(2), 75-89.
DeFillippi, R., & Lehrer, M. (2011). Temporary Modes of Project-Based Organization within Evolving Organizational Forms: Insights from Oticon's Experiment with the Spaghetti Organization *Project-Based Organizing and Strategic Management* (pp. 61-82): Emerald Group Publishing Limited.
Difi. (2016, 27. mars 2017). Best Value Procurement (BVP). Retrieved from https://www.anskaffelser.no/bygg-anlegg-og-eiendom-bae/temaer-bae/best-value-procurement-bvp
Doloi, H. (2009). Analysis of pre-qualification criteria in contractor selection and their impacts on project success. *Construction Management and Economics, 27*(12), 1245-1263.
Dubois, A., & Araujo, L. (2007). Case research in purchasing and supply management: opportunities and challenges. *Journal of Purchasing and Supply Management, 13*(3), 170-181.
Dubois, A., & Gadde, L.-E. (2002a). The construction industry as a loosely coupled system: implications for productivity and innovation.

Construction Management and Economics, 20(7), 621-631. doi:10.1080/01446190210163543

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

Dubois, A., & Gadde, L.-E. (2014). "Systematic combining"—A decade later. *Journal of Business Research, 67*(6), 1277-1284.

Dubois, A., & Salmi, A. (2016). A call for broadening the range of approaches to case studies in purchasing and supply management. *Journal of Purchasing and Supply Management, 22*(4), 247-249.

Dulmin, R., & Mininno, V. (2003). Supplier selection using a multi-criteria decision aid method. *Journal of Purchasing and Supply Management, 9*(4), 177-187.

Duren, J., & Dorée, A. (2008). An evaluation of performance information procurement system (PIPS).

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

Ekambaram, P., Mohan, K., & Thomas, N. (2003). Targeting optimum value in public sector projects through "best value"-focused contractor selection. *Engineering, Construction and Architectural Management, 10*(6), 418-431. doi:10.1108/09699980310509390

Ellram, L. M. (1996). The use of the case study method in logistics research. *Journal of business logistics, 17*(2), 93.

Ellram, L. M., & Carr, A. (1994). Strategic purchasing: a history and review of the literature. *International journal of purchasing and materials management, 30*(1), 9-19.

Elyamany, A., & Abdelrahman, M. (2010). Contractor performance evaluation for the best value of superpave projects.(Author abstract)(Report). *Journal of Construction Engineering and Management, 136*(5), 606.

Eriksson, P., & Kovalainen, A. (2015). *Qualitative Methods in Business Research: A Practical Guide to Social Research*: Sage.

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

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

Fernandes, S. I. S. (2013). "Best Value" Model.

Flick, U. (2009). *An introduction to qualitative research*: Sage.

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

Glavee-Geo, R. (2015). The History and Development of Purchasing Management and Its Theoretical Framework: A Review of Transaction Cost Economics. *Handbook of Research on Global Supply Chain Management*, 379.

Gransberg, D., Runde, D., & James, S. (2000). The effect of innovative highway construction contract methods. *AACE International Transactions*, P2A-P2.6.

Halldorsson, A., & Aastrup, J. (2003). Quality criteria for qualitative inquiries in logistics. *European Journal of Operational Research, 144*(2), 321-332.

Hannah, D. R., & Lautsch, B. A. (2011). Counting in qualitative research: Why to conduct it, when to avoid it, and when to closet it. *Journal of Management Inquiry, 20*(1), 14-22.

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

Hitt, J. C., Robbins, A. S., Galbraith, J. S., Todd, J. D., Patel–Larson, A., McFarlane, J. R., . . . Carey, J. W. (2006). Adaptation and Implementation of an Evidence–Based Prevention Counseling Intervention in Texas. *AIDS Education & Prevention, 18*(supp), 108-118.

Ho, C., & Nguyen, P.-M. (2007). Supplier evaluation and selection criteria in the construction industry of Taiwan and Vietnam. *Information and management Sciences, 18*(4), 403-426.

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

Ibbs, W., Nguyen, L. D., & Lee, S. (2007). Quantified impacts of project change. *Journal of Professional Issues in Engineering Education and Practice, 133*(1), 45-52.

Jacobsson, M., & Roth, P. (2014). Towards a shift in mindset: partnering projects as engagement platforms. *Construction Management and Economics, 32*(5), 419-432.

Jaskowski, P., Biruk, S., & Bucon, R. (2010). Assessing contractor selection criteria weights with fuzzy AHP method application in group decision environment. *Automation in construction, 19*(2), 120-126.

Jeroen, B., Hans, V., & Bart, V. (2012). Supplier-contractor collaboration in the construction industry; A taxonomic approach to the literature of the 2000-2009 decade. *Engineering, Construction and Architectural Management, 19*(4), 342-368. doi:10.1108/09699981211237085

Kadefors, A. (2004). Trust in project relationships—inside the black box. *International Journal of project management, 22*(3), 175-182.

Kahraman, C., Cebeci, U., & Ulukan, Z. (2003). Multi-criteria supplier selection using fuzzy AHP. *Logistics information management, 16*(6), 382-394.

Kashiwagi, D. (2011). Case study: Best value procurement/performance information procurement system development. *Journal for the Advancement of Performance Information & Value, 3*(1).

Kashiwagi, D., & Byfield, R. E. (2002). Selecting the best contractor to get performance: On time, on budget, meeting quality expectations. *Journal of Facilities management, 1*(2), 103-116.

Kashiwagi, D., & Kashiwagi, J. (2011). Case Study: Performance Information Procurement System (PIPS) in the Netherlands. *Malaysian Construction Research Journal, 8*(1).

Kashiwagi, D., Kashiwagi, J., Kashiwagi, A., & Sullivan, K. (2012). The Research Model that Revolutionized the Dutch Construction Industry. *Journal for the Advancement of Performance Information & Value, 4*(2).

Kashiwagi, D., Kashiwagi, J., & Savicky, J. (2009). *Industry structure: misunderstood by industry and researchers.* Paper presented at the 2nd Construction Industry Research Achievement International Conference, Kuala Lumpur, Malaysia, CD-Day.

Kashiwagi, D. T. (1999). The development of the performance based procurement system (PBPS). *Journal of Construction Education, 4*(2), 196-206.

Kashiwagi Solution Model Inc. (2017). *How to Know Everything Without Knowing Anything*: Kashiwagi Solution Model, Incorporated.

Khan, S. N. (2014). Qualitative research method: Grounded theory. *International Journal of Business and Management, 9*(11), 224.

Kovács, G., & Spens, K. M. (2005). Abductive reasoning in logistics research. *International Journal of Physical Distribution & Logistics Management, 35*(2), 132-144.

Krishnan, S. K. (2006). Increasing the visibility of hidden failure costs. *Measuring business excellence, 10*(4), 77-101.

Kristiansen, K., Emmitt, S., & Bonke, S. (2005). Changes in the Danish construction sector: the need for a new focus. *Engineering, Construction and Architectural Management, 12*(5), 502-511.

Laan, A., Noorderhaven, N., Voordijk, H., & Dewulf, G. (2011). Building trust in construction partnering projects: An exploratory case-study. *Journal of Purchasing and Supply Management, 17*(2), 98-108.

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

Lines, B. C., Sullivan, K. T., Smithwick, J. B., & Mischung, J. (2015). Overcoming resistance to change in engineering and construction: Change management factors for owner organizations. *International Journal of project management, 33*(5), 1170-1179.

Lines, B. C., Sullivan, K. T., & Wiezel, A. (2015). Support for organizational change: Change-readiness outcomes among AEC project teams. *Journal of Construction Engineering and Management, 142*(2), 04015062.

Love, P. E., & Li, H. (2000). Quantifying the causes and costs of rework in construction. *Construction Management & Economics, 18*(4), 479-490.

Mahdi, I. M., Riley, M. J., Fereig, S. M., & Alex, A. P. (2002). A multi-criteria approach to contractor selection. *Engineering Construction and Architectural Management, 9*(1), 29-37.

Marshall, C., & Rossman, G. (2006). The how of the study: Building the research design. *Designing qualitative research*, 55-101.

Maycock, J. A., & Shaw, T. (1994). Quality Costing–The Money in Mistakes. *The TQM Magazine, 6*(3), 20-22.

McManus, J., & Wood-Harper, A. (2003). *Information systems project management: Methods, tools and techniques*: Pearson Education.

Meng, X. (2012). The effect of relationship management on project performance in construction. *International Journal of project management, 30*(2), 188-198.

Migliaccio, G. C., Gibson Jr, G. E., & O'Connor, J. T. (2008). Changing project delivery strategy: An implementation framework. *Public Works Management & Policy, 12*(3), 483-502.

Miles, M. B. (1979). Qualitative data as an attractive nuisance: The problem of analysis. *Administrative science quarterly, 24*(4), 590-601.

Molenaar, K. R., & Gransberg, D. D. (2001). Design-builder selection for small highway projects. *Journal of Management in Engineering, 17*(4), 214-223.

Naoum, S. (2003). An overview into the concept of partnering. *International Journal of project management, 21*(1), 71-76.

Naoum, S., & Egbu, C. (2015). Critical review of procurement method research in construction journals. *Procedia Economics and Finance, 21*, 6-13.

Ness, H., & Haugland, S. A. (2005). The evolution of governance mechanisms and negotiation strategies in fixed-duration interfirm relationships. *Journal of Business Research, 58*(9), 1226-1239.

Newell, S., Bresnen, M., Edelman, L., Scarbrough, H., & Swan, J. (2006). Sharing knowledge across projects limits to ICT-led project review practices. *Management Learning, 37*(2), 167-185.

Ng, W. L. (2008). An efficient and simple model for multiple criteria supplier selection problem. *European Journal of Operational Research, 186*(3), 1059-1067.

Nye Veier. (2017a, may 18, 2017). E18 LANGANGEN-GRIMSTAD. Retrieved from http://www.nyeveier.no/veiprosjekt-e18/

Nye Veier. (2017b, februar 21, 2017). OM NYE VEIER. Retrieved from http://www.nyeveier.no/om-nyeveier/

Odeh, A. M., & Battaineh, H. T. (2002). Causes of construction delay: traditional contracts. *International journal of project management, 20*(1), 67-73.

Pakkala, P., Martin de Jong, W., & Aijo, J. (2007). *International overview of innovative contracting practices for roads*.

Penuel, W. R., & Means, B. (2004). Implementation variation and fidelity in an inquiry science program: Analysis of GLOBE data reporting patterns. *Journal of Research in Science Teaching, 41*(3), 294-315.

Perols, J., Zimmermann, C., & Kortmann, S. (2012). On the relationship between supplier integration and time-to-market. *Journal of Operations Management*. doi:10.1016/j.jom.2012.11.002

Petersen, K. J., Handfield, R. B., & Ragatz, G. L. (2005). Supplier integration into new product development: coordinating product, process and supply chain design. *Journal of Operations Management, 23*(3), 371-388. doi:10.1016/j.jom.2004.07.009

Pinto, J. K., & Covin, J. G. (1989). Critical factors in project implementation: a comparison of construction and R&D projects. *Technovation, 9*(1), 49-62.

Ragatz, G. L., Handfield, R. B., & Petersen, K. J. (2002). Benefits associated with supplier integration into new product development under conditions of technology uncertainty. *Journal of Business Research, 55*(5), 389-400. doi:10.1016/S0148-2963(00)00158-2

Resnick, B., Inguito, P., Orwig, D., Yahiro, J. Y., Hawkes, W., Werner, M., . . . Magaziner, J. (2005). Treatment fidelity in behavior change research: a case example. *Nursing research, 54*(2), 139-143.

Rijt, J., & Santema, S. C. (2013). *Prestatieinkoop: met Best Value naar succesvolle projecten (Prestasjonsinnkjøp)*: Graphicom.

Rivera, A., Kashiwagi, J., & Kashiwagi, D. (2016). Improving the Management of Environmental Engineering Projects through the Best Value Project Management Model for a State Agency. *Journal for the Advancement of Performance Information & Value, 8*(1).

Ruparathna, R., & Hewage, K. (2013). Review of contemporary construction procurement practices. *Journal of Management in Engineering, 31*(3), 04014038.

Sage, D., Dainty, A., & Brookes, N. (2012). A 'Strategy-as-Practice'exploration of lean construction strategizing. *Building Research & Information, 40*(2), 221-230.

Savicky, J., Kashiwagi, D., Hurtado, K., & Sullivan, K. (2014). Best Value Case Study: Procurement Results within the GSA. *Journal for the Advancement of Performance Information & Value, 6*(1).

Scott, S. (2006). *Best-value procurement methods for highway construction projects*: Transportation Research Board.

Singh, D., & Tiong, R. L. (2005). A fuzzy decision framework for contractor selection. *Journal of Construction Engineering and Management, 131*(1), 62-70.

Smyth, H. (2010). Construction industry performance improvement programmes: the UK case of demonstration projects in the 'Continuous Improvement'programme. *Construction Management and Economics, 28*(3), 255-270.

Snippert, T., Witteveen, W., Boes, H., & Voordijk, H. (2015). Barriers to realizing a stewardship relation between client and vendor: the Best Value approach. *Construction Management and Economics, 33*(7), 569-586. doi:10.1080/01446193.2015.1078902

Song, L., Mohamed, Y., & AbouRizk, S. M. (2009). Early contractor involvement in design and its impact on construction schedule performance.(Author abstract)(Technical report). *Journal of Management in Engineering, 25*(1), 12.

Songer, A., & Molenaar, K. R. (1996). Selecting design-build: public and private sector owner attitudes. (design-build procurement method). *Journal of Management in Engineering, 12*(6), 47.

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

Stake, R. E. (2013). *Multiple case study analysis*: Guilford Press.

Sullivan, K. T. (2010). Quality management programs in the construction industry: Best value compared with other methodologies. *Journal of Management in Engineering, 27*(4), 210-219.

Swärd, A. (2016). Trust, reciprocity, and actions: The development of trust in temporary inter-organizational relations. *Organization Studies*, 0170840616655488.

Tekna, T. B. M. (2016, 7. september 2016). Anskaffelser i BAE-Bransjen. Retrieved from http://bygg.tekna.no/anskaffelser-i-bae-bransjen/

Thomas, H. R., & Napolitan, C. L. (1995). Quantitative effects of construction changes on labor productivity. *Journal of Construction Engineering and Management, 121*(3), 290.

van de Rijt, J., Witteveen, W., Vis, C., & Santema, S. (2011). Best Value at the Directorate-General for Public Works and Water Management in The Netherlands: A Case Study of the Procurement of Infrastructure Projects Worth $1,200 M. *Journal for the Advancement of Performance Information & Value, 3*(1).

Van de Ven, A. H., & Poole, M. S. (1995). Explaining development and change in organizations. *Academy of management review, 20*(3), 510-540.

Van Duren, J., & Dorée, A. (2010). AN EVALUATION OF THE PERFORMANCE INFORMATION PROCUREMENT SYSTEM (PiPS). *Journal of Public Procurement, 10*(2), 187.

van Hoek, R., Aronsson, H., Kovács, G., & Spens, K. M. (2005). Abductive reasoning in logistics research. *International Journal of Physical Distribution & Logistics Management, 35*(2), 132-144.

Waara, F., & Bröchner, J. (2006). Price and nonprice criteria for contractor selection. *Journal of Construction Engineering and Management, 132*(8), 797-804.

Wacker, J. G. (1998). A definition of theory: research guidelines for different theory-building research methods in operations management. *Journal of Operations Management, 16*(4), 361-385.

Wambeke, B. W., Hsiang, S. M., & Liu, M. (2011). Causes of variation in construction project task starting times and duration.(Author abstract)(Report). *Journal of Construction Engineering and Management, 137*(9), 663.

Wang, W.-C., Yu, W.-d., Yang, I.-T., Lin, C.-C., Lee, M.-T., & Cheng, Y.-Y. (2013). Applying the AHP to support the best-value contractor selection–lessons learned from two case studies in Taiwan. *Journal of Civil Engineering and Management, 19*(1), 24-36.

Watt, D., Kayis, B., & Willey, K. (2010). The relative importance of tender evaluation and contractor selection criteria. *International Journal of project management, 28*(1), 51-60.

Yawei, L., Shouyu, C., & Xiangtian, N. (2005). Fuzzy pattern recognition approach to construction contractor selection. *Fuzzy Optimization and Decision Making, 4*(2), 103-118.

Yin, R. K. (2014). *Case study research : design and methods* (5th ed. ed.). Los Angeles, Calif: SAGE.

Appendix

Appendix 1 – Interview guide

Åpne spørsmål til intervjuer/evaluerer

1. Er du intervjuer/evaluerer/prosjektleder?
2. Hvordan synes du BVP hjalp dere å få et bilde av tilbyderen?
3. Var det vanskeligere å vurdere tilbyderen ved bruk av denne metoden kontra vanlig tilbudsdokumenter?
4. Hva synes du om BVP metoden så langt?
5. Hva synes du var de største utfordringene ved intervjuene med bruk av BVP?
6. Hva synes du er fordelene med BVP mtp intervjuene?
7. Oppdaget du noe du ikke har opplevd før mtp utvelgelsen?
8. I hvilken grad føler du at du fikk et fullstendig bilde av kompetansen til intervjuobjektet?
9. Var det noe som var vanskelig å vurdere ut i fra intervjuet?
10. Hva føler du er fordelene ved intervjumetoden kontra omfattende tilbudsdokumenter?
11. Hva føler du er ulempene ved intervjumetoden kontra omfattende tilbudsdokumenter?

Åpne spørsmål til tilbydere

1. Føler du at du har fått tilstrekkelig innføring i BVP metoden til å være med på denne prosessen?
    a. Hvordan har du tilegnet deg kunnskap om metoden?
2. Hva synes du var vanskeligere ved å bruke denne metoden enn andre tilbudsprosessen du har vært involvert i? Og hvorfor?
3. Hva synes du var lettere ved å bruke denne metoden enn andre tilbudsprosessen du har vært involvert i? Og hvorfor?
4. Følte du at dere fikk vist med denne prosessen kompetansen dere har? På hvilken måte?
5. Hvilke områder var det vanskelig å forklare kompetansen din/deres ved bruk av denne metoden?
6. Hva synes du var negativt ved denne intervjuprosessen?
7. Hva synes dere var positivt ved denne intervjuprosessen?

Appendix 2 - Presentation of interviewees

Company	Type of company	Interviewee	Position
Veidekke	Entreprenørselskap	Anonym	HMS ansvarlig
AF gruppen (Veidekke)	Entreprenør- og industrikonsern	Anonym	Prosjektplanlegger
Veidekke	Entreprenørselskap	Anonym	Prosjektleder
Hæhre	Entreprenørselskap	Anonym	HMS ansvarlig ytre miljø
Cowi (Hæhre)	Konsulentselskap	Anonym	Prosjekteringsansvarlig
Hæhre	Entreprenørselskap	Anonym	Prosjektleder
Acciona	Entreprenørselskap	No show	HMS ansvarlig
Acciona	Entreprenørselskap	Anonym	Prosjekteringsansvarlig
Acciona	Entreprenørselskap	Anonym	Prosjektleder
Nye Veier	Interimselskap	Evaluerer 1	
Nye Veier	Interimselskap	Evaluerer 2	
Nye Veier	Interimselskap	Evaluerer 3	
Nye Veier	Interimselskap	Evaluerer 4	
Nye Veier	Interimselskap	Evaluerer 5	
Nye Veier	Interimselskap	Anonym	Kontraktsansvarlig

Appendix 3 – Prekvalifiseringsgrunnlag

NyeVeier

Foretaksnavn: Nye Veier AS | Adresse: Tangen 76 4608 Kristiansand | Org. nr.: 915 488 099 | Nettside: www.nyeveier.no

NYE VEIER AS

E18 Rugtvedt – Dørdal

Prekvalifiseringsgrunnlag

Ved eventuell avvik/tolkning mellom norsk og engelsk utgave, vil den norske utgaven av dette dokumentet rangeres først.

In case of deviation/interpretation between the Norwegian and English version, the Norwegian version shall prevail.

INFORMASJON

Invitasjon til konkurranse

Det vises til kunngjøring i Doffin og TED.

Nye Veier AS («Nye Veier») inviterer med dette til prekvalifisering til konkurranse for prosjektering, bygging og eventuelt drift/vedlikehold av prosjektet E18 Rugtvedt – Dørdal.

Konkurransen gjennomføres i henhold til lov 16. juni 1999 om offentlige anskaffelser (LOA) og forskrift 7. april 2006 nr. 402 om offentlig anskaffelser (FOA). Prosedyre for gjennomføring: Konkurranse med forhandling med en tilbuds- og utvelgelsesprosess tilsvarende Best Value Procurement metoden («BVP-metoden»).

BVP-metoden innebærer i korte trekk at:

- Byggherren offentliggjør budsjett eller maksimumsprisen
- Prosjektet har tydelige og prioriterte mål som er grunnlag for tilbudet
- Kravspesifikasjonen er kort og funksjonsbasert
- Leverandøren leverer et 6-siders tilbud
- Leverandøren konkurrerer på pris, kompetanse/prestasjon, risikoforståelse og tilbudt ekstra kvalitet
- Det gjennomføres intervju av nøkkelpersonell. Dette evalueres, og er en del av kontrakten
- Vinneren tas med i en konkretiseringsfase der tilbudet detaljeres, før kontrakt signeres
- Målet er å få inn den rette ekspertisen.
- Byggherren er en kvalitetsoppfølger, ikke kvalitetskontrollør

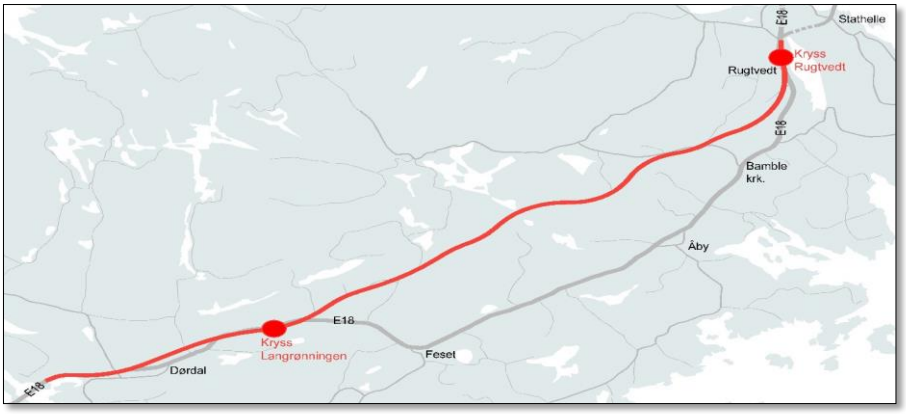
Nye Veier vil i trinn 1 foreta en prekvalifisering av leverandører basert på kriterier som er angitt i Nye Veiers kvalitetsgjennomføringssystem (KGV-system), EU-supply. Trinn 2 vil bli gjennomført med en tilbuds- og utvelgelsesprosess tilsvarende BVP-metoden.

Kontraktsarbeidet

Kontraktsarbeidet E18 Rugtvedt – Dørdal omfatter prosjektering og bygging av anslagsvis 16,8 km ny firefelts riksvei fra Rugtvedt til Dørdal i tillegg til påkobling til eksisterende E18, og opsjon på drift og vedlikehold av samme strekning. Kontraktsarbeidet kan også utvides til å omfatte prosjektutvikling og prosjektering av strekningen E18 Langangen – Rugtvedt. Arbeidet skal i så fall utføres i samarbeid med valgt reguleringsrådgiver for strekningen, og det kan i den forbindelse være aktuelt at kontrakten på reguleringsarbeidet blir tiltransportert totalentreprenøren. Dette vil bli spesifisert nærmere i konkurransegrunnlaget, enten som del av kontraktsarbeidet, eller som opsjon.

Nye Veier krever 50 % fagarbeidere og 7 % lærlinger i kontrakten. Dette kravet kan opparbeides i løpet av kontraktsperioden.

Mesteparten av den nye veistrekningen vil legges i ny trasè utenfor eksisterende vei og tettbebyggelse. Ved Rugtvedt og fra Langrønningen til Bakkevannet går veien i omtrent samme trase som dagens E18. Arbeidene inkluderer enkelte omlegginger og utvidelser av tilstøtende veier.



Se vedlegg «Oversiktskart» for mer detaljert oversikt over traseen slik den er planlagt på nåværende tidspunkt.

I reguleringsplanen er det planlagt bygging av 10 bruer i linjen med lengder fra anslagsvis 25 meter opp til ca. 455 meter, i tillegg til 6 overgangsbruer. Videre er det planlagt tre miljøtunneler og en rekke kulverter.

Nedenfor listes angitte størrelser for de viktigste konstruksjonene:

Navn på konstruksjon	Lengde
Rugtvedttunnelen (miljøtunnel)	122 m
Vardåstunnelen (miljøtunnel)	70 m
Langrønningtunnelen (miljøtunnel)	60 m
Hegnabrua	47 m
Hydalbrua	214 m
Vinterdalbrua	250 m
Tinderholtbrua	85 m
Mørkekjerrbrua	215 m
Stemmenbrua	455 m
Svartholtbrua	195 m
Rønholtdalbrua	245 m
Sprangfossbrua	90 m
Hanfangbrua	25 m

Det planlegges to større kryssområder med av- og påkjøring og tilknytning til lokalt veinett. Krysset på Rugtvedt er en utvidelse av dagens trafikkløsning, der ny firefelts

E18 legges i en ny miljøtunnel. Det er planlagt oval rundkjøring på toppen av tunnelen for å avvikle trafikken fra rampene og lokalveisystemet. Krysset på Langrønningen er planlagt som standard ruterkryss med rundkjøring på hver side av primærveien. I tilknytning til krysset er det regulert areal for både døgnhvileplass for tungtransport, serviceanlegg og rasteplass.

Hovedtyngden av anleggsaktiviteten vil foregå i stor avstand fra dagens E18. Rugtvedtområdet og området fra Dørdal mot Bakkevannet krever imidlertid spesielle tiltak for å sørge for en sikker og god trafikkavvikling i anleggsperioden. I området fra dagens kryss ved Dørdal og frem til Bakkevannet er det behov for en omkjøringsvei som skal benyttes når ny E18 skal sprenges inn i Hanfangåsen. Dette innebærer omfattende sprengningsarbeider.

Massetransport på offentlig veinett skal unngås.

Det er satt av egne riggområder i reguleringsplanen.

Drifts- og vedlikeholdsperioden av E18 Rugtvedt - Dørdal er planlagt til 20 år.

Til informasjon har Statens vegvesen har utarbeidet en 3D-animasjon som er tilgjengelig her: https://www.youtube.com/watch?v=aGv0Gd5hwV4

Det tas forbehold om endringer i ovennevnte prosjektarbeid.

Tidspunkt for igangsettelse og ferdigstillelse

Dato for kontraktssignering og igangsettelse er planlagt til første kvartal i 2017.

Frist for ferdigstillelse av alle kontraktarbeider, inklusiv dokumentasjon, er 2. desember 2019.

Totalentreprenør gis anledning til å tilby en tidligere ferdigstillelse.

Entrepriseform

Kontrakten er en totalentreprise hvor totalentreprenøren skal forestå prosjektering, bygging, med opsjon for drift og vedlikehold. Kontrakten er basert på NS8407 med tilleggsbestemmelser.

Kontraktens vederlag baseres i hovedsak på fastpris. Nærmere detaljer rundt kompensasjonsformat vil bli fastsatt i konkurransegrunnlaget.

Særlige forhold

Planstatus

Reguleringsplanen for prosjektet ble vedtatt av Bamble kommune i april 2013.

I reguleringsplan inngår følgende dokumenter:

- Planvedtak i Bamble kommune datert 4. april 2013
- Reguleringsplankart med tilhørende bestemmelser

I tillegg inngår følgende materiale som vedlegg til reguleringsplanen og detaljplanen (listen er ikke uttømmende):

- Planhefte 1: Tiltaksbeskrivelse for detalj- og reguleringsplan, datert 12. oktober 2012

- Planhefte 2: Tegningshefte E18 Rugtvedt–Dørdal, datert 12. oktober 2012
- Multiconsult AS, E18 Rugtvedt–Dørdal, Støyrapport, datert 12. oktober 2012
- Multiconsult AS, Forprosjekt konstruksjoner, datert 12. oktober 2012
- Rambøll, ROS-analyse E18 Rugtvedt – Dørdal, datert 7. september 2012

Ovennevnte dokumentasjonsunderlag foreligger kun på norsk.

Grunnforhold

Det er gjennomført geologiske og geotekniske undersøkelser.

Statens vegvesen har utarbeidet geologisk rapport for reguleringsplan, datert 25. september 2012. I tillegg kommer grunnundersøkelsesrapporter av Multiconsult fra tidsperioden april - mai 2012.

Alt grunnlag vil bli gjort tilgjengelig som del av konkurransegrunnlaget.

Massedeponier

Det er regulert flere deponier for lagring av masser. Bamble kommune ønsker å etablere skytebane i forbindelse med deponiområdet Stillinga. Dette vil også kunne være aktuelt som riggområde.

Det er i reguleringsplanfasen beregnet et masseoverskudd (inkludert omregningsfaktor) på anslagsvis 250.000 m3 jordmasser og 1.200.000 m3 fjellmasser.

Øvrig

For bevaring av natur- og kulturmiljø henvises det til gjeldende reguleringsplan.

Nye Veier har som intensjon å inngå avtaler om bruk av regulerte private adkomstveier til anlegget.

Trafikk på eksisterende veinett skal opprettholdes gjennom hele anleggsperioden.

Som forberedende tiltak, med oppstart høsten 2016, vil det bli etablert adkomstveier til anlegget. Største delen av traseen vil bli avskoget og ryddet for kvist. Arbeidene gjennomføres som en egen entreprise og er planlagt avsluttet mars 2017.

Det skal også gjennomføres tiltak på dagens E18, som etter åpning av E18 Rugtvedt – Dørdal skal omklassifiseres til fylkesvei og kommunal vei. Dette vil bli utført som en separat entreprise og ikke være en del av dette kontraktsarbeidet.

Tentativ tidsplan for prekvalifiseringsfasen

Eventuelle endringer i tidsplanen vil bli publisert i Eu-supply.

Aktivitet eller frister	Dato
Kunngjøring	10.6.2016
Frist for søknad om å delta i konkurransen	16.8.2016 kl. 12
Meddelelse av kvalifikasjonsvurdering	26.9.2016
Karensperiode – 15 dager	
Utsendelse av konkurransegrunnlag	10.10.2016
Tilbudsfrist	20.12.2016
Vurdering av tilbudene	20.12.2016-5.2.2017
Kunngjøring av tildelingsbeslutning	5.2.2017
Konkretiseringsfase	5.3.2017
Kontraktssignering	6.3.2017

KONKURRANSEBESTEMMELSER

Generelle konkurransebestemmelser

Lov 16. juli 1999 nr. 69 om offentlige anskaffelser (LOA) og forskrift 7. april 2006 nr. 402 om offentlige anskaffelser (FOA) gjelder for gjennomføringen av konkurransen, med de tillegg som følger av dette dokumentet.

Tilbyderne har ikke rett til å samarbeide i strid med bestemmelsene i lov av 5. mars 2004 nr. 12 om konkurranse mellom foretak og kontroll med foretakssammenslutninger (konkurranseloven).

Prosedyre

Konkurransen gjennomføres etter følgende prosedyre:

Konkurranse med forhandling med en tilbuds- og utvelgelsesprosess tilsvarende BVP-metoden.

Levering av søknad om deltagelse i konkurransen

Frist for søknad om deltagelse i konkurransen er 16. august 2016.

Søknaden skal leveres i Nye Veiers elektroniske konkurransegjennomføringsverktøy, EU Supply. Søknader som ikke er kommet Nye Veier i hende innen fristen vil bli avvist.

Språkkrav

Søknad om å bli kvalifisert og all tilhørende dokumentasjon skal være på norsk, svensk, dansk eller engelsk.

For den senere konkurransefasen og kontraktsgjennomføringen skal all kommunikasjon og dokumentasjon kun være på norsk.

Evaluering

Tilbudene vil bli evaluert etter følgende vekting:

- Erfaring fra tidligere arbeid – vektlegges 60%
- HMSK – vektlegges 30%
- Samfunnsansvar – vektlegges 10%

Frist for begjæring om midlertidig forføyning

Nye Veier fastsetter en frist på 15 dager for å fremsette begjæring om midlertidig forføyning til tingretten, jf. FOA § 19-7.

Forpliktelseserklæring

Tilbyder kan støtte seg på andre foretak for å oppfylle kvalifikasjonskravene relatert til økonomi og referanser, uavhengig av den juridiske karakteren av forbindelsen mellom dem. I så fall skal tilbyder dokumentere ovenfor Nye Veier at den vil ha rådighet over de nødvendige ressursene ved å fremlegge en forpliktelseserklæring om dette fra disse foretakene. Vedlagt mal for forpliktelseserklæring kan benyttes.

Tabellen nedenfor viser hvilke øvrige kvalifikasjonskrav som også skal oppfylles av foretak som har signert forpliktelseserklæring.

Kvalifikasjonskrav	Skal leveres av Tilbyder og forpliktende foretak	Skal kun leveres av Tilbyder
Skatteattest	x	
Firmaattest	x	
HMSK «skal- og bør-krav»		x
H1 verdi		x
Samfunnsansvar «skal- og børkrav»		x
Utskrift fra strafferegister	x	

Appendix 4 -Implementeringsplan

Tidspunkt	Beskrivelse
09. november 2016	Informasjonsmøte på Rugtvedt fra kl 1000 til 1500. Gjennomgang av konkurransegrunnlaget og BVP metoden spesielt.
21.. desember 2016	Totalentreprenør skal gjennomgå konkurransegrunnlaget og komme med eventuelle tilbakemeldinger om feil og mangler. Dette meldes inn som melding i EU-Supply.
13. desember 2016	Individuelt møte. Totalentreprenøren skal innen møte den 13. desember 2016 ha tatt stilling til om byggherrens makspris er oppnåelig i forhold til beskrevet omfang. Videre skal totalentreprenøren ha tatt stilling til om ferdigstillelsesdatoen som er oppgitt i konkurransegrunnlaget kan oppnås.
05. januar 2017	Oversikt over sentrale underleverandører som skal utføre vesentlige deler av arbeidene må oppgis til byggherre.
09. januar 2017	Byggherre forbeholder seg retten til å rette opp feil og mangler i konkurransegrunnlaget frem til og med 9. januar 2017. Feil og mangler vil bli kommunisert via EU-Supply portalen til alle totalentreprenørene.
23. januar 2017	Tilbudsfrist
24. januar - 07. februar 2017	Evaluering av K1-K3 og T
13. – 15. februar 2017	Intervjuer av nøkkelpersonell
24. februar 2017	Valg av totalentreprenør til konkretiseringsfasen, og meddelelse av resultatet.
07. mars 2017	Informasjonsmøte om konkretiseringsfasen. Byggherre gjennomfører informasjonsmøte med valgt totalentreprenør
13.-14. mars 2017	Oppstartsmøte. Totalentreprenør kaller inn og fasiliterer møte i Byggherrens lokaler. Gjennomføres over 2 dager.
4-6 uker	Konkretiseringsfase. Ledes av totalentreprenør.
25. april 2017	Endelig valg i styremøte
26. april til 8. mai	Intensjonsperiode
10. mai 2017	Signere kontrakt

Appendix 5 - Juridisk vurdering av Best Value Procurement (BVP) som metode for offentlige anskaffelser i Norge

Direktoratet for forvaltning og IKT

Bakgrunn for notatet

Metoden Best Value Procurement (BVP) er benyttet i Nederland av store offentlige aktører i store anskaffelsesprosjekter, men er foreløpig ny og uprøvd i Norge.

Da metoden forutsetter bruk av anbudskonkurranse som konkurranseprosedyre kombinert med tett dialog mellom oppdragsgiver og den innstilte leverandør før kontrakt signeres, er det uttrykt ønske om at Difi foretar en juridisk vurdering av metoden

Hvilke juridiske problemstillinger reiser seg?

Difi har, blant annet gjennom dialog med offentlige oppdragsgivere, identifisert tre forhold det ønskes en vurdering av.

1. Konkretiseringsfasen (clarification phase) og overholdelse av forhandlingsforbudet
2. Rettslig grunnlag for å endre tildelingsbeslutning og gå til leverandør rangert som nr. 2
3. Bruk av «intervju» i evalueringen

Da metoden er benyttet i Nederland i en lengre periode, har Difi også undersøkt om det er grunnlag for å hevde at Nederland vurderer de ovennevnte forhold på en annen måte enn hva vi gjør i Norge. For å finne ut av dette har Difi sett nærmere på EU-retten og vært i kontakt med en Nederlandsk advokat med ekspertise på offentlige anskaffelser og BVP.

Konkretiseringsfasen og overholdelse av forhandlingsforbudet

I Norge følger det av forskrift om offentlige anskaffelser at det i anbudskonkurranser ikke er tillatt å endre tilbudene gjennom forhandlinger. En tilsvarende bestemmelse finnes ikke i EU-direktivene. I EU-retten kan likevel et forhandlingsforbud utledes fra en felleserklæring gitt av Rådet og EUkommisjonen i forbindelse med vedtakelsen av bygge- og anleggsdirektivet og av praksis fra EU- domstolen. Felleserklæringen fra Rådet og EU-kommisjonen lyder slik i dansk versjon:

"Rådet og Kommissionen erklærer, at fremgangsmåderne med offentligt eller begrænset udbud udelukker enhver forhandling med ansøgere eller bydende om grundlæggende elementer i kontrakterne, som ikke vil kunne ændres uden fare for konkurrencefordrejning, og der må navnlig ikke forhandles om priser ; der må kun finde drøftelser sted med ansøgere eller bydende, når det sker med henblik på at præcisere eller supplere indholdet af deres bud eller de

ordregivende myndigheders krav, og i det omfang, dette ikke giver anledning til forskelsbehandling."

Forhandlingsforbudet i EU-retten har også kommet til uttrykk i flere avgjørelser fra EU-domstolen.

I sak C-599/10 fra mars 2012 uttaler EU-domstolen følgende (om begrenset anbudskonkurranse): *«Den begrænsede udbudsprocedure indebærer efter sin art, at når først udvælgelsen af ansøgere har fundet sted, og når først ansøgerne har afgivet deres tilbud, kan sidstnævnte i princippet ikke længere ændres, hverken på den ordregivende myndigheds initiativ eller ansøgerens initiativ. Princippet om ligebehandling af ansøgere og den gennemsigtighedsforpligtelse, der følger heraf, er således i forbindelse med denne procedure til hinder for enhver forhandling mellem den ordregivende myndighed og den ene eller den anden ansøger.»*

Både etter norsk rett og etter EU-retten er det et forbud mot å endre tilbudene etter utløpt tilbudsfrist når en benytter anbudskonkurranse som anskaffelsesprosedyre.

Dette gjelder også i Nederland. Nederlandsk juridisk ekspertise er tydelige på at man i konkretiseringsfasen ikke kan endre tilbudet eller konkurransegrunnlaget. Det er kun utdypninger og avklaringer som er tillatt i denne fasen. Et gjennomarbeidet konkurransegrunnlag er avgjørende for å lykkes med BVP.

Under konkretiseringsfasen utarbeider og fremlegger leverandøren en detaljert plan for hvordan prosjektet skal gjennomføres. Under denne prosessen vil det fremkomme forhold som ikke tidligere er omtalt i tilbudet. Slike forhold vil det kunne være rom for å diskutere, da justeringer her ikke nødvendigvis vil utgjøre endringer i tilbudet i strid med forhandlingsforbudet. Forhold som tidligere er omtalt i det skriftlige tilbudet, eller i intervju, derimot, kan ikke endres.

Forskrift om offentlige anskaffelser gir i § 21-1(2) også oppdragsgiver adgang til å foreta følgende avklaringer i tilbudet:

a) «oppdragsgiver kan innhente nærmere opplysninger hos leverandørene for å få klarlagt uklarheter og ufullstendigheter i tilbudene».

b) «når det gjelder løsninger, arbeidsmetoder eller materialer som leverandøren selv foreslår, kan oppdragsgiver be leverandøren foreta utdypninger og klargjøringer om hvordan kravene i konkurransegrunnlaget vil bli ivaretatt».

c) «dersom det av tekniske eller funksjonelle grunner er nødvendige, kan det gjøres mindre justeringer i de løsninger leverandøren har fremsatt.»

Implementeringen av det nye anskaffelsesdirektivet vil antagelig innebære en viss utvidelse av denne avklaringsadgangen.

Konklusjon: En anskaffelse etter BVP metoden må forholde seg til forbudet mot å endre tilbud i en anbudskonkurranse, men det er adgang til å foreta utdypninger og avklaringer i tilbudet i henhold til forskriftens § 21-1(2).

Rettslig grunnlag for å endre tildelingsbeslutning og gå videre til leverandør nr. 2

I en BVP-prosess gjennomføres konkretiseringsfasen mellom tildelingsbeslutningen og kontraktsigneringen. Det reiser seg da et spørsmål om og eventuelt hvilke forhold som kan gi oppdragsgiver grunnlag for å omgjøre sin tildelingsbeslutning som følge av gjennomføringen av konkretiseringsfasen. Det ses i det følgende bort fra forhold som kan medføre en plikt til å omgjøre tildelingsbeslutningen, men som ikke har noe med gjennomføringen av konkretiseringsfasen å gjøre, som for eksempel at oppdragsgiver har benyttet tildelingskriteriene feil eller at valgte leverandør skulle vært avvist som ikke kvalifisert.

Etter forskrift om offentlige anskaffelser §22-3(5) kan en tildelingsbeslutning annulleres dersom oppdragsgiver finner at beslutningen om å tildele kontrakt ikke er i samsvar med §22-2 (kriterier for valg av tilbud).

Nederland har tilsvarende bestemmelser.

I konkretiseringsfasen er det særlig to situasjoner som gi oppdragsgiver et rettslig grunnlag for å omgjøre sin tildelingsbeslutning.

Den første situasjonen er dersom av konkretiseringsfasen avdekker at leverandørens tilbud ikke oppfyller absolutte krav til leveransen. Dette vil med stor sannsynlighet medføre at det oppstår en plikt til å avvise valgte leverandør dersom konkretiseringsfasen får konsekvenser for forhold av betydning for den evaluering som lå til grunn for tildelingsbeslutningen, jfr. forskriftens § 20-13(1)e.

Den andre situasjonen er dersom leverandøren i konkretiseringsfasen avviker fra eller endrer tilbudet. Dette vil bety at den evalueringen som lå til grunn for tildelingsbeslutningen er foretatt på et feilaktig grunnlag og beslutningen vil være i strid med §22-2. I tillegg vil en slik opptreden fra en leverandør være i strid med forhandlingsforbudet og med kontraktsretten.

Det er særlig disse to situasjonene som fremstår som mulige rettslige grunnlag for å omgjøre en tildelingsbeslutning på bakgrunn av det som skjer i konkretiseringsfasen. Det at gjennomføringen av konkretiseringsfasen har medført at oppdragsgiver ikke lenger er like overbevist om leverandørens fortreffelighet gir i seg selv ikke grunnlag for å omgjøre beslutningen. En slik situasjon medfører ikke nødvendigvis at tildelingsbeslutningen ikke er i samsvar med § 22-2.

For å kunne gå videre til leverandør nr. 2 på rangeringslisten må vedståelsesfristen fremdeles løpe. Man kan heller ikke ha avslått tilbudet til leverandør nr.2.

Konklusjon: I en BVP prosess kan man annullere en tildelingsbeslutning og gå videre til leverandør nr. 2 dersom det viser seg at tildelingsbeslutningen er i strid med forskriftens § 22-2.

Bruk av intervju som metode for evaluering av tilbudet

Bruk av intervju ved anbudskonkurranser har vært oppe i flere saker for KOFA. I Sak 2013/103 uttaler KOFA i premiss 35 og 36: *«Klagenemnda har tidligere funnet at regelverket ikke stenger for å bruke intervju i evalueringen, jf. sak 2011/55 premiss (56). Det ble vektlagt at regelverket prinsipielt ikke er til hinder for å trekke inn annen*

informasjon i evalueringen enn den som fremkommer skriftlig i de innkomne tilbud, og at det tidligere er akseptert bruk av referanseuttalelser og befaringer av tekniske innretninger.
Klagenemnda deler flertallets syn i sak 2011/55, og finner at regelverket ikke prinsipielt er til hinder for å benytte møter eller intervju ved anskaffelsen saken gjelder.

«Slik tildelingskriteriet er utformet, er det for øvrig ingenting som tilsier at møtet med tilbyderne faktisk ville bli benyttet til å forhandle om tilbudets innhold. Det fulgte tvert imot uttrykkelig av konkurransegrunnlaget at betingelser i tilbudet ikke ville bli diskutert. Kriteriet kan etter dette ikke sies å bryte med forhandlingsforbudet. Kriteriet er likevel nokså skjønnsmessig, og sammenholdt med bruken av muntlige møter, åpnes det i større grad for at evalueringen kan gjennomføres i uoverensstemmelse med regelverket. For å minske denne risikoen, kan oppdragsgiver gjøre en rekke tiltak, som ikke å åpne pristilbudet før etter evalueringen av konsulentene, eller innhente en uavhengig person eller jury til å delta under møtet mv. I alle tilfeller fordrer gjennomføringsmåten at det etterprøvbarheten er ivaretatt på en god måte, jf. også forskriften § 3-1 (4).»

I KOFA sak 2011/55, som også omhandler bruk av intervju ved tilbudsevalueringen, uttaler KOFA i premiss 60:

«Klagenemnda deler ikke klagers syn om at intervjuene utelukkende kunne vært benyttet for å etterprøve riktigheten av en opprinnelig evaluering, som skulle har vært basert på tilbudet. Hensikten med intervjuet var å "avklare balansen i gruppen mht samspillforståelse". Det er ikke gitt at skriftlig dokumentasjon ville være relevant for å kartlegge dette, og regelverket pålegger intet krav om en slik toleddet prosess mht evalueringen som klager med dette krever.»

Her uttaler altså KOFA uttrykkelig at det er tillatt å legge vekt på forhold som fremkommer i intervjuet, men som ikke fremkom av det skriftlige tilbudet. I premiss 39 i nevnte sak 2013/103 tillater KOFA at forhold som skal vurderes, kun vurderes på bakgrunn av gjennomført intervju:

«Kriteriet gir innklagede et relativt vidt skjønn med hensyn til hvilke egenskaper som kunne vektlegges ved innklagedes "totalinntrykk" av konsulentene. Det er likevel flere begrensninger i dette skjønnet. For det første er oppdragsgiver bundet av at evalueringen må være saklig og forsvarlig, og i samsvar med de grunnleggende kravene i loven § 5. Skjønnet ved innklagedes "totalinntrykk" var følgelig begrenset av at evalueringen ikke kan bygge på utenforliggende forhold ved konsulentene som ikke har betydning for tjenestens kvalitet. Videre skulle konsulentenes relevante utdanning og erfaring, dokumentert ved CV, evalueres under tildelingskriteriet "Kompetanse og erfaring". I lys av dette er det en naturlig tolkning at "totalinntrykk" av konsulentene kun skulle evalueres på bakgrunn av den kompetansen de viste på møtet, og dette i hovedsak ut fra konsulentens fremstilling av hvordan oppdraget var tenkt utført. Anførselen om at tildelingskriteriet gir innklagede ubetinget fritt skjønn fører ikke frem. På samme grunnlag finner klagenemnda ikke holdepunkter for at tildelingskriteriet åpnet for å vurdere forhold som ikke var relevante for oppdragsutførelsen, og kriteriet har dermed tilstrekkelig tilknytning til kontraktens gjenstand.»

Konklusjon: Av KOFA-praksis følger at det å benytte intervju i forbindelse med tilbudsevalueringen er akseptert. KOFA har videre akseptert at enkelte forhold ved tilbudet kan evalueres utelukkende på bakgrunn av gjennomført intervju.

Appendix 7 -Tildelingskriterier

Følgende kriterier vil bli vektlagt ved evalueringen av tilbudene:

Tildelingskriterier	**Vekting**
T-Tilbudssum	25%
K1 – Prestasjonsbegrunnelse	25%
K2 – Risikovurdering	15%
K3 – Tilleggsverdi	10%
K4 – Kvalifikasjoner og erfaring nøkkelpersoner	25%

Prestasjonsbegrunnelse

Poengsum	Vurdering
100	Prestasjonsdokumentet bidrar veldig positivt til realisering av prosjektets mål og leveranse.
80	Prestasjonsdokumentet bidrar godt til realisering av prosjektets mål og kontraktsarbeidet.
60	Prestasjonsdokumentet bidrar tilstrekkelig til realisering av prosjektets mål og kontraktsarbeidet.
Ikke tilfredsstillende	Prestasjonsdokumentet er ikke tilstrekkelig til å sannsynliggjøre at totalentreprenøren er i stand til å realisere kontraktsarbeidet og bidrar ikke nok til å nå prosjektets mål

Risikovurdering

Poengsum	Vurdering
100	Risikovurdringsplanen bidrar veldig godt til å minimere risiko for byggherre.
80	Risikovurdringsplanen bidrar godt til å minimere risiko for byggherre.
60	Risikovurdringsplanen bidrar tilstrekkelig til å minimere risiko for byggherre.
40	Risikovurdringsplanen bidrar lite til å minimere risiko for byggherre.
20	Risikovurdringsplanen bidrar ikke til å minimere risiko for byggherre.
0	Risikovurderingsplan uten innhold

Tilleggsverdi

Poengsum	Vurdering
100	Tilleggsverdien bidrar utrolig godt til å nå prosjektets mål, utover de forpliktelser basert på konkurransegrunnlaget ved en proporsjonal kostnad.
80	Tilleggsverdien bidrar godt til å nå prosjektets mål, utover de forpliktelser basert på konkurransegrunnlaget ved en proporsjonal kostnad.
60	Tilleggsverdien bidrar nøytralt til å nå prosjektets mål, utover de forpliktelser basert på konkurransegrunnlaget ved en proporsjonal kostnad.
Ikke tilfredsstillende	Tilleggsverdien viser at kontraktsarbeidet ikke vil bli produsert i tide, innenfor budsjett taket eller med den nødvendige kvalitet

Kvalifikasjoner og erfaring av de sentrale ledere og deres rolle i organisasjonen

Poengsum	Vurdering
100	Kvalifikasjoner og erfaringer hos nøkkelpersonene og deres roller i organisasjonen, bidrar veldig godt til realisering av prosjektets mål og kontraktsarbeidet.
80	Kvalifikasjoner og erfaringer hos nøkkelpersonene og deres roller i organisasjonen, bidrar godt til realisering av prosjektets mål og kontraktsarbeidet.
60	Kvalifikasjoner og erfaringer hos nøkkelpersonene og deres roller i organisasjonen, bidrar tilstrekkelig til realisering av prosjektets mål og kontraktsarbeidet.
40	Kvalifikasjoner og erfaringer hos nøkkelpersonene og deres roller i organisasjonen, bidrar dårlig til realisering av prosjektets mål og kontraktsarbeidet.
20	Kvalifikasjoner og erfaringer hos nøkkelpersonene og deres roller i organisasjonen, bidrar ikke til realisering av prosjektets mål og kontraktsarbeidet.

Appendix 8 – Maler til tilbudsdokumenter

NyeVeier

MAL FORBEHOLD

Forbehold 1 - beskrivelse	
Kostnadskonsekvens i NOK	
Tidskonsekvens i tid	
HMS konsekvens	
Kvalitetskonsekvens	
Forbehold 2 - beskrivelse	
Kostnadskonsekvens i NOK	

NyeVeier

MAL FOR PRESTASJONSBEGRUNNELSE

Påstand 1	
Underbyggelse av påstanden med målbar prestasjonsinformasjon	
Påstand 2	
Underbyggelse av påstanden med målbar prestasjonsinformasjon	

NyeVeier

MAL FOR RISIKOVURDERING

Risiko 1	
Hvorfor er dette en risiko?	
Forebyggende tiltak (pris må være inkludert i BMP)	
Underbyggelse av effektiviteten av forebyggende tiltaket med målbar prestasjonsinformasjon	
Korrigerende og skadebegrensende tiltak	
Kostnader for korrigerende og skadebegrensende tiltak	
Risiko 2	
Hvorfor er dette en risiko?	

NyeVeier

MAL FOR TILLEGGSVERDIVURDERING

Tilleggsverdi 1	
På hvilken måte bidrar denne tilleggsverdien til å realisere prosjektmålsetningene?	
Underbyggelse	
Innflytelse på pris	
Innflytelse på tid	
Tilleggsverdi 2	
På hvilken måte bidrar denne tilleggsverdien til å realisere	

Appendix 9 - Sample of interview questions from selection phase at Nye Veier

Spørsmål	Stikkord svar	Poeng (20-100)	Bidrar svaret til å nå målene eller kontraktarbeid?	Er svaret basert på erfaring, evt. Hvilke?
Hvilke erfaringer har du som kan være relevant for dette prosjektet?				
Hva er din forståelse av din rolle i dette prosjektet?				
Hvordan tenker du at samarbeidet i prosjektet skal foregå, og hvordan skal du bidra til dette?				
Hvordan kan du bidra for å nå …?				
Hvilke erfaringer har du i å …?				
Hvordan tenker du å sikre god kvalitet på …?				
Hvilke tanker har du rundt …?				

Appendix 10 – Preliminary thesis

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Preliminary Thesis
BI Norwegian Business School

Preliminary thesis on Best Value Procurement

Hand-in date:
16.01.2017

Supervisor:
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Campus:
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Examination code and name:
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Program:
Master of Science in Business
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Table of content

Abstract

The need for better integration, cooperation and coordination of construction project teams, has since the 1980s been a topic that has attracted the attention of the construction industry (Cicmil & Marshall, 2005). There has been a need for new thinking and innovation in the industry, hence an initiative has emerged to explore new alternatives such as lean, turn-key and now Best Value Procurement (Barlish et al., 2013; Cicmil & Marshall, 2005; Fernandes, 2013; Molenaar & Gransberg, 2001; Naoum & Egbu, 2015; Sage et al., 2012; K. T. Sullivan, 2010; Van Duren & Dorée, 2010). The role of procurement has evolved as firms recognized the importance in reducing cost and handle increased competition (Ellram & Carr, 1994; Glavee-Geo, 2015). Best Value Procurement (BVP) is an approach used in projects where the purpose is to increase the value added (Abdelrahman et al., 2008), by using the contractor as the expert (D. Kashiwagi, 2011). This thesis will look at how a new procurement method is implemented through a pilot project in the public construction sector. The focal point of the case studied is a relatively newly established public road construction firm Nye Veier. The goal is to investigate how a client change procurement methods in the construction industry, and how this can be illustrated through this case using Best Value Procurement. A qualitative strategy will be applied with a back-and-forth approach for developing the theory and framework, which further directed the literature and case study. Data collection will be conducted through a literature review of articles and previous case studies obtained from the US and Netherlands, and through interviews and observations in Nye Veier`s implementation process. The aim is to get a contemporary look at a real-life situation and to get a basis for the application theory of BVP, as well as to observe the process and challenges that occur during the implementation.

Introduction

In this thesis, we will look at how a new procurement method is implemented in a pilot project in the public construction sector. The case studied concerns a relatively newly established public road construction firm Nye Veier, and their implementation process of a procurement method called Best Value Procurement (BVP). This will be one of several pilot projects conducted across the public construction sector on the BVP approach. The role of procurement has evolved as firms recognized the importance of reducing cost and handle increased competition. In addition, it has now matured into a strategic important field (Ellram & Carr, 1994; Glavee-Geo, 2015). According to Turner (1990) "Procurement is the act of obtaining/acquiring or securing. In commerce and industry, it has come to mean purchasing – the tendering and selection system to obtain anything needed". Purchasing is the management of the company's external resources in such a way that the supply of all goods, services, capabilities and knowledge is secured at most favorable conditions (Weele, 2014). Procurement has historically been viewed as an administrative and transactional role, but in more recent years it has evolved into strategic field involving partnerships, cooperative alliances and supply network management (Carr & Smeltzer, 1997; Tassabehji & Moorhouse, 2008).

The construction industry has long been characterized as conservative industry with a low bid approach to contracting (D. Kashiwagi & Kashiwagi, 2011; D. Kashiwagi et al., 2012; K. T. Sullivan, 2010). This has caused conflicts, delays and unexpected additional costs. There has been a need for new thinking and innovation in the industry, hence an initiative has emerged to explore new alternatives such as lean, turn-key and now BVP (Barlish et al., 2013; Cicmil & Marshall, 2005; Fernandes, 2013; Molenaar & Gransberg, 2001; Naoum & Egbu, 2015; Sage et al., 2012; K. T. Sullivan, 2010; Van Duren & Dorée, 2010).

Supplier integration has become increasingly important in the construction industry in a time that requires close cooperation between production planning, inventory control, quality inspection and purchasing (Weele, 2014). Early supplier involvement is also beneficial as more innovations in industry come from suppliers. Getting them involved early in the new product development process becomes an issue of primary concern (Weele, 2014).

Background

Best Value Procurement (BVP) is an approach used in procurement projects where the purpose is to increase the value added to the project (Abdelrahman et al., 2008), by using the contractor as the expert (D. Kashiwagi, 2011). Hence, the approach is aligned with the general trend of early supplier involvement. The literature differs between calling it Best Value Procurement, Performance Information Procurement System, and best-value, but in this thesis, it will be referred to as Best Value Procurement (BVP). In our study, we will observe how the Norwegian company "Nye Veier" (contractor) implement BVP, with emphasis on contractual phases in the process.

The approach has mostly been applied in the Netherlands and US. The goal of BVP is to minimize the risk of non-performance and effort in new construction projects (D. Kashiwagi & Byfield, 2002). BVP is an approach where both price and performance are considered rather than just price (D. Kashiwagi, 2011). The objective of this transformation from lowest bid to best-value, is to increase the total value and quality to the project (Abdelrahman et al., 2008). The idea of the procurement approach is to accelerate the delivery time and the length of the tender procedure to maintain the competition, and to procure the best possible value (van de Rijt et al., 2011). Through selecting the contractor with the most advantageous offer to the owner, best-value aims at enhancing the long-term performance (Abdelrahman et al., 2008). The study will follow the process of implementing a new method, the complexity and challenges that may occur.

Problem statement

The knowledge obtained from the case study can be used by other companies that are considering to implement the BVP approach, hence the problem statement is:

- *How do clients change procurement methods in the construction industry?*
    - *How can this be illustrated through the case of Best Value Procurement?*

Through a case study of the pilot project in Nye Veier, the process of BVP will be used as an example of a change in procurement methods. In addition, the study aims to investigate:

- *What are the challenges?*
- *What are the benefits?*
- *How is the process?*
- *How complex is this type of change?*

Empirical setting

Nye Veier is a Norwegian public corporation founded May 2015, which has the responsibility of development and operations of interstate roads in Norway. Nye Veier`s goal is to be a lean and effective constructor, with focus on a holistic and cost efficient development of main roads. Their vision is to build good roads fast and smart, with a focus on improvement, innovation, and safety. To achieve these goals and visions they have decided to utilize the BVP approach in a pilot project. Nye Veier is the contractor and will select a provider to design and build the infrastructure. The BVP approach will be used in the contracting and possibly also in the project management stage of one construction project. This study will only follow the contractual phases.

Through a case study of Nye Veier`s pilot project on BVP, we will collect empirical data that can be used to describe the process, identify challenges, document possible solutions and compared to the theoretical frameworks. Through this we hope to identify similarities and differences compared to other case studies. The pilot project entails a 3 billion NOK road construction contract that will be awarded through the BVP approach.

The importance of this thesis

According to Sullivan (2010) the success of the best value system does not hinge on any new concepts or ideas, but on a different approach to the application of earlier quality management programs. BVP has never been implemented in Norway before and this study will give insights to the challenges and solutions during the process. BVP differs from other best-value approaches, among others, in terms of measuring performance and project deviations. As well as reducing the client/buyer's management, and control of the vendor/contractor. Vendors administer their own contract by the minimization of project cost and time deviations, and BVP does not use negotiation of price (D. Kashiwagi, 2011).

The conclusions developed in this study can benefit several parties. The findings will be specifically directed at projects that wants to implement the BVP

approach. The importance of these findings is to provide project managers with a basis to decide how to implement BVP in their project. Supplying project managers with such recommendations will enable them to clearly identify their requirements before implementing the change. Even though BVP has been a success in other countries, it is not given that this will be the case in Norway due to different country laws, regulations, culture, etc. Potential obstacles in the best-value contractor selection can be the legal requirements in each country (Wang et al., 2013). It is therefore necessary to view this process in comparison to experiences in other countries.

When implementing a new approach, it is crucial to learn from the experiences throughout the project process and to document lessons learned. When using pilot projects, the goal is to learn from success and failures to evaluate if this could be more broadly implemented in future projects. To achieve this, knowledge management need to be in focus. Knowledge management is a large and complex area which include knowledge creation, knowledge capturing, knowledge sharing, knowledge transfer, knowledge application and even organizational learning and innovation (Liyanage, Elhag, Ballal, & Li, 2009). This thesis can contribute by facilitating knowledge transfer and documentation. Through interviews and observation, we will gather data on how the company execute the different steps in the model and how they handle challenges that occur.

Relevant theory

Construction industry characteristics

The construction industry has long been characterized as conservative with a low bid approach to contracting (D. Kashiwagi & Kashiwagi, 2011; D. Kashiwagi et al., 2012; K. T. Sullivan, 2010). This has caused conflicts, delays, and unexpected additional costs. There has been a need for new thinking and innovation in the industry, hence an initiative has emerged to explore new alternatives such as lean, turn-key and now BVP (Barlish et al., 2013; Cicmil & Marshall, 2005; Fernandes, 2013; Molenaar & Gransberg, 2001; Naoum & Egbu, 2015; Sage et al., 2012; K. T. Sullivan, 2010; Van Duren & Dorée, 2010). According to Naoum and Egbu (2015), the main problems that are facing the construction industry are in relation to: separation of design from construction; lack of integration; lack of effective

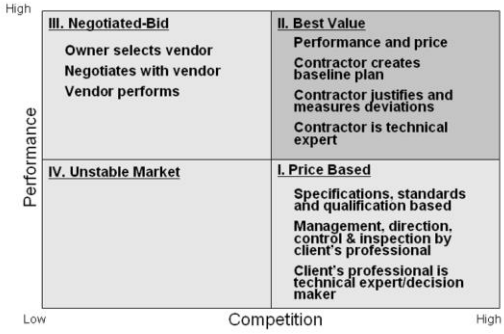
communication; uncertainty; changing environment, changing clients' priorities and expectations, and increasing complexity. Also, cooperation and coordination of construction project teams has been attracting the attention of practitioners and academic researchers alike since the late 1980s. Project team integration is inevitably associated with an ongoing concern in the construction industry to overcome cultural inconsistencies, distrustful relationships and paradoxes associated with the 'design–construction divide' that have been acknowledged as major obstacles to the successful and more efficient completion of construction projects (Cicmil & Marshall, 2005). Increased collaboration within the construction industry will be vital to achieve future gains and for the industry to deliver improvements on the clients triangulated factors of cost, time, and quality (Naoum & Egbu, 2015).

The construction industry consists of actors involved in activities such as building, engineering, designing, and demolishing structures. At the most basic level, construction projects involve the planning and building of some physical facility (Pinto & Covin, 1989). Dubois and Gadde (2002a) states that the industry is characterized by competitive tendering, lowest price bids, adversarial relationships, and risk transfer. In addition, the construction industry often uses a lot of subcontractors and outsourcing. This leads to specialization and a high degree of interdependency in the supply chain (Dubois & Gadde, 2002a).

The construction sector is a project based industry, and have several of the typical project characteristics. "A project based organization is one in which the project is the primary unit for production organization, innovation, and competition" (Hobday, 2000, p. p. 874). A project is often task-driven, aiming at creating a unique result (DeFillippi & Lehrer, 2011a). This is done in teams with different knowledge and background, and with limitations concerning time and resources. Knowledge transfer is particularly challenging in a project based industry, due to lack of continuity (Schindler & Eppler, 2003).

In the Construction Industry Structure (CIS) (Figure 1) Kashiwagi et al. (2009) defines construction based on the factors of performance and competition (K.

Sullivan, Kashiwagi, & Kashiwagi, 2010).



Source: (Kashiwagi, 2009)

Figure 1: Construction Industry Structure

Due to the worldwide competitive environment, buyers of design and construction services have moved to increase competition (Quadrant I – Price Based Award and Quadrant II – Value Based or Best Value) (D. Kashiwagi et al., 2009).

Procurement methods

Procurement methods have received considerable attention and discussion within the construction industry in the past decades (Naoum & Egbu, 2015; Ruparathna & Hewage, 2013). Purchasing plays a key role in corporate strategic success through the selection and development of suppliers that can support a firm's long term strategy and competitive positioning (Ellram & Carr, 1994). As mentioned earlier, "Procurement is the act of obtaining/acquiring or securing. In commerce and industry, it has come to mean purchasing – the tendering and selection system to obtain anything needed" (Turner, 1990). In construction, it can be viewed as "a mechanism for linking and coordinating members of the building team throughout the building process in a unique systematic structure, both functionally and contractually. Functionally via roles, authority, and power, contractually via responsibilities and risks. The main aim is to deliver a project that meets its objectives and fulfill the client criteria and expectations" (Naoum & Egbu, 2015). The basic managerial problem is that the purchasing function has the ability to influence corporate profitability *only* when it is operating at a strategic level at the firm. In the 1990`s, there was a move towards global sourcing, rapid change in technology, and increased competition which required purchasing to assume more responsibility in the planning and implementation of strategies to support corporate strategy (Ellram & Carr, 1994). The 1990s offers both private and public owners a variety of procurement methods, such as Warranties, Design-Bid-

Build, Multi-parameter bidding, Pre-engineered building, Cost Plus Time Bidding, Partnering and Design-Build (Anderson & Russell, 2001; Briscoe, Dainty, & Millett, 2001; Clough et al., 2015; Konchar & Sanvido, 1998). The selection of the most suitable procurement method is critical for both client and project participants, and it is becoming an important contemporary issue within the construction industry (P. E. D. Love, Skitmore, & Earl, 1998).

The design-build delivery method is increasingly used in construction due to the numerous advantages it can offer to a project (Molenaar & Gransberg, 2001). Design-build is a project delivery method by which design and construction services are delivered by one single contractor (Chen et al., 2015; Clough et al., 2015; Songer & Molenaar, 1996). Design-build is described as an evaluation process in three parts; pre-qualification process, a technical review, and evaluating the proposed project price for realism and reasonableness. The goal is to select the design-builder with the highest probability of successfully completing the project to a higher level of quality that is required (Gransberg et al., 2000). The primary reason why owner select design-build is to take advantage of the time savings inherited in the process. For any specific project, additional factors that may dictate the use of design-build include establishing cost, reducing cost, constructability/innovation, establishing schedule, and reducing claims (Songer & Molenaar, 1996).

The advantages of Design-Build include shortened project duration and early certainty of project cost, and have been proved both theoretically and empirically in recent years, leading to the increasing popularity of Design-Build in the international construction market (Chen et al., 2015; Songer & Molenaar, 1996). Because of coordinated efforts between the designers and the builders, construction can begin prior to completion of construction documents (Molenaar & Gransberg, 2001).

The design-build delivery method is further divided into a range of procurement methods. Some design-build procurement methods are: sole source, qualifications-based, fixed budget/best design, best value, and low bid selection (Molenaar & Gransberg, 2001).

Figure 1 - Selection Methodology Continuum. (Molenaar and Gransberg 2001)

Sole Source selection is a type of procurement method which involves the direct selection of the design-build team without proposals (Molenaar & Gransberg, 2001). This is considered as the most qualitative consideration method. Another qualitative consideration method is Qualifications-Based Selection, where the owner select the most qualified design-build team through an request for quotation (RFQ) and often negotiates only with that entity to a "fair and reasonable" price (Beard et al., 2001). In a Best Value Selection approach, the design-build teams respond to the owner by submitting proposals that are primarily evaluated based on the technical aspects together with the associated cost of the project (Beard et al., 2001). This is a combination of qualitative and price consideration methods.

On the other end of the scale is the methods that focus on price considerations. Examples of these methods are Fixed Budget/Best Design Selection which is when the owner specifies the project budget during the request for proposal (RFP) process (Beard et al., 2001), and Low-Bid Selection where the owner primarily selects the design-build team based on the project value and related cost items. Cost criteria represent more than 90% of the design-build team procurement selection process (Beard et al., 2001).

The current trend in the literature is urging greater involvement and interaction between client and consultants for a more effective procurement process (P. E. D. Love et al., 1998).

Supplier integration and early involvement

Supplier integration has become increasingly important in the construction industry in a time that requires close cooperation between production planning, inventory control, quality inspection and purchasing (Song et al., 2009; Weele, 2014). Early supplier involvement is also beneficial as more and more innovations

in industry come from suppliers (Jeroen et al., 2012). Getting them involved early in the new product development process becomes an issue of primary concern (Weele, 2014). Supplier integration influence efficiency and schedule attainment performance through a synergic effect (Danese, 2013b). Involving the supplier in the determination of appropriate technical metrics and targets for the project, and agreeing jointly with the supplier on these targets was shown to be a key element in project team effectiveness (Petersen et al., 2005). Research offers strong support for the belief that input from a carefully selected supplier facilitates better decision making by the development project team. This improved decision making in turn, promotes the development of a better design and better financial performance (Petersen et al., 2005).

According to Ragatz, Handfield et al. (2002), results show the importance of supplier integration. Managers seeking to reduce concept to customer development time while increasing quality should seek to make suppliers part of the team, through co-location or frequent participation on team meetings. Research show that process supplier integration has positive technology spillover effects. Buying organizations tend to adopt more external technologies if they integrate suppliers (Perols et al., 2012; Ragatz et al., 2002). In addition, Song, Mohamed et al. (2009) argues that early contractor involvement leads to reduced project duration and total man hours. His research improves the understanding on what contractors can bring to the design table and how this early involvement effort can influence construction schedule performance. In addition, Eriksson and Westerberg (2011) suggests that cooperative supplier integration generally have a positive influence on project performance (cost, time, quality, environmental impact, work environment, and innovation).

Research identified three compelling reasons why organizations should reappraise the nature of the relationships they develop with their suppliers and customers: the potential partnership benefits; the trend towards supply-base reduction, and; the emphasis being placed on best value (Beach et al., 2005). It follows that suppliers that ignore this trend and fail to focus on delivering best value are likely to find themselves increasingly isolated and competing in a shrinking market. However, much continues to depend on the willingness of clients to accept that best value,

and not cost minimization, represents a more effective and efficient means of achieving a project's goals (Beach et al., 2005).

The introduction to Best Value Procurement (BVP)

The building industry has been described as inefficient and resulting in many project changes (Ibbs et al., 2007; Savicky et al., 2014; Thomas & Napolitan, 1995; Wambeke et al., 2011). They are facing problems related to budget cracks and high level of conflict during and after construction projects (D. Kashiwagi & Kashiwagi, 2011; D. Kashiwagi et al., 2012; K. T. Sullivan, 2010). According to Bos et al. (2015) the cause of the collusion in the industry structure is not the vendors' criminal/malicious intent but the minimization of the contractor's profit margins to an extent that threatened their sustainability. Many non-priced attributes such as faster construction and better quality that could increase the procured value considerably and reduce unwelcome adjustments through claims that contractors resort to compensate for unrealistic low bids (Ekambaram et al., 2003). Due to this, Best Value Procurement approach was introduced.

Theoretical framework

The Best Value Procurement (BVP) approach was introduced by Dean Kashiwagi from Arizona State University. The goal was to minimize the risk of non-performance and effort in new construction projects (D. Kashiwagi & Byfield, 2002). The approach was introduced in 1991, and has since then become a well-known procurement practice in the United States and Netherlands. BVP is an approach where both price and performance are considered instead of just price (Abdelrahman et al., 2008; D. Kashiwagi, 2011). The objective of this transformation from the old practice of lowest bid to best-value, is to increase the value added to the project (Abdelrahman et al., 2008). The main objective of the procurement approach is to accelerate the delivery and the length of the tender procedure in order to maintain the competition, and to procure the best possible value (van de Rijt et al., 2011).

The concept of Best Value Procurement (BVP)

BVP is used to select the best suppliers who will do the infrastructural work for several selected projects, as speed and quality is of the utmost importance (van de

Rijt et al., 2011). A previous research study shows an increasing trend in the construction sector toward the use of various BVP approaches (Abdelrahman et al., 2008). BVP have been tested over 700 times mostly in the Netherlands and US, both in construction and other services (D. Kashiwagi, 2011). It is used to successfully deliver commodities, professional services, non-construction services, and information technology (IT) services (Adeyemi et al., 2009; D. Kashiwagi, 2011; D. Kashiwagi et al., 2009; K. T. Sullivan, 2010). The delivery of these services has been an issue for the last 20 years. The development of BVP identified the delivery system of services as the problem and not the lack of technically qualified personnel (D. Kashiwagi, 2011; Meyer, Witt, Kashiwagi, & Kashiwagi, 2010). The results of BVP tests shows a 98% client satisfaction and no vendor caused cost deviation. It has reduced the client's risk and project management with up to 90%, and provider have increased profits up to 100% without increasing the cost to the client (D. Kashiwagi, 2011; D. Kashiwagi et al., 2009).

In performing the approach, the operations used often differ due to the various government procurement requirements (Wang et al., 2013). Selecting an appropriate provider is essential to achieve a successful implementation of a construction project. The best value environment identifies the provider as an expert, and assigns quality control and risk management to the contractor. In the best value environment, the client's representative has a nontechnical quality assurance role of ensuring that the provider has a quality control/risk management system that is used to minimize deviations. BVP differs from other procurement and risk management systems because it minimizes subjective decision making of the contractor's experts. It forces the provider to compete based on value (quality risk management capability and price) (D. Kashiwagi, 2011).

Although the lowest-bid method is typically adopted to award contracts for most public construction projects, the best-value approach has been receiving considerable attention in many countries (Abdelrahman et al., 2008; Elyamany & Abdelrahman, 2010; Wang et al., 2013). Best-value refers to the optimum outcome of a business process (Wang et al., 2013). One conclusion drawn from BVP, is that the approach has made the acceleration of the projects possible and the transaction time is cut in half. The focus on timely delivery of the project's lead to offers from the provider for reducing the building period. Another

objective of the procurement approach was to achieve the best possible value for the projects (van de Rijt et al., 2011).

BVP implementation phases

There are different phases in the BVP process called preparation phase, procurement phase, pre-award phase, and the execution phase (van de Rijt et al., 2011).

In the preparation phase the contractor and providers are educated in the philosophy of BVP such as the minimizing of decision making by the client, transfer of risk and control to the provider's, quality assurance by client, quality control by vendors, and risk management (van de Rijt et al., 2011). This is done by inviting all interested parties to participate in an independent course conducted by experts in the Best Value approach. The preparation phase is about preparing both the contractor and the provider on how to execute the project in regard to choice and education of key personnel. In addition, the phase is used to formulate project goals, make project plans, and choose tendering procedure to mention some. The contractor hands out the invitation to tender with project specifications. These specifications can be function based if the provider is to compete on solution suggestions (van de Rijt et al., 2011).

Following the preparation phase is the procurement phase, also called the selection phase. The providers submit their written offer consisting of price, documentation on previous performance, risk evaluation, and additional value adding elements. The chosen providers proceed to the interview rounds with the key personnel in the project, prioritizing the provider and a check that the chosen BVP supplier provides the best value (Rijt & Santema, 2013).

In the end, a provider is selected based on all the criteria's mentioned above. In the pre-award phase, the chosen provider describes a detailed picture of their tender, and the goal is to clarify and argue the choices that they made. "The pre-award phase is the most important phase of the BVP" (Rijt & Santema, 2013). In the pre-award phase, the provider should show their value through dominant expertise and technical competence. Vendors should explain as experts how they will minimize both risk and cost, thus providing the best value for the lowest cost. The contractor is able to propose measures for risk minimization during the

execution of the project. In some projects, money for these measures are paid out of a risk fund, and the contractor receives 25% of the remaining money in the fund at the end of the project (van de Rijt et al., 2011). The contract is signed at the end of this phase.

The last phase is the execution phase. It is important that both contractor and provider sticks to the BVP principles during the execution of the project. The provider is the expert and has already proven this in the earlier phases. This is why there should be minimal control by the contractor from this point out, but the contractor can and should contribute with their expertise and point of views, without taking over and control the project. Weekly reports from the provider on progress, risk identification and risk ownership contributes to the necessary openness between the parties. This creates responsibility from the providers and leads to an efficient work environment for all the involved parties.

Implementation challenges

When implementing a new approach, the literature identifies several risks; unwilling users, uncertain resource requirements, lack of experienced team members, project scheduling, lack of information, implementation fidelity and failure to integrate with existing organization (Carroll et al., 2007; Pinto & Covin, 1989; Smith, 2014). Snippert et al. (2015) suggest that the more the client and provider deviate from the approach, the harder it becomes to realize the benefits of a stewardship relationship. Stewardship theory is a theory that managers, left on their own, will indeed act as responsible stewards of the assets they control. Achievement of high implementation fidelity is one of the best ways of replicating the success with interventions achieved by original research. Successful evidence-based practice is governed by many things, and implementation fidelity is one of them (Carroll et al., 2007).

Research methodology

This section will give a brief summation of our main data sources and how these will be utilized. Further on there is a short argument for why a qualitative method will be used, and the reasons behind choosing a case study in this research. This research proposal also mentions the limitations in the research design due to scope of project, time restriction, and resources.

Research strategy

The research strategy describes how the author will implement their future research study. When considering which strategy to utilize the properties and advantages of each strategy was thoroughly studied and considered.

We can classify different methods of research as quantitative or qualitative. Quantitative and qualitative research can be understood as two distinctive clusters of research strategy. Qualitative research can be described as a strategy that "emphasize words rather than quantification in the collection analysis of data". Observable but not measurable data is typical of qualitative research. Qualitative research methods are designed to help researchers with in-depth knowledge of the context, and generates rich, detailed, and valid data (Bryman & Bell, 2015).

In contrast, quantitative researchers employ measurement, contrary to qualitative researchers (Bryman & Bell, 2015). Bryman and Bell (2015) defines quantitative research as a research strategy that emphasizes quantification in the collection and analysis of data. However, the quantitative measurements can only be collected when the BVP approach has been implemented and results can be observed.

As this study is concluded before project completion, there will be a lack of quantitative data to collect. Data concerning the processes in other countries are not documented for specific phases, hence there will be no comparison data available. Due to the previous argument, a qualitative approach will be most suitable in the study of implementation of BVP. The focus will be on the process itself, selection of suppliers, contractual agreements, cooperation, and the implementation in practice. We will use measures such as types of obstacles during the process, conflicts between the parties, and resources used on resolving issues, which are all qualitative in nature. Hence, a qualitative strategy will be applied.

In order to see how theory is used in practice, it is important to gather data from professionals in the field (Blaikie, 2007). In this study, observations made in the implementation process might identify unanticipated issues that need further analysis in the interviews and literature. Dubois and Gadde (2002a) developed a model (fig. 1) which illustrates the basic ingredients in systematic combining.

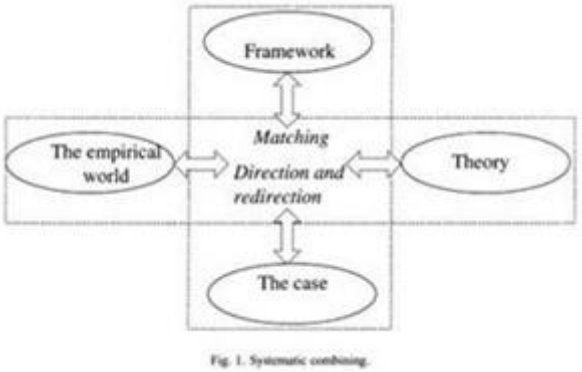


Fig. 1. Systematic combining.

Dubois and Gadde 2002

By using the literature on BVP, we get an overview of the empirical world, and this will be combined with the first data collected. Through a systematic-combining the initial findings will then be used to do future theoretical and empirical studies. This back-and-forth approach will form the basis for developing the theory and framework, which will further direct the literature and case study. Dubois and Gadde (2002a) argues that the goal of the research is to confront theory with the empirical world and have a continuous research throughout the process. To identify how to implement BVP in a best possible manner, we will categorize the data into different stages of implementation and themes such as barriers, benefits, conditions and so on. The data will be analyzed continuously during interviews and observations. The purpose is to identify challenges in a strategy implementation process, and how these were solved.

Selection of research design

In this research, we want to get a contemporary look at a real-life situation and to get a basis for the application theory of BVP. The aim is to observe the process and challenges that occur during the implementation, and because of this a case study satisfies the purpose of our research. A single case study is a detailed and intensive study of one case. The focus is on observing the complexity and particular nature of the case in question, and is a popular research design in business research (Baxter & Jack, 2008; Stake, 1995; Yin, 2014). A case study can investigate different scenarios such as an organization, location, person, or event. The focus in this case is the implementation of BVP approach on a single pilot project in Norway.

Stake (1995, 2013) identifies three main types of case studies; intrinsic cases, instrumental cases, and collective cases. Intrinsic are used to gain insight into a

particular case or situation, while instrumental use a case in order to identify a broader issue or try to generalize. The case is preselected in intrinsic studies, and in instrumental study the problem or hypothesis will determine the case selection, some could be more useful than others. When using several studies to investigate a general phenomenon, it is referred to as collective cases. It can be difficult to clearly separate these three categories, and chosen method will be different depending on intrinsic and instrumental interests (1995, 2013). Therefore, this case study will be a combination of these three types.

Data collection

The first data collected is the literature review of articles and previous case studies obtained from the US and Netherlands. Further, a triangulation with both interviews and observations will be conducted to get a thorough understanding with multiple reference points. This is done to reveal possible misunderstandings during the observation by asking questions in various research interviews. There are different types of research interviews (structured, standardized, semi-structured, unstructured/qualitative, focused, group e.g.) (Bryman & Bell, 2015). Most applicable for this case is the unstructured interview in the early stages with only wide conversation topics. Later in the process, in-depth interviews and focus groups will be performed to go more into the topics uncovered during the first interviews and observations. As the study is time limited and quantitative data will not be available, measures such as types of obstacles during the process, conflicts between the parties, and resources used to resolve issues will be used.

Ethnography

Before deciding on the data collection method, it is essential to consider what type of information is needed to perform the case study, and how to obtain it. Observation or ethnography is when the researcher immerse into a group for an extended time period, observing behavior, listening to what is said in conversations both between others and with fieldworker, and asking questions. This type of data collection is often combined with interviews and collection of documents (Bryman & Bell, 2015). Observations can be done both overt and covert, but there are ethical dilemmas with observing people without them knowing about it. There will not be performed any observations without consent in this study. It is important to access some key informants, but it is of great

importance that their influence is not too high on the outcome of the research (Bryman & Bell, 2015). In this study, we will perform complete observation without any form of participating. We will conduct field notes during the ethnography as the main data collection, but some situations might be recorded as well. The focus of the observations will be mainly on negotiation meetings, selection process discussions, and specification meetings.

Interviews

When deciding on how to gather data through interviews, it is important to understand the nature of the information collected. As challenges and problems in a process are unpredictable it would be counterproductive to have structured interviews with a strict format. In an unstructured interview, the interviewer typically has only a list of topics or issues that are to be covered. The style of questioning is usually informal and the phrasing and sequencing of questions will vary from interview to interview (Bryman & Bell, 2015). Bryman and Bell (2015) denote an in-depth interview in the same way as the unstructured interview, but more comprehensive. In a focus group, specific issues are discussed in groups. This method is a form of group interview in which there are several participants where the emphasis is on a particular defined topic, a particular phase in this case. After each phase in the BVP is completed, we will conduct unstructured interviews and arrange focus groups in order to document the process. The accent is upon interaction within the group and the joint construction of meaning (Bryman & Bell, 2015). The participants will foremost be the ones working with procurement and negotiation, as well as engineers and controllers. Our key informant will be the project manager, which has the overall responsibility.

Research steps

The following steps will be used to get an understanding of the research field and gather information which could be useful to document and transfer to future implementation projects.

1. Review the literature: As we will be looking at how project procurement approaches are implemented it is necessary to review the current practices used in project procurement. Especially how other approaches differ from Best Value Procurement. How the BVP approach have been implemented in other countries is also deemed necessary to address in the literature review.

2. Develop definitions for the different procurement methods: Definitions of BVP, and the other main procurement approaches will be developed to serve as a basis for comparison reasons. There are an infinite number of different methods, but they all have more in common than they differ. The five procurement methods defined included best value, sole source, qualifications-based, fixed budget/best design, and low bid selection (Beard et al., 2001).
3. Collect the data: In the implementation of a BVP strategy, the first data collected is based on articles and previous case studies done in the field. This is obtained from US and Netherland studies since this approach has mainly been studied in these countries. When starting the in-depth research on how this can be implemented in Norway, various types of interviews will be performed, and ethnography/observations will be conducted.
4. Perform data analysis: A back and forth approach between framework, literature and observations will be conducted. Comparisons between theoretical and empirical information will be discussed, and used to create an overview to aid in decision making.
5. Develop conclusions and recommendations: Based on observations and analysis of the data, topics will be categorized to get a better understanding of the main issues that occurred in the observed case. The findings will be used to describe suggestions for solutions based on how they were solved in this setting. The results can contribute to knowledge transfer on future implementation projects.

Quality of research design

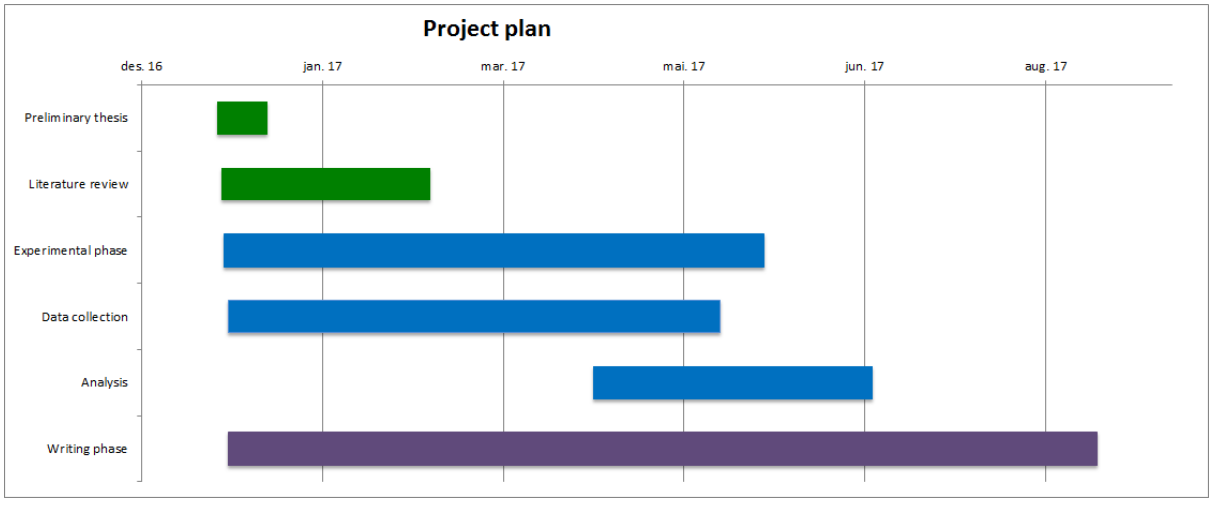
The research design of case study is often associated with a subjective research strategy (Stake, 1995), because of this it is important to consider both the sources of the data and the setting it is investigated under. When conducting a case study, one should avoid generalizing the findings. The case that is chosen might not be representative for the population. Hence, it is important to emphasize the particularization rather than the generalization, and concentrate on the uniqueness of the case to understand its complexity.
The primary criteria for assessing qualitative research is trustworthiness and authenticity. Trustworthiness is further evaluated on the four criteria credibility, transferability, dependability, and confirmability. Through triangulation we ensure

credibility, and by thorough documentation of the process it should be possible to transfer and confirm our results on other projects. As it is difficult to replicate unique cases, and to test the findings, several case studies should be compared if generalizations are to be made. As first introduction can only occur once, replicability will be hard. However, it is possible to compare the findings from this study with similar first time implementations in other countries. Furthermore, authenticity is concerned with the research impact on a wider aspect. In our case a tactical authenticity can be argued because it empowers members to take necessary steps in implementing BVP, but Bryman and Bell (2015) argues that a wider impact of such research is controversial.

Considerations and limitations

There are several limitations which can be connected to a case study due to the scope of the project, limitations of time and resources. In this study, there is a risk of not being included and therefore not get enough insight to be able to provide suggestions for solutions based on how challenges was solved during the implementation process. We might only be allowed to observe a part of the process and not get a holistic view of the results. This may cause incomplete research documentation on our part. Due to the time restriction on this research, we will not be able to observe the result of the BVP approach, as the prosecution of the project will occur after our research is concluded. Another limitation is that due to the range of this research it is not possible to collect data from a large sample, and the study is limited by the delays in most of the pilot projects. Hence, only one case can be observed.

Project plan



Bibliografi

Abdelrahman, M., Zayed, T., & Elyamany, A. (2008). Best-value model based on project specific characteristics. *Journal of Construction Engineering and Management, 134*(3), 179-188.

Adeyemi, A., Kashiwagi, J., Kashiwagi, D., & Sullivan, K. (2009). New Procurement Approach in Graduate Education. *Manuscript submitted for publication. Association of Schools of Construction of Southern Africa. Livingstone: Zambia*.

Anderson, S., & Russell, J. (2001). Guidelines for Warranty, Multi-Parameter, and Best Value Contracting. NCHRP Report 451. *Transportation Research Board National Research Council, Washington, DC*.

Assaf, S. A., & Al-Hejji, S. (2006). Causes of delay in large construction projects. *International Journal of project management, 24*(4), 349-357.

Banaitiene, N., & Banaitis, A. (2006). Analysis of criteria for contractors' qualification evaluation. *Technological and Economic Development of Economy, 12*(4), 276-282.

Barlish, K. C., Nihas, S., & Kashiwagi, D. T. (2013). IMPLEMENTATION OF BEST VALUE IN INDIA.

Bartunek, J. M. (2012). How qualitative research on change can contribute to changing practice. *The Journal of Applied Behavioral Science, 48*(2), 272-277.

Baxter, P., & Jack, S. (2008). Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *Qualitative Report, 13*(4), 544-559.

Beach, R., Webster, M., & Campbell, K. M. (2005). An evaluation of partnership development in the construction industry. *International Journal of project management, 23*(8), 611-621. doi:10.1016/j.ijproman.2005.04.001

Beard, J., Loulakis, E. M., & Wundram, E. (2001). *Design-build: Planning through development*: McGraw Hill Professional.

Blaikie, N. (2007). *Approaches to social enquiry: Advancing knowledge*: Polity.

Borg, L. (2015). *Procurement Contracts, Innovation and Productivity in the Construction Sector: Five Studies.* KTH Royal Institute of Technology.

Bos, A., Kashiwagi, D., & Kashiwagi, I. (2015). Changes Required to Sustain a Best Value Environment. *Journal for the Advancement of Performance Information & Value, 7*(1).

Bosma, E., van der Ven, M., Kerkhoven, O., & Kashiwagi, D. (2015). A Large Dutch Engineering Service Adopts the Best Value Approach. *Journal for the Advancement of Performance Information & Value, 7*(1).

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative research journal, 9*(2), 27-40.

Boyatzis, R., & Boyatzis, R. E. (2006). An overview of intentional change from a complexity perspective. *Journal of Management Development, 25*(7), 607-623.

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

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

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

Bresnen, M., & Marshall, N. (1999). *Achieving customer satisfaction? Client-contractor collaboration in the UK construction industry.* Paper presented at the Customer Satisfaction: A Focus on Research and Practice, Joint Triennial Symposium of CIB Commissions W.

Bresnen, M., & Marshall, N. (2000). Building partnerships: case studies of client–contractor collaboration in the UK construction industry. *Construction Management & Economics, 18*(7), 819-832.

Bresnen, M., & Marshall, N. (2010). Projects and Partnerships.

Briscoe, G., Dainty, A. R. J., & Millett, S. (2001). Construction supply chain partnerships: skills, knowledge and attitudinal requirements. *European Journal of Purchasing and Supply Management, 7*(4), 243-255. doi:10.1016/S0969-7012(01)00005-3

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

Bygballe, L., Swärd, A., & Vaagaasar, A. (2016). Coordinating in construction projects and the emergence of synchronized readiness. *International Journal of project management, 34*(8), 1479-1492.

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

Carr, A. S., & Smeltzer, L. R. (1997). An empirically based operational definition of strategic purchasing. *European Journal of Purchasing & Supply Management, 3*(4), 199-207.

Carroll, C., Patterson, M., Wood, S., Booth, A., Rick, J., & Balain, S. (2007). A conceptual framework for implementation fidelity. *Implementation Science, 2*(1), 1.

Chen, Q., Xia, B., Jin, Z., Wu, P., & Hu, Y. (2015). Choosing appropriate contract methods for design-build projects. *Journal of Management in Engineering, 32*(1), 04015029.

Cheng, Y.-M. (2014). An exploration into cost-influencing factors on construction projects. *International Journal of project management, 32*(5), 850-860.

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

CII, C. (1991). In search of partnering excellence, in. *Bureau of Engineering Research, Construction Industry Institute, University of Texas Austin, TX*.

Clough, R. H., Sears, G. A., Sears, S. K., Segner, R. O., & Rounds, J. L. (2015). *Construction contracting: A practical guide to company management*: John Wiley & Sons.

Danese, P. (2013a). Supplier integration and company performance: a configurational view. *Omega, 41*(6), 1029-1041.

Danese, P. (2013b). Supplier integration and company performance: A configurational view. *Omega (United Kingdom), 41*(6), 1029-1041. doi:10.1016/j.omega.2013.01.006

De Boer, L., Labro, E., & Morlacchi, P. (2001). A review of methods supporting supplier selection. *European Journal of Purchasing & Supply Management, 7*(2), 75-89.

DeFillippi, R., & Lehrer, M. (2011a). Temporary Modes of Project-Based Organization within Evolving Organizational Forms: Insights from Oticon's Experiment with the Spaghetti Organization. *Project-Based Organizing and Strategic Management, 28*, 61-82.

DeFillippi, R., & Lehrer, M. (2011b). Temporary Modes of Project-Based Organization within Evolving Organizational Forms: Insights from Oticon's Experiment with the Spaghetti Organization *Project-Based Organizing and Strategic Management* (pp. 61-82): Emerald Group Publishing Limited.

Difi. (2016, 27. mars 2017). Best Value Procurement (BVP). Retrieved from https://www.anskaffelser.no/bygg-anlegg-og-eiendom-bae/temaer-bae/best-value-procurement-bvp

Doloi, H. (2009). Analysis of pre-qualification criteria in contractor selection and their impacts on project success. *Construction Management and Economics, 27*(12), 1245-1263.

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

Dubois, A., & Gadde, L.-E. (2002a). The construction industry as a loosely coupled system: implications for productivity and innovation. *Construction Management and Economics, 20*(7), 621-631. doi:10.1080/01446190210163543

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

Dubois, A., & Gadde, L.-E. (2014). "Systematic combining"—A decade later. *Journal of Business Research, 67*(6), 1277-1284.

Dubois, A., & Salmi, A. (2016). A call for broadening the range of approaches to case studies in purchasing and supply management. *Journal of Purchasing and Supply Management, 22*(4), 247-249.

Dulmin, R., & Mininno, V. (2003). Supplier selection using a multi-criteria decision aid method. *Journal of Purchasing and Supply Management, 9*(4), 177-187.

Duren, J., & Dorée, A. (2008). An evaluation of performance information procurement system (PIPS).

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

Ekambaram, P., Mohan, K., & Thomas, N. (2003). Targeting optimum value in public sector projects through "best value"-focused contractor selection. *Engineering, Construction and Architectural Management, 10*(6), 418-431. doi:10.1108/09699980310509390

Ellram, L. M. (1996). The use of the case study method in logistics research. *Journal of business logistics, 17*(2), 93.

Ellram, L. M., & Carr, A. (1994). Strategic purchasing: a history and review of the literature. *International journal of purchasing and materials management, 30*(1), 9-19.

Elyamany, A., & Abdelrahman, M. (2010). Contractor performance evaluation for the best value of superpave projects.(Author abstract)(Report). *Journal of Construction Engineering and Management, 136*(5), 606.

Eriksson, P., & Kovalainen, A. (2015). *Qualitative Methods in Business Research: A Practical Guide to Social Research*: Sage.

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

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

Fernandes, S. I. S. (2013). “Best Value” Model.

Flick, U. (2009). *An introduction to qualitative research*: Sage.

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

Glavee-Geo, R. (2015). The History and Development of Purchasing Management and Its Theoretical Framework: A Review of Transaction Cost Economics. *Handbook of Research on Global Supply Chain Management*, 379.

Gransberg, D., Runde, D., & James, S. (2000). The effect of innovative highway construction contract methods. *AACE International Transactions*, P2A-P2.6.

Halldorsson, A., & Aastrup, J. (2003). Quality criteria for qualitative inquiries in logistics. *European Journal of Operational Research, 144*(2), 321-332.

Hannah, D. R., & Lautsch, B. A. (2011). Counting in qualitative research: Why to conduct it, when to avoid it, and when to closet it. *Journal of Management Inquiry, 20*(1), 14-22.

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

Hitt, J. C., Robbins, A. S., Galbraith, J. S., Todd, J. D., Patel–Larson, A., McFarlane, J. R., . . . Carey, J. W. (2006). Adaptation and Implementation of an Evidence–Based Prevention Counseling Intervention in Texas. *AIDS Education & Prevention, 18*(supp), 108-118.

Ho, C., & Nguyen, P.-M. (2007). Supplier evaluation and selection criteria in the construction industry of Taiwan and Vietnam. *Information and management Sciences, 18*(4), 403-426.

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

Ibbs, W., Nguyen, L. D., & Lee, S. (2007). Quantified impacts of project change. *Journal of Professional Issues in Engineering Education and Practice, 133*(1), 45-52.

Jacobsson, M., & Roth, P. (2014). Towards a shift in mindset: partnering projects as engagement platforms. *Construction Management and Economics, 32*(5), 419-432.

Jaskowski, P., Biruk, S., & Bucon, R. (2010). Assessing contractor selection criteria weights with fuzzy AHP method application in group decision environment. *Automation in construction, 19*(2), 120-126.

Jeroen, B., Hans, V., & Bart, V. (2012). Supplier-contractor collaboration in the construction industry; A taxonomic approach to the literature of the 2000-2009 decade. *Engineering, Construction and Architectural Management, 19*(4), 342-368. doi:10.1108/09699981211237085

Kadefors, A. (2004). Trust in project relationships—inside the black box. *International Journal of project management, 22*(3), 175-182.

Kahraman, C., Cebeci, U., & Ulukan, Z. (2003). Multi-criteria supplier selection using fuzzy AHP. *Logistics information management, 16*(6), 382-394.

Kashiwagi, D. (2011). Case study: Best value procurement/performance information procurement system development. *Journal for the Advancement of Performance Information & Value, 3*(1).

Kashiwagi, D., & Byfield, R. E. (2002). Selecting the best contractor to get performance: On time, on budget, meeting quality expectations. *Journal of Facilities management, 1*(2), 103-116.

Kashiwagi, D., & Kashiwagi, J. (2011). Case Study: Performance Information Procurement System (PIPS) in the Netherlands. *Malaysian Construction Research Journal, 8*(1).

Kashiwagi, D., Kashiwagi, J., Kashiwagi, A., & Sullivan, K. (2012). The Research Model that Revolutionized the Dutch Construction Industry. *Journal for the Advancement of Performance Information & Value, 4*(2).

Kashiwagi, D., Kashiwagi, J., & Savicky, J. (2009). *Industry structure: misunderstood by industry and researchers.* Paper presented at the 2nd Construction Industry Research Achievement International Conference, Kuala Lumpur, Malaysia, CD-Day.

Kashiwagi, D. T. (1999). The development of the performance based procurement system (PBPS). *Journal of Construction Education, 4*(2), 196-206.

Kashiwagi Solution Model Inc. (2017). *How to Know Everything Without Knowing Anything*: Kashiwagi Solution Model, Incorporated.

Khan, S. N. (2014). Qualitative research method: Grounded theory. *International Journal of Business and Management, 9*(11), 224.

Konchar, M., & Sanvido, V. (1998). Comparison of US project delivery systems. *Journal of construction engineering and management, 124*(6), 435-444.

Kovács, G., & Spens, K. M. (2005). Abductive reasoning in logistics research. *International Journal of Physical Distribution & Logistics Management, 35*(2), 132-144.

Krishnan, S. K. (2006). Increasing the visibility of hidden failure costs. *Measuring business excellence, 10*(4), 77-101.

Kristiansen, K., Emmitt, S., & Bonke, S. (2005). Changes in the Danish construction sector: the need for a new focus. *Engineering, Construction and Architectural Management, 12*(5), 502-511.

Laan, A., Noorderhaven, N., Voordijk, H., & Dewulf, G. (2011). Building trust in construction partnering projects: An exploratory case-study. *Journal of Purchasing and Supply Management, 17*(2), 98-108.

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

Lines, B. C., Sullivan, K. T., Smithwick, J. B., & Mischung, J. (2015). Overcoming resistance to change in engineering and construction: Change management factors for owner organizations. *International Journal of project management, 33*(5), 1170-1179.

Lines, B. C., Sullivan, K. T., & Wiezel, A. (2015). Support for organizational change: Change-readiness outcomes among AEC project teams. *Journal of Construction Engineering and Management, 142*(2), 04015062.

Liyanage, C., Elhag, T., Ballal, T., & Li, Q. (2009). Knowledge communication and translation-a knowledge transfer model. *Journal of Knowledge management, 13*(3), 118-131.

Love, P. E., & Li, H. (2000). Quantifying the causes and costs of rework in construction. *Construction Management & Economics, 18*(4), 479-490.

Love, P. E. D., Skitmore, M., & Earl, G. (1998). Selecting a suitable procurement method for a building project. *Construction Management and Economics, 16*(2), 221-233. doi:10.1080/014461998372501

Mahdi, I. M., Riley, M. J., Fereig, S. M., & Alex, A. P. (2002). A multi-criteria approach to contractor selection. *Engineering Construction and Architectural Management, 9*(1), 29-37.
Marshall, C., & Rossman, G. (2006). The how of the study: Building the research design. *Designing qualitative research*, 55-101.
Maycock, J. A., & Shaw, T. (1994). Quality Costing–The Money in Mistakes. *The TQM Magazine, 6*(3), 20-22.
McManus, J., & Wood-Harper, A. (2003). *Information systems project management: Methods, tools and techniques*: Pearson Education.
Meng, X. (2012). The effect of relationship management on project performance in construction. *International Journal of project management, 30*(2), 188-198.
Meyer, J., Witt, S. R., Kashiwagi, J., & Kashiwagi, D. T. (2010). *General services administration streamlines the procurement of construction services*. Retrieved from
Migliaccio, G. C., Gibson Jr, G. E., & O'Connor, J. T. (2008). Changing project delivery strategy: An implementation framework. *Public Works Management & Policy, 12*(3), 483-502.
Miles, M. B. (1979). Qualitative data as an attractive nuisance: The problem of analysis. *Administrative science quarterly, 24*(4), 590-601.
Molenaar, K. R., & Gransberg, D. D. (2001). Design-builder selection for small highway projects. *Journal of Management in Engineering, 17*(4), 214-223.
Naoum, S. (2003). An overview into the concept of partnering. *International Journal of project management, 21*(1), 71-76.
Naoum, S., & Egbu, C. (2015). Critical review of procurement method research in construction journals. *Procedia Economics and Finance, 21*, 6-13.
Ness, H., & Haugland, S. A. (2005). The evolution of governance mechanisms and negotiation strategies in fixed-duration interfirm relationships. *Journal of Business Research, 58*(9), 1226-1239.
Newell, S., Bresnen, M., Edelman, L., Scarbrough, H., & Swan, J. (2006). Sharing knowledge across projects limits to ICT-led project review practices. *Management Learning, 37*(2), 167-185.
Ng, W. L. (2008). An efficient and simple model for multiple criteria supplier selection problem. *European Journal of Operational Research, 186*(3), 1059-1067.
Nye Veier. (2017a, may 18, 2017). E18 LANGANGEN-GRIMSTAD. Retrieved from http://www.nyeveier.no/veiprosjekt-e18/
Nye Veier. (2017b, februar 21, 2017). OM NYE VEIER. Retrieved from http://www.nyeveier.no/om-nyeveier/
Odeh, A. M., & Battaineh, H. T. (2002). Causes of construction delay: traditional contracts. *International journal of project management, 20*(1), 67-73.
Pakkala, P., Martin de Jong, W., & Aijo, J. (2007). *International overview of innovative contracting practices for roads*.
Penuel, W. R., & Means, B. (2004). Implementation variation and fidelity in an inquiry science program: Analysis of GLOBE data reporting patterns. *Journal of Research in Science Teaching, 41*(3), 294-315.
Perols, J., Zimmermann, C., & Kortmann, S. (2012). On the relationship between supplier integration and time-to-market. *Journal of Operations Management*. doi:10.1016/j.jom.2012.11.002
Petersen, K. J., Handfield, R. B., & Ragatz, G. L. (2005). Supplier integration into new product development: coordinating product, process and supply chain

design. *Journal of Operations Management, 23*(3), 371-388. doi:10.1016/j.jom.2004.07.009

Pinto, J. K., & Covin, J. G. (1989). Critical factors in project implementation: a comparison of construction and R&D projects. *Technovation, 9*(1), 49-62.

Ragatz, G. L., Handfield, R. B., & Petersen, K. J. (2002). Benefits associated with supplier integration into new product development under conditions of technology uncertainty. *Journal of Business Research, 55*(5), 389-400. doi:10.1016/S0148-2963(00)00158-2

Resnick, B., Inguito, P., Orwig, D., Yahiro, J. Y., Hawkes, W., Werner, M., . . . Magaziner, J. (2005). Treatment fidelity in behavior change research: a case example. *Nursing research, 54*(2), 139-143.

Rijt, J., & Santema, S. C. (2013). *Prestatieinkoop: met Best Value naar succesvolle projecten (Prestasjonsinnkjøp)*: Graphicom.

Rivera, A., Kashiwagi, J., & Kashiwagi, D. (2016). Improving the Management of Environmental Engineering Projects through the Best Value Project Management Model for a State Agency. *Journal for the Advancement of Performance Information & Value, 8*(1).

Ruparathna, R., & Hewage, K. (2013). Review of contemporary construction procurement practices. *Journal of Management in Engineering, 31*(3), 04014038.

Sage, D., Dainty, A., & Brookes, N. (2012). A 'Strategy-as-Practice'exploration of lean construction strategizing. *Building Research & Information, 40*(2), 221-230.

Savicky, J., Kashiwagi, D., Hurtado, K., & Sullivan, K. (2014). Best Value Case Study: Procurement Results within the GSA. *Journal for the Advancement of Performance Information & Value, 6*(1).

Schindler, M., & Eppler, M. J. (2003). Harvesting project knowledge: a review of project learning methods and success factors. *International Journal of Project Management, 21*(3), 219-228.

Scott, S. (2006). *Best-value procurement methods for highway construction projects*: Transportation Research Board.

Singh, D., & Tiong, R. L. (2005). A fuzzy decision framework for contractor selection. *Journal of Construction Engineering and Management, 131*(1), 62-70.

Smith, B. (2014). A Guide to the Implementation Process: Stages, Steps and Activities. *ECTA Center. Dostupno na:* http://ectacenter. *org/~ pdfs/implementprocess/implementprocess-stagesandsteps. pdf [17. srpanj 2015.]*.

Smyth, H. (2010). Construction industry performance improvement programmes: the UK case of demonstration projects in the 'Continuous Improvement'programme. *Construction Management and Economics, 28*(3), 255-270.

Snippert, T., Witteveen, W., Boes, H., & Voordijk, H. (2015). Barriers to realizing a stewardship relation between client and vendor: the Best Value approach. *Construction Management and Economics, 33*(7), 569-586. doi:10.1080/01446193.2015.1078902

Song, L., Mohamed, Y., & AbouRizk, S. M. (2009). Early contractor involvement in design and its impact on construction schedule performance.(Author abstract)(Technical report). *Journal of Management in Engineering, 25*(1), 12.

Songer, A., & Molenaar, K. R. (1996). Selecting design-build: public and private sector owner attitudes. (design-build procurement method). *Journal of Management in Engineering, 12*(6), 47.
Stake, R. E. (1995). *The art of case study research*: Sage.
Stake, R. E. (2013). *Multiple case study analysis*: Guilford Press.
Sullivan, K., Kashiwagi, J., & Kashiwagi, D. (2010). The optimizing of design delivery services for facility owners. *Journal of Facilities Management, 8*(1), 26-46.
Sullivan, K. T. (2010). Quality management programs in the construction industry: Best value compared with other methodologies. *Journal of Management in Engineering, 27*(4), 210-219.
Swärd, A. (2016). Trust, reciprocity, and actions: The development of trust in temporary inter-organizational relations. *Organization Studies*, 0170840616655488.
Tassabehji, R., & Moorhouse, A. (2008). The changing role of procurement: Developing professional effectiveness. *Journal of Purchasing and Supply Management, 14*(1), 55-68.
Tekna, T. B. M. (2016, 7. september 2016). Anskaffelser i BAE-Bransjen. Retrieved from http://bygg.tekna.no/anskaffelser-i-bae-bransjen/
Thomas, H. R., & Napolitan, C. L. (1995). Quantitative effects of construction changes on labor productivity. *Journal of Construction Engineering and Management, 121*(3), 290.
Turner, A. (1990). *Building procurement*: Springer.
van de Rijt, J., Witteveen, W., Vis, C., & Santema, S. (2011). Best Value at the Directorate-General for Public Works and Water Management in The Netherlands: A Case Study of the Procurement of Infrastructure Projects Worth $1,200 M. *Journal for the Advancement of Performance Information & Value, 3*(1).
Van de Ven, A. H., & Poole, M. S. (1995). Explaining development and change in organizations. *Academy of management review, 20*(3), 510-540.
Van Duren, J., & Dorée, A. (2010). AN EVALUATION OF THE PERFORMANCE INFORMATION PROCUREMENT SYSTEM (PiPS). *Journal of Public Procurement, 10*(2), 187.
van Hoek, R., Aronsson, H., Kovács, G., & Spens, K. M. (2005). Abductive reasoning in logistics research. *International Journal of Physical Distribution & Logistics Management, 35*(2), 132-144.
Waara, F., & Bröchner, J. (2006). Price and nonprice criteria for contractor selection. *Journal of Construction Engineering and Management, 132*(8), 797-804.
Wacker, J. G. (1998). A definition of theory: research guidelines for different theory-building research methods in operations management. *Journal of Operations Management, 16*(4), 361-385.
Wambeke, B. W., Hsiang, S. M., & Liu, M. (2011). Causes of variation in construction project task starting times and duration.(Author abstract)(Report). *Journal of Construction Engineering and Management, 137*(9), 663.
Wang, W.-C., Yu, W.-d., Yang, I.-T., Lin, C.-C., Lee, M.-T., & Cheng, Y.-Y. (2013). Applying the AHP to support the best-value contractor selection–lessons learned from two case studies in Taiwan. *Journal of Civil Engineering and Management, 19*(1), 24-36.

Watt, D., Kayis, B., & Willey, K. (2010). The relative importance of tender evaluation and contractor selection criteria. *International Journal of project management, 28*(1), 51-60.

Weele, A. J. v. (2014). *Purchasing & supply chain management : analysis, strategy, planning and practice* (6th ed. ed.). Hampshire: Cengage Learning.

Yawei, L., Shouyu, C., & Xiangtian, N. (2005). Fuzzy pattern recognition approach to construction contractor selection. *Fuzzy Optimization and Decision Making, 4*(2), 103-118.

Yin, R. K. (2014). *Case study research : design and methods* (5th ed. ed.). Los Angeles, Calif: SAGE.