Purchasing Structures in the Construction Industry

- Mesta Entreprenør -

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Table of Content

1 ABSTRACT ........................................................................................................................................ IV

2 AREA OF STUDY ........................................................................................................................... 2
   2.1 PURCHASING ............................................................................................................................. 2
      2.1.1 Purchasing structure .......................................................................................................... 4
   2.2 PURCHASING STRUCTURES IN CONSTRUCTION ................................................................. 4
   2.3 PROBLEM STATEMENT ........................................................................................................... 5
   2.4 OUTLINE OF THE THESIS .................................................................................................... 6

3 RESEARCH METHOD ..................................................................................................................... 9
   3.1 SELECTION OF RESEARCH DESIGN ................................................................................... 9
   3.2 DATA COLLECTION .................................................................................................................. 11
   3.3 QUALITY OF RESEARCH DESIGN ....................................................................................... 12
      3.3.1 Credibility ......................................................................................................................... 12
      3.3.2 External Validity ................................................................................................................. 13
      3.3.3 Limitations of Study .......................................................................................................... 13
   3.4 EMPIRICAL SETTING – THE CONSTRUCTION INDUSTRY ................................................... 14
      3.4.1 Mesta ................................................................................................................................ 15
      3.4.2 Mesta Entreprenør ........................................................................................................... 15
      3.4.3 E6 Gardermoen Project .................................................................................................... 16

4 THEORETICAL FRAMEWORK .................................................................................................... 18
   4.1 PURCHASING STRUCTURES ................................................................................................... 18
      4.1.1 Centralization .................................................................................................................... 18
      4.1.2 Decentralization ................................................................................................................ 19
   4.2 INFLUENCING FACTORS ....................................................................................................... 20
      4.2.1 Context Related Factors .................................................................................................... 20
         4.2.1.1 Contingency Theory .................................................................................................... 20
         4.2.1.2 Structural Contingency Theory .................................................................................... 21
      4.2.2 Information and Power Related Factors ........................................................................... 23
      4.2.3 Purchasing Related Factors .............................................................................................. 24
      4.2.4 Summary ............................................................................................................................ 27
   4.3 ADVANTAGES AND DISADVANTAGES ............................................................................... 28
      4.3.1 Advantages Related to Centralization ............................................................................... 28
      4.3.2 Advantages Related to Decentralization .......................................................................... 29
      4.3.3 Summary – Control and flexibility ..................................................................................... 31
   4.4 HYBRID STRUCTURES ............................................................................................................ 32
      4.4.1 Historical Development – Pendulum Swing ..................................................................... 34
      4.4.2 Summary ............................................................................................................................ 35
   4.5 PURCHASING STRUCTURES IN THE CONSTRUCTION INDUSTRY ..................................... 35
      4.5.1 Project Uniqueness .............................................................................................................. 36
# Table of Contents

4.5.2 Complexity and Uncertainty .......................................................... 36
4.5.3 Summary ....................................................................................... 37
4.6 LESSONS FROM THE THEORIES .......................................................... 37
5 CASE PRESENTATION AND ANALYSIS ...................................................... 42
  5.1 OVERVIEW OF THE PURCHASING FUNCTION AT ME ....................... 42
  5.2 CENTRALIZED AND DECENTRALIZED PURCHASING AT ME ................. 43
    5.2.1 Chief Purchasing Officer ............................................................. 44
    5.2.2 Product Managers ..................................................................... 44
    5.2.3 Project Purchasing Manager ....................................................... 45
    5.2.4 Purchasing Policies and Guidelines ............................................. 47
    5.2.5 Summary .................................................................................. 48
  5.3 INFLUENCING FACTORS IN THE ME CASE ......................................... 49
    5.3.1 Context Related Factors .............................................................. 49
    5.3.2 Information and Power Related Factors ...................................... 50
    5.3.3 Purchasing Related Factors ......................................................... 51
    5.3.4 Summary .................................................................................. 54
  5.4 ADVANTAGES AND DISADVANTAGES OF THE PURCHASING STRUCTURE ... 55
    5.4.1 Advantages of the Present Purchasing Structure at ME .................. 55
    5.4.2 Disadvantages of the Present Purchasing Structure at ME ............... 56
  5.5 SUMMARY OF THE FINDINGS ............................................................. 57
6 DISCUSSION .......................................................................................... 60
  6.1 PURCHASING STRUCTURE AT ME ....................................................... 60
  6.2 FACTORS AFFECTING PURCHASING STRUCTURE ................................ 61
    6.2.1 Context Related Factors .............................................................. 61
    6.2.2 Information and Power Related Factors ...................................... 62
    6.2.3 Purchasing Related Factors ......................................................... 63
    6.2.4 Summary .................................................................................. 66
  6.3 ADVANTAGES AND DISADVANTAGES .................................................. 66
    6.3.1 Advantages Related to the Existing Purchasing Structure at ME ......... 67
    6.3.2 Disadvantages Related to the Existing Purchasing Structure at ME .......... 68
    6.3.3 Summary .................................................................................. 69
7 CONCLUSION AND IMPLICATIONS OF STUDY ........................................ 72
  7.1 CONCLUSION AND IMPLICATIONS ..................................................... 72
  7.2 FURTHER RESEARCH ....................................................................... 75
  7.3 CONCLUDING REMARKS .................................................................. 75
8 REFERENCES ......................................................................................... 77
  8.1 ARTICLES ..................................................................................... 77
  8.2 BOOKS .......................................................................................... 79
  8.3 INTERNET ...................................................................................... 81
9 APPENDICES ........................................................................................................ 83

9.1 APPENDIX 1: INTERVIEW GUIDE, FIRST MEETING WITH PM ....................... 84
9.2 APPENDIX 2: INTERVIEW GUIDE, FIRST MEETING WITH PPM .................... 85
9.3 APPENDIX 3: INTERVIEW GUIDE REGARDING INFLUENCING FACTORS, CPO, PPM AND PM 87
9.4 APPENDIX 4: INTERVIEW GUIDE PROJECT MANAGER AT E6 GARDERMOEN PROJECT .... 90
9.5 APPENDIX 5 – EXTRACT OF PRODUCTION AGREEMENTS AT E6 GARDERMOEN PROJECT .. 92
9.6 APPENDIX 6 – EXTRACT OF ADMINISTRATIVE AGREEMENTS E6 GARDERMOEN PROJECT. 93
9.7 APPENDIX 7 – PURCHASING AUTHORITY AT E6 GARDERMOEN PROJECT ................ 94
9.8 APPENDIX 8 – PURCHASING AUTHORITY AT MESTA ENTPRENEUR ......................... 95

RESEARCH PROPOSAL ................................................................................................... 96
ABSTRACT

Purchasing and supply chain management have gotten increased foothold as a managerial tool due to its proved impact on the bottom line. However, an area within purchasing that has gotten limited attention is the structure of the purchasing function. Purchasing structure is an important subject since it affects processes, procedures, systems and the relationship of a purchasing function. By combining existing literature, and a single case study from the Norwegian construction industry, this study investigates purchasing structures in the construction industry through three research questions. First, this study investigates how firms in the construction industry structure their purchasing function. Second, this study reveals some of the factors that influence the choice of purchasing structure. Finally, this thesis investigates advantages and disadvantages related to purchasing structure.

The theoretical foundation of this thesis is based on supply chain management literature, in addition to contingency, agency and construction specific theories. The empirical data is gathered through a single case study of Mesta Entreprenør, one of the largest actors in the Norwegian construction industry. The finding of our study addresses the classical distinction between centralized and decentralized purchasing structures, in addition to hybrid structures. The construction industry was argued to have an inherently decentralized structure. However, findings from the Mesta Entreprenør case study revealed a hybrid purchasing structure with strong elements of centralization. This is explained by looking at the factors affecting the choice of purchasing structure. In this thesis we have presented several factors that influence the choice of purchasing structure, classified into context related factors, information and power related factors, and purchasing related factors. This study also identifies several advantages and disadvantages related to centralization and decentralization. These can be summarized in terms of control and flexibility, where control is related to centralization and flexibility is related to decentralization.

Key words: purchasing structure, centralization, decentralization, construction industry.
2 Area of Study

- Purchasing
  - Purchasing Structures
- Purchasing Structures in Construction
- Problem Statement
- Outline of the Thesis
2 Area of Study

Purchasing is viewed as increasingly significant since the cost of purchased goods for many companies represent the dominant portion of total costs; purchasing costs may accumulate up to 80% of total cost (van Weele 2005; Gadde and Håkansson 2001). In addition supply chain management (SCM) is gaining increased foothold as a managerial tool due to its proved impact on the bottom line (Fabbe-Costes and Jahre 2008). Due to this significant impact we find purchasing to be an interesting area to study. Within the field of purchasing there are numerous areas to study, such as the new roles of purchasing, in-house vs. outsourcing, supply network strategies and supplier relationships to mention some. This thesis concentrates on another important area of purchasing: the structure of the purchasing function – centralization vs. decentralization. In relation to purchasing structure, centralization may be defined as when “all main purchasing is controlled at one central location for the entire firm” (Leenders and Johnson 2000, p. 28), whereas decentralization may be defined as when “all main purchasing is controlled at the business units, plants, and/or divisions” (Leenders and Johnson 2000, p. 28). The purchasing structures are often presented in the context of corporations with multiple business units. However, this thesis uses Mesta Entreprenør, one of Norway’s largest construction firms as a case study, where the context of corporations with multiple business units can be analogous to the headquarters’ of construction firms and their different projects. The reason for this is that construction projects often resemble independent business units. We will start off by presenting some definitions and insights of purchasing and purchasing structures, before presenting our problem statement.

2.1 Purchasing

Arjan van Weele (2005, p.12) defines purchasing as:

“The management of the company’s external resources in such a way that the supply of all goods, services, capabilities and knowledge which are necessary for running, maintaining and managing the company’s primary and support activities is secured at the most favorable conditions.”
Furthermore, he states that the purchasing function covers the following six activities: (1) determining the specification of the goods and services needed; (2) develop procedures and routines to select the best supplier; (3) prepare and conduct negotiations with suppliers and write up the contract; (4) place the order with the supplier; (5) monitoring and control of the order to secure supply; and (6) follow up and evaluation (van Weele 2005). Purchasing may also be responsible for the organization’s customers and their suppliers’ supplier. The latter is often called SCM, where the focus is “on minimizing costs and times across the supply chain to the benefit of final customer in the chain” (Leenders et al. 2006, p.5).

Some of the theories use different terms when describing the purchasing process and structure. However, we assume that terms like purchasing, procurement, and supply management have the similar meaning since they are often used interchangeably (Leenders et al. 2006).

Traditionally, most firms have regarded purchasing primarily as a clerical function (Leenders et al. 2006; Gadde and Håkansson 2001). This can also be seen in Michael Porter’s value chain, where purchasing is classified as a support activity (Porter 1985). More recently however, the purchasing function has started to get increased recognition and status (Pearson, Ellram, and Carter 1996). This is further supported by the fact that top managers have increasingly recognized purchasing and SCM as key business drivers (van Weele 2005), and as stated by Gadde and Håkansson (2001, p.11) “what began as a clerical and administrative function has developed into a strategically significant profession”. In addition, companies are facing increased competition due to globalization, which has “opened the eyes of executives everywhere to the strategic benefits that can be achieved through the intelligent use of purchasing and supply management” (Hardt, Reinecke, and Spiller 2007, p.1).

Due to the increased importance of purchasing, and the impact it has on a company’s overall financial performance, purchasing should be of highly strategic importance to companies and top management: There is a need for purchasing to be considered strategic and not clerical, if it is to have significant impact on the overall performance of the firm (Pearson, Ellram, and Carter 1996; Gadde and Håkansson 2001).
2.1.1 Purchasing structure

An important aspect of purchasing and SCM is the organizational structure of the purchasing function. It is argued that an efficient organizational design “provides a foundation upon which firms can pursue progressive supply strategies” (Trent 2004, p. 16). However, despite its importance, organizational design has received limited attention in the supply management literature (Trent 2004).

Wit and Meyer (2004, p. 166) define a company’s overall organizational structure as “the clustering of tasks and people into smaller groups”. They state that organizational structure, alongside organizational process and culture, makes up a company’s organizational system. This organizational system is the foundation for a firm’s business system, which may be defined as “the way a company makes money” (Wit and Meyer 2004). Within the overall organizational structure, a firm may cluster the different tasks and people into divisions, functions and departments. One example of this may be the purchasing function.

The structure of the purchasing function, as the structure of other company functions, can be characterized as either centralized or decentralized. However, most companies rely on a combination of both (Gadde and Håkansson 2001). This combination is often referred to as a hybrid structure, and it exists since companies try to reap the benefits of the two extremes, while at the same time trying to avoid the disadvantages. This section has given a brief introduction to some of the important topics of our paper and these will be further elaborated later in the thesis. The next section provides some brief insights to purchasing structures in the construction industry.

2.2 Purchasing Structures in Construction

SCM has been used widely within traditional manufacturing industry; however the construction industry has been reluctant in making use of this concept (Morledge, Knight, and Grada 2009). Further, it is stated that the construction industry differs strongly from traditional manufacturing industry (Cox and Thompson 1997). The construction industry is often characterized by decentralized decision making and financial control (Dubois and Gadde 2002). It is also characterized as being a project based industry; the projects are located in
different geographical areas and each project has its own life-cycle. In addition, firms in this industry compete almost solely through competitive tendering (Morledge, Knight, and Grada 2009) and are subject to high failure cost, which makes planning and budgeting important (Staveren 2006). The reluctant use of SCM concepts and the characteristics of the construction industry mentioned above make it an interesting context for our study; the question of centralized or decentralized purchasing structure might become more visible due to its project based and decentralized nature.

2.3 Problem Statement

Despite of its importance, organizational design has gotten limited attention in the SCM literature. This, together with the reluctant use of SCM concepts in construction, make purchasing structures in the construction industry an interesting area to get further insights into. From this we have developed our first question we wish to answer in our thesis:

*How do companies in the construction industry structure their purchasing function?*

Since it is most likely that different purchasing structures exist, it might also be that different elements in a firm’s internal and external environment that favor, or at least affect, the choice of a certain structural model exist. It will therefore be interesting to see what factors influence a firm’s choice of purchasing structure. This has led to the second question that we will seek to answer in our thesis:

*What factors influence the choice of purchasing structure in the construction industry?*

Potential advantages and disadvantages exist that differ between each structure (Leenders *et al.* 2006). It will therefore be interesting to try to identify these potential advantages and disadvantages. This has led to the third question of our thesis:
What are the potential advantages and disadvantages related to the different purchasing structures?

The important aspects of this thesis, as we see it, are two fold. First, as previously mentioned, there has been limited scientific research on the issue of purchasing structures within both SCM literature and the construction industry. Hence, our thesis will hopefully provide additional insight in this field. Second, the issue of organizational structure of a firm’s purchasing function should be of great concern to top management and purchasing officials, due to the magnitude of its impact. We therefore hope to contribute to firms’ understanding of the issue, and also contribute to the scientific research of organizational structuring of the purchasing function in the construction industry.

2.4 Outline of the Thesis

The rest of the thesis is divided into five main parts. First, chapter 3 presents the method used in this theory. This section elaborates on the selection of research design, data collection, and quality of the study and the empirical setting of the thesis. Second, chapter 4 presents the theoretical framework used in this thesis. The theoretical framework presents different purchasing structures, factors which may influence the choice of structure, advantages and disadvantages of the structures and provides insights to purchasing structures in the construction industry. Third, chapter 5 presents the presentation and analysis of Mesta Entreprenør case. This section provides insights into how the purchasing structure at Mesta Entreprenør is organized, what factors that are said to have influenced the choice of this structure and what advantages and disadvantages Mesta Entreprenør and its staff members perceive related to the present structure. Fourth, chapter 6 presents a discussion based on the two previous chapters. This chapter discusses the purchasing structure at Mesta Entreprenør, Mesta Entreprenør’s influencing factors and the advantages and disadvantages Mesta Entreprenør experiences in light of the literature. As can be seen, these three chapters are constructed in the same way, corresponding with our research questions. First, they start off by looking at the purchasing structure, second they view the factors which might influence the choice of purchasing structure and, finally, they look at
the potential advantages and disadvantages related to the purchasing structure.
Finally, chapter 7 provides a conclusion and implications of our thesis.
3 Research Method

- Selection of Research Design
- Data Collection
- Quality of Research Design
  - Credibility
  - External Validity
  - Limitations of Study
- Empirical Setting – The Construction Industry
  - Mesta Konsern AS
  - Mesta Entreprenør
  - E6 Gardermoen Project
3 RESEARCH METHOD

There are several possible methods that may be applied by researchers in order to solve a stated problem situation. In general there are two distinct types of methods that may be applied: qualitative or quantitative (Dubois and Araujo 2007). The quantitative methods include simulations and model building as well as statistical testing of survey data (Ellram 1996). This method is well suited in situations where the researchers are searching for generalities and patterns in collected data (Dubois and Araujo 2007). The qualitative method is an umbrella concept covering several forms of inquiry that helps to understand and explain the meaning of a phenomenon (Merriam 1998).

3.1 Selection of Research Design

The appropriate class of research methods to choose from depends on the researcher’s goal and nature of the research question (Ellram 1996). Ellram presents a classification of research methods according to objectives; exploration, explanation, description and prediction. This classification may prove useful when deciding upon the most appropriate research design for the research question. Our study has an exploratory, descriptive and explanatory nature. It is exploratory since we will study a phenomenon that has received little attention in scientific research. However, it is also descriptive since we will investigate how firms structure their purchasing function. Our study is also explanatory since we want to elucidate why firms choose their purchasing structure through investigating what factors influence the choice of structure. In addition, we want to investigate what the advantages related to different structures are. A case study methodology would be desirable in such circumstances because it provides depth and insight into a little known phenomenon. Another argument for applying a case study method is that the construction industry is characterized by a high level of complexity (Gidado 1996). According to Dubois and Araujo, research that focus on complexity is often associated with qualitative and case-oriented methods (Dubois and Araujo 2007).

The case study method generally emphasizes qualitative, in depth study of one or a small number of cases (Ellram 1996). However, a case study should not be confused with qualitative studies, since case studies can be based on a mix of both
quantitative and qualitative evidence (Yin 2003). Given the nature of our study, a qualitative case study is chosen since qualitative methods provide a depth and richness, allowing the researcher to really investigate the how and why questions (Ellram 1996). A central question that arises before conducting a case study is the choice between a single and a multiple case study. This thesis uses a Mesta Entreprenør in a single case study. One of the reasons for choosing a single case study design is as presented by Yin the representative or typical case study (Yin 2003). Here, the case study looks at every day situations of e.g. a manufacturing firm that are typical for many other manufacturing firms in the industry. The use of a single case study may often be less resource demanding and time consuming than a multiple case study design (Yin 2003).

There are different approaches for performing a case study. Traditionally, these approaches have been either deductive or inductive. Deductive approaches aim at generating hypothesis and propositions based on some existing theory and try to test them out in the real world, whereas inductive approaches try to generate new theories based on data from the real world (Dubois and Gadde 2002b). Dubois and Gadde have presented a third way of conducting a case study, called systematic combining. This is a “process where theoretical framework, empirical fieldwork and case analysis evolve simultaneously, and is particularly useful for development of new theories.” (Dubois and Gadde 2002b, p.554). Even though the intent of this thesis was not to develop new theories, some of the methods presented by Dubois and Gadde have proven highly useful for our single case study. This has allowed us to adopt and adjust our theoretical framework according to our empirical findings, develop our study questions according to the theories and empirical findings and to discover new dimensions of the research problem.

Based on the above, a qualitative single case design is suitable for our study. This has allowed us to get thorough and in depth knowledge of our case, which is important due to the complex empirical setting of the construction industry and the nature of our study. As being presented in more depth later, we are using Mesta Entreprenør as a case study in order to get empirical insights into our research question.
3.2 Data Collection

When performing qualitative analysis, the data collection normally derives from fieldwork (Patton 2002). There are three main categories of data collection: (1) in-depth, open-ended interviews; (2) direct observations; and (3) written documents (Patton 2002).

Our data collection has been two fold: theoretical data searches and empirical case studies. We have performed extensive research in various databases, such as BISYS Ask, Business Source Complete and Science Direct, in order to get a theoretical insight to the problem area. Even though our research area has been subjected to limited research, we did find articles and books that have provided useful insights regarding purchasing, purchasing structure and construction industry. The relevant articles were printed and stored in a protocol. These articles derive from journals such as Journal of Purchasing and Supply Management, Construction Management and Economics, and Journal of Logistics Management.

We have conducted an in-depth case study, where the main sources of information were primary interviews, in addition to, internal documents, public available information, e-mail correspondence and attending a supplier meeting. Through this we hope to achieve triangulation in our data collection and to get good insights into the case. In total we performed nine interviews with four different staff members at Mesta Entreprenør: Chief Purchasing Officer (CPO), one representative for the Product Managers (PM), one representative for the Project Purchasing Manager (PPM) and one Project Manager. These interviews were conducted over a 13-month period. The two first interviews were conducted with the CPO, and these interviews may be characterized as informal meetings where we got good insights to both Mesta Konsern AS and Mesta Entreprenør. After these initial meetings, we conducted two different rounds of interviews with the PM of concrete and the PPM at the E6 Gardermoen project. The first round were aimed at identifying how different actors perceived the structure of the purchasing function at Mesta Entreprenør, while the second were aimed at identifying what potential factors that may have influenced the choice of purchasing structure and the advantages related to this structure. Interview-guides can be seen in appendixes 1-4. These interviews have given us good information about Mesta Entreprenør and its purchasing function. Our interviews may be characterized as
semi structured interviews (Yin 2003). This has allowed us to follow a set of questions, while at the same time being able to follow up interesting comments and remarks made by the interviewees. It has proven vital to use these interviews as conversations where we search for key information. We were well prepared for the interviews, and developed interview guides for each interviewee. The interview guides were sent to the respective correspondents before hand, so that they could feel comfortable and be prepared for the interview. Our interviews were recorded and stored on a computer. This allowed us to be more adaptive and flexible during our interview, while at the same time being able to be better listeners, since our attention was directed towards the interviewees. With respect to the recording of the interviews, it is important to notice that we were given permission by the interviewees and that we informed them that we had sign a professional secrecy and would handle the recordings accordingly. When each interview was done, we wrote down the entire interview and sent it back to the correspondent, in order to get it reviewed and approved. These interviews, observations and notes were then stored in our case study protocol, along with the theoretical articles for our studies. By both recording and taking notes during the interviews, in addition to writing down the entire interview and getting reviews by the interviewees, helps ensuring the quality and the validity of the inquiries (Patton 2002).

3.3 Quality of Research Design

In order to assure the quality of the research design, there are some elements which the researchers need to aware of, such as credibility, external validity and limitations of the study.

3.3.1 Credibility

In order to provide a useful research design, it is necessary to ensure the credibility of the work (Patton 2002, p.51). Traditionally, the terms objectivity and subjectivity have been used when referring to credibility, however more recent, qualitative research has moved towards using trustworthiness and authenticity (Patton 2002). Thus, it is vital that the researchers are neutral regarding their area of study: the researchers should not try to prove a particular
theory nor manipulate data in order to achieve the desired result; they should rather try to understand the world as it unfolds and report accordingly (Patton 2002). In order to avoid selective perception and personal bias, there are some methods that should be utilized: e.g. systematic data collection procedures, multiple data sources, triangulation and external reviews (Patton 2002).

During our work we have tried to perform our study according to these principles. As mentioned, we have interviewed four different staff members at Mesta Entreprenør, all located in different areas in the purchasing structure. This has enabled us to get insight to the area of study from several viewpoints. By recording the interviews and providing the interviewees with a written report of the interview for them to review and comment, have ensured the validity of the data collection. When performing both the theoretical data collection and the empirical data collection, we have tried to be as un-biased and open-minded as possible, in order to avoid personal preferences and predisposed truths. During our study, we have included the instruments used, such as interview guides, questionnaires and internal documents in a case study protocol.

3.3.2 External Validity

“External validity reflects how accurately the results represent the phenomenon studied, establishing generalizability of results” (Ellram 1996). Generalization of a case study differs from statistical generalization where, if a sample is correctly selected, the results may be generalized to a broader population. In a single case study design however, this statistical generalization would be incorrect (Yin 2003). When applying a single case study design, the researcher should try to generalize the results through analytic generalization; the researcher tries to generalize the results, not to a broader sample, but to some broader theory (Yin 2003). Hence, the generalization of our study will be based on the discussion of our findings in relation to our theoretical framework.

3.3.3 Limitations of Study

Despite our efforts to ensure the credibility of our study and the quality of the data collection, there are some limitations of our study that one needs to be aware of.
First of all, this is a single case study. This means that, even though Mesta Entreprenør is one of the largest entrepreneurs in Norway, the findings and results can neither be generalized to a broader population nor have a statistical impact. Due to this, the case study approach has not always been recognized as a proper scientific method. However this has changed during the recent years (Dubois and Gadde 2002b). Despite these limitations, a case analysis may provide good insights and explanations to a problem area and is aimed at analytical generalization (Yin 2003), and thus a qualitative single case is still a good research design for our study. Second, the E6 Gardermoen project used in this study is a relatively large project compared to other projects at Mesta Entreprenør. Thus, there might be some findings within this project that may differ from other smaller projects at Mesta Entreprenør. However, the interviewees used in this study who are currently working at the E6 Gardermoen project have broad experience from other projects at Mesta Entreprenør, and their feedback reflects their overall interpretation of Mesta Entreprenør.

3.4 Empirical Setting – The Construction Industry

The setting for this thesis is the Norwegian construction industry and especially related to construction of infrastructure, such as roads, bridges and tunnels. The Norwegian construction industry is highly dependent on the state of the market (SSB 2009). This can be seen in light of the development during the last 50 years. The industry experienced a tremendous growth during the period 1966-1988, followed by a rapid decline up until 1992. The industry experienced once again a record growth from the start of 2000 up until 2007 (SSB 2009). However, the recent years have shown a new decline of the industry. Major actors within the Norwegian construction industry are Mesta, Veidekke, NCC and Skanska (NorgesStørsteBedrifter 2009).

In general, this industry is characterized as being project based (Morledge, Knight, and Grada 2009; Cox and Thompson 1997), and is subject to strong competitive tendering and fragmentation (Morledge, Knight, and Grada 2009). In addition, the industry is highly complex, both in relation to planning of the workflow and to the execution of the individual processes (Gidado 1996). These and other characteristics will be further elaborated later in the thesis.
3.4.1 Mesta

As mentioned, this thesis uses Mesta Entreprenør, a subsidiary of Mesta Konsern AS, as a case study. Mesta Konsern AS is the largest Norwegian entrepreneur company within construction, maintenance and operations of roads (Mesta 2009). Mesta was established in 2003 when the production function of Statens Vegvesen was turned into an own entity and exposed to competition. The headquarter of Mesta is located at Lysaker, Oslo. Mesta has recently gone through a restructuring of the entire company. From being a single company with geographical divisions, Mesta is now organized as a group consisting of eight fully owned subsidiaries: Geo Survey AS, Mesta Eiendom AS, Mesta Entreprenør AS, Mesta Asfalt AS, Mesta Stein AS, Mesta Elektro AS, Mesta Drift AS and Mesta Verksted AS (Mesta 2009). Mesta is owned by the Norwegian Ministry of Trade and Industry. In 2008 the Group had a total turnover of NOK 5 592 mill, with a net result of NOK -608 mill. Employees numbered a total of 2 766 people.

3.4.2 Mesta Entreprenør

Mesta Entreprenør AS, hereby referred to as ME, is one of the largest subsidiaries of Mesta Konsern AS, and is, alongside with Mesta Drift, the subsidiary with the highest purchasing activity. Its main area of business is construction of roads, tunnels, docks, bridges, power plants, and airports (Mesta 2009). The primary market for ME is public road and infrastructure, and its largest client is Statens Vegvesen. However, an increasing portion of ME’s turnover derives from other clients, such as local government, energy companies and private customers. In 2008, ME had a turnover of NOK 2 071 mill. resulting in a net result of NOK -438 mill. ME employed 729 employees.
The construction activities of ME are project based. Present, ME has approximately 20 projects. Figure 1 gives an overview of some of the largest projects that ME is currently managing. In addition to at the locations of the projects, ME has offices in different areas of Norway. ME’s headquarter is located at Lysaker, Oslo. In addition, ME has operating offices in Skjedsmo and Bergen.

As can be seen from the figure, ME takes on construction projects all over Norway. A specific project that is used in this thesis, for getting insight into purchasing at ME, is the E6 Gardermoen project.

### 3.4.3 E6 Gardermoen Project

The E6 Gardermoen project is a large road construction project consisting of a four-line highway between Hovinmoen and Dal. It is approximately 10 km in length, including slip roads and ramps. The project has budget limits of approximately NOK 550 mill and constitutes of 250 man-labor years. By analogy, the project may be regarded as a large Norwegian company, with a daily turnover of NOK 1.5-2 mill. The project was initiated at the end of 2007 and is estimated to be finished by the fall of 2009. The project contract is executed on behalf of Statens Vegvesen and is a part of the new four-line highway, reaching from Hovinmoen to Biri, with a total length of 110 km.
4 Theoretical Framework

Purchasing Structures
  o Centralization
  o Decentralization

• Influencing Factors
  o Context Related Factors
    ▪ Contingency Theory
    ▪ Structural Contingency Theory
  o Information and Power Related Factors
  o Purchasing Related Factors
  o Summary

• Hybrid Structures
  o Historical Development – Pendulum Swing
  o Summary

• Purchasing Structures in the Construction Industry
  o Project Uniqueness
  o Complexity and Uncertainty
  o Summary

• Lessons From the Theories
4 THEORETICAL FRAMEWORK

It is important to build a theoretical framework that is relevant to our research questions, and that will contribute to the results of our study. We have divided our framework into four parts. First, the two extreme purchasing structures, centralization and decentralization will be presented and elaborated on. Second, we will present some important underlying factors that influence the choice of structure. Third, we will present the advantages related to the different purchasing structures. Fourth, we will present and elaborate on hybrid structures. Finally, insights into purchasing structures in the construction industry are presented.

4.1 Purchasing Structures

The structure of the organization affects processes, procedures, systems and the relationships of a purchasing function (Leenders et al. 2006). Thus, the choice of purchasing structure is important. A central issue in the organizational design of the purchasing structure is, as mentioned, the classical distinction between centralization and decentralization.

4.1.1 Centralization

A centralized purchasing structure is defined as when “all main purchasing is controlled at one central location for the entire firm” (Leenders and Johnson 2000, 28). This structure may be described as a situation where a central purchasing department, operating on the strategic and tactical level, is found at a corporate level. This department is often responsible for product specification, supplier selection, contract negotiations and coordination of activities. While the corporations’ different business units conduct the operational purchasing activities (van Weele 2005). Centralization of purchasing makes it possible to control the resources used and the activities performed at one place in the organization (Gadde and Håkansson 1993).

A feature of a centralized purchasing department is that it is usually divided according to different product types, where different groups of personnel is responsible for different product groups (Gadde and Håkansson 1993). Examples of this may be different component group and different raw materials. This
enables the purchasers to become specialists within their respective product group (Gadde and Håkansson 1993).

According to Cavinato (1991), a centralized structure can be found in three different forms: single site firms, meaning small organizations or new start-ups that are located at only one location; multi-plant firm with procurement at headquarters, meaning organizations with several plants located at different places where the purchase is being performed at the central headquarter; multi-plant firms that have procurement at the field locations, but these reports directly to the central headquarter.

4.1.2 Decentralization

A decentralized purchasing structure is defined as when “all main purchasing is controlled at the business units, plants, and/or divisions” (Leenders and Johnson 2000, 28), meaning that different business units are responsible for their own purchasing activities. This structure can be found in companies with a business unit structure, and where the business unit management is responsible for all its purchasing activities (van Weele 2005). A decentralized purchasing function is also typical for project based businesses (Gadde and Håkansson 2001). In such a system, the buyers are often responsible for a large variety of products, which are bought in smaller quantities compared to a centralized purchasing function (Gadde and Håkansson 2001).

In a fully decentralized structure there is no central coordinating organization, neither is there a set of purchasing policies that act as guidelines to the different business units purchasing staff; “cross business unit co-ordination, if any, is voluntary, ad-hoc and informal” (Rozemeijer 2000).

The choice between the two classical organizational structures, centralization vs. decentralization, has been said to be decided by fashion, by organizations copying the structure of another successful organization, or by leading management consultants promoting their favorite organizational structure (Baily et al. 2005). The last argument is also supported by Leenders and Johnson (2000), who identified consultants as a major influencer when deciding organizational
structure. They also found that rather than giving the corporate purchasing officer the opportunity to select the appropriate organizational structure for the purchasing function, the pressure to maintain similarity with the broader organizational structure was the primary factor. In other words, supply considerations are often not taken into consideration when selecting a particular organizational structure. However, it has been claimed that “effective management will endeavor to construct its organizational structure upon more objective foundations” (Baily et al. 2005, p. 76). Thus, the next section will present some of the most prominent factors that may affect the choice of purchasing structure.

4.2 Influencing Factors

This section will provide insights into some of the most prominent factors, as highlighted by the literature, for influencing the choice of purchasing structure. The factors are divided into context, information and power, and purchasing related factors.

4.2.1 Context Related Factors

Some of the factors affecting the choice of purchasing structure may be classified as context related factors, since they relate to the context and situation of a company. Van Weele (2005, p. 229) argues that “the location and structure of purchasing are very much dependent on business characteristics and situational factors”. The argument that there is no single optimal way to structure organizations, rather this is dependent on some characteristics of the situation organizations are faced with, is in fact one of the core lessons of contingency theory.

4.2.1.1 Contingency Theory

Contingency theory has since the 1960s been viewed by many as the way out of the “jungle” of different theories, since it guides top management in choosing the right management tools for a given situation (Carlisle 1974). The essence of contingency theory, also known as situational theory, is that “management concepts are not universally applicable but are only appropriate if the right
conditions exist in a given situation” (Carlisle 1974, p. 9). In other words, the utilization of the many managerial tools or concepts is contingent upon the specific situation.

One of these management tools is the choice of organizational structure. Up until the late 1950s, academic writing held that there was one organizational structure that was optimal and most efficient for all organizations. This structure was characterized as hierarchical, where the planning and decisions were made at the top of the hierarchy and activities in the lower levels was dominated by strict job definitions and routines predefined by the top management (Donaldson 1999). However, by the end of 1950, scholars started to apply contingency theory to the choice of organizational structure, a combination that has emerged to what we know today as Structural Contingency Theory.

4.2.1.2 Structural Contingency Theory

Structural contingency theory states that there is no organizational structure that is highly effective for all organizations. Each organization must find a structure that is contingent to its situation. This situation, which again influences the choice of organizational structure, can be characterized, or influenced by a number of contingency factors. Within structural contingency theory, a number of contingency factors are identified such as task uncertainty, technology, environmental change, technological change, size, and strategy. Donaldson (2001) argues that these factors can be reduced to the following underlying factors: size, task uncertainty, and task interdependence.

Size as a contingency factor relates to the size of the organization, e.g. the number of employees. The way size affect the structure of the organization is as follows: When an organization has few members and is relatively small, a simple centralized structure is sufficient. The top manager can have the decision authority since he or she has both the capacity and sufficient overview of the entire organization. However, as the organization grows, this simple structure is “replaced by a bureaucracy featuring a tall hierarchy and extensive specialization” (Donaldson 1999, p. 53). This makes decentralization of decision authority close to necessity since “internal structural complexity and length of hierarchy makes centralization infeasible” (Donaldson 1999, p. 53).
Task uncertainty is often caused by environmental and technological change. This uncertainty may then be reinforced by the innovation that often is needed as a response to these changes in environment and technology. If a task has low uncertainty, it is most efficiently performed in a centralized structure, since this allows efficient planning and coordination. However, with high task uncertainty, “less work can be scheduled in advance” and the firm needs to rely more on ad hoc solutions (Donaldson 1999, p. 52). Hence, there should be a reduction in formalization and the firm should have a more decentralized structure (Donaldson 2001).

Tasks interdependence relates to the activities of an organization’s different sub units that are connected to each other. A classical distinction of interdependence is pooled, sequential and reciprocal interdependence (see Thompson 1967). The way task interdependence affects organizational structure is that low interdependence between tasks, fits with divisionalization (Graubner 2006). According to Donaldson (2001), the divisional structure is a decentralized organizational structure. The reason for this is that there might not be a need for a central division coordinating the interdependent activities. However, “the greater the task interdependence, the more centralized the coordination” (Donaldson 2001, p. 80).

Even though these factors are characteristics of an organization, Donaldson (1999, p. 51) argues that these characteristics often “reflect the influence of the environment in which the organization is located”. He further argues that in order to be efficient, organizations need a structure that fits to the characteristics of the organization and thus to its environment.

Within structural contingency theory, organizational structure involves more than the tension between a centralized and decentralized structure. Other structural dimensions may include specialization, standardization, formalization, hierarchical levels, and span of control (Donaldson 2001). However, since some of these extra dimensions are touched upon within the tension between a centralized and decentralized structure, the contingency factors mentioned above, may still be relevant for choosing between a centralized or decentralized purchasing structure. In addition, several academics have performed studies to identify the underlying factors that affect the choice of structure. These factors are
found using different theories and perspectives and can be classified as information and power related factors, and purchasing related factors.

### 4.2.2 Information and Power Related Factors

An element that can affect the structure of the purchasing function is the relationship between the centralized headquarter and the different divisions. This may be referred to as information and power related factors. A useful insight into this issue is agency theory. Agency theory may be explained as when one party (the principal) delegates work to another party (the agent) (Vibert 2004). Agency theory assumes that individuals have bounded rationally, self-interest and risk aversion (Eisenhardt 1989). Due to these assumptions, two problems are of particular interest within the agency theory.

The first problem is the *agency problem*, which can be caused by two situations. The first situation is when there are conflicting goals between the principal and the agent, and the second situation is when it is difficult or expensive for the principal to monitor and control what the agent is doing. The second problem is the *problem of risk sharing*, and arises when the principal and the agent have different risk preferences (Eisenhardt 1989). Agency theory addresses these problems through determining the most efficient contractual arrangements between the principal and the agent. However, contractual problems often arise due to *moral hazard* and *adverse selection*. Moral hazard occurs when the agent do not deliver the agreed upon effort, and adverse selection arises when the agent claim to have certain skills and competences, which the principle cannot verify (Eisenhardt 1989).

Some have argued that the relationship between a principal (e.g. centralized headquarter) and an agent (e.g. division or business unit) may influence the choice of organizational structure. Vagstad (2000) argues that the choice of organizational structure should be determined by the trade-off between two important factors: *bureaucracy cost* and *agency cost*. The logic is that a centralized structure is costly and often not very efficient due to bureaucracy costs; costs that are related to the fixed costs of the daily operation of the department. At the same time, costs related to decentralized structure may be
agency costs; costs that arise as a result of conflicting objectives between the principal and the agent. Hence, when the bureaucracy costs are lower than the potential agency costs, a centralized structure may be favored, while a decentralized structure may be favored when the potential agency costs is lower than the bureaucracy costs.

The fact that agency costs can affect the structure of the purchasing department is also supported by Carlisle (1974). He argues that one of the advantages with a decentralized structure is that people are more productive when they have more freedom and control over their jobs. However, with a decentralized structure, there is a risk of “individuals who does not accept the organizations goals” which would alter some of the advantages of a decentralized structure (Carlisle 1974, p. 14).

To summarize, if potential agency costs exist, it would call for a more centralized purchasing structure, since this would alter some of the advantages of a decentralized purchasing structure. However, a more centralized purchasing structure would lead to increased bureaucracy costs. The choice of organizational model should therefore evaluate the tradeoff between bureaucracy cost and agency cost.

4.2.3 Purchasing Related Factors

Different types of purchasing situations are said to have different demands on the purchasing structure (Gadde and Håkansson 1993). Within supply chain literature, several criteria affecting the decision of centralization or decentralization have been identified. These factors may be referred to as purchasing related factors. This section will present some of these most prominent factors, in addition to some suggestions of how to structure the purchasing function accordingly.

Several authors mention product type as a central factor affecting purchasing structure and purchasing strategy (van Weele 2005; Kraljic 1983; Corey 1978). One element within product type is commonality of purchase requirements; the greater the commonality of the products being purchased, the more benefits can be obtained by having a centralized structure (van Weele 2005). Further, high-
volume products with a predictable usage pattern calls for centralization, in order to reap cost benefits of aggregated purchase (Corey 1978). Corey (1978) argues that products possessing some specific characteristics should be handled in a decentralized purchasing department. These products and characteristics are: (1) standard products with need for local service that are ordered in small amounts and subject to unpredictable usage pattern and immediate need, (2) products that are subject to high engineering involvement, products with high need for coordination of the purchased parts with production schedules, and (3) products with unique use requirements. A way of classifying different product types is to use portfolio models. Such a model has been developed by Peter Kraljic (1983). The Kraljic-model classifies four different product types: Non-critical items, leverage items, bottleneck items and strategic items. According to Kraljic (1983), the handling of the different product groups are as follows: Non-critical items may be handled at a decentralized level, due to the low strategic importance and the low supply market complexity. At the same time, a centralized approach may be favorable in order to achieve economies of scale, due to standardized products. Leverage items may be handled at both a decentralized level and centralized level. A decentralized level is favorable due to the low complexity of the market, while a centralized approach is favorable in order to strengthen and to exploit the purchasing power. Bottleneck products may be handled at a decentralized level, but there is a need for centralized coordination in order to ensure supply of products that are subject to production scarcity. Strategic items should be handled at a centralized level, in order to ensure supply of products that are of high strategic importance and are subject to market complexity.

The recent globalization has led to a development of multinational business operations (Corey 1978). This new business environment means that many companies need to negotiate with foreign sources, which may be both difficult and time consuming (Corey 1978). Thus, geographical location is an important factor affecting whether to centralize purchasing or not. According to Corey, international negotiations may call for special knowledge and skills, which may be difficult to handle by a decentralized organization. Thus it should be handled at a centralized level in the organization (Corey 1978). On the other hand, it may be difficult to achieve efficient coordination across international and cultural borders.
As a consequence many firms are utilizing a decentralized structure (van Weele 2005).

Several academics stress supply market characteristics as an important factor in relation to the structure of purchasing strategies (van Weele 2005; Kraljic 1983; Corey 1978). Thus supply market structure is highlighted as an important criterion. When the supply market is characterized by one or a limited number of suppliers, which often gives the supplier an advantage due to strong bargaining power, it may be necessary to utilize a centralized purchasing function in order to achieve a better negotiation position (van Weele 2005). This is also supported by Corey (1978, p. 102), who states that “corporate headquarters often negotiates with large sellers in oligopolistic industries”. He further states, in relation to purchasing power, that “by centralizing purchases at the corporate level, companies may command attention at higher management levels in supplier organizations [...]” (Corey 1978, p. 105). According to Corey, this might lead to a more long-term commitment between the parties. A centralized purchasing function in an oligopolistic market may, in addition to provide favorable prices, negotiate better service at the user locations and to ensure long-term supply of the product (Corey 1978).

Savings potential is also a relevant factor when deciding on the purchasing structure. Many raw materials are sensitive to volume, by utilizing a centralized purchasing function one is able to accumulate the quantity in order to reap savings potential (van Weele 2005). Aggregating purchasing activities through centralization may be an effective way of achieving large cost savings, especially related to standardized parts, supply items and non-product purchases (Corey 1978).

It is claimed by several authors that the expertise required and the efficient use of personnel may affect the organizational structure (van Weele 2005; Corey 1978). When specific expertise is required for effective buying, it may be useful to have a centralized purchasing approach, since it may be difficult to provide the necessary expertise in several decentralized departments (van Weele 2005). This is further underpinned by the fact that centralization may improve the efficient use of scarce managerial resources (Corey 1978). On the other hand, attaining expertise within
purchasing might be difficult. One reason for this is that the attitude towards purchasing, especially in the past, has suffered from low status (Gadde and Håkansson 1993). However, centralization has been viewed as a factor for attracting competent personnel and the expertise required (Corey 1978). In addition, Corey (1978, p. 106) argues that “to justify the development of purchasing expertise in any product areas requires a sufficient volume base”. This critical mass of volume can be archived by pooling total product requirements in the company and by centralizing the purchasing responsibility (Corey 1978).

*Price fluctuations and political climate* may also affect the desired structure of the purchasing function (van Weele 2005; Corey 1978). If material prices are highly sensitive to the political and economic climate, a centralized purchasing approach may be efficient (van Weele 2005). A centralized approach may be favorable in coping with shortages of supply as a consequence of political and governmental regulations (Corey 1978). This is due to the fact that a centralized purchasing function may identify alternative sources of supply, negotiate contracts, and allocate the resources within the organization (Corey 1978).

The degree of *customer demands* may also affect the purchasing structure. In situations where the customers dictate which products that should be purchased, a centralized approach will not be needed (van Weele 2005). This is due to the fact that it will not be possible to reap any purchasing synergies across the entire organization, as long as there are strong local restrictions on what needs to be purchased.

### 4.2.4 Summary

As seen above, there are several factors that might affect the choice of purchasing structure. However, there is usually not a clear-cut decision between centralization or decentralization, and in most cases, companies rely on a combination of both; companies usually “try to reap the benefits of one organizational form and then minimize its corresponding disadvantages” (Gadde and Håkansson 2001, p. 113). It is thus important to have insight into the advantages and disadvantages related to both a centralized and decentralized structure.
4.3 Advantages and Disadvantages

There are several potential advantages and disadvantages of having either a centralized or a decentralized purchasing structure. Since the two represents the extremes of organizational design, it is often so that the advantages of centralization is the corresponding disadvantage of decentralization, and vice versa (Carlisle 1974). Hence, in order to “attain the benefits at one extreme, one has to sacrifice the benefits at the other” (Gadde and Håkansson 2001, p. 32). Thus, we will present only the advantages associated with the two structures.

4.3.1 Advantages Related to Centralization

One of the major advantages with centralization is that it enables firms to consolidate its purchasing requirements (Leenders et al. 2006; Baily et al. 2005). Håkansson and Gadde (1993) state that a centralized purchasing function enables coordination across the organization in relation to individual suppliers. Such consolidation and coordination give firms greater bargaining power on the demand side, and can thus reduce the suppliers’ rent (Piga, Dimitri, and Spagnolo 2006). This is possible due to the buying economies of scale, which is defined as “a reduction in the cost of purchasing raw materials and components or of borrowing money due to the increased size of the purchase” (Business_&_Management_Dictionary 2007).

Another advantage of a centralized purchasing function is that the firm is able to coordinate and control the policies and procedures related to purchasing (Leenders et al. 2006). With such coordination, firms can avoid duplication of efforts throughout the organization (Carlisle 1974; Piga, Dimitri, and Spagnolo 2006). Such efforts can be activities that are carried out independently by the different parts of the organization (Carlisle 1974). In addition, coordination of purchasing activities, may reduce the risk of price anomalies between the business units of divisions in the same organization (Baily et al. 2005). Corey (1978) illustrates this problem with an example from General Motors, where management found that seven different prices were paid by ten different divisions for the same item. In addition, five of the different prices were paid to the same supplier. Coordinating and controlling a firm’s purchasing activities through a centralized purchasing department can prevent such price anomalies.
There are also advantages with a centralization related to the *knowledge* and *expertise* of purchasing personnel. A centralized purchasing function collects the skilled human capital and expertise found in an organization (Piga, Dimitri, and Spagnolo 2006). Since the human resources is “all in one place” it is easier to allocate it more effectively (Gadde and Håkansson 1993). It also gives the purchasing function the ability to pay for talent, which again increases the knowledge and expertise found in the function (Leenders et al. 2006). This enables the organization to form specialized teams to better design procurement strategies, and continuous improve them over time through learning and experience (Piga, Dimitri, and Spagnolo 2006).

Finally, an important advantage related to centralized purchasing is that it gives a *strategic focus* (Leenders et al. 2006). With centralization, firms can avoid suboptimal decisions since it has a broader perspective and consider the interest of the entire organization (Carlisle 1974). With this broad scope, the purchasing function can make strategic decisions that are most favorable in the long term, and for the entire organization.

### 4.3.2 Advantages Related to Decentralization

One of the advantages with a decentralized purchasing function is that it gives the business unit or division an increased *speed of response* (Leenders et al. 2006). In case of emergency situations, such as unforeseen stock outs, decentralization gives the firm the ability to respond quickly. This is due to the short lines of communication, and knowledge of local circumstances (Baily et al. 2005). This is also supported by Carlisle (1974) who argues that decentralization leads to quicker response, since decisions don’t have to be referred up the hierarchy. Therefore one can argue that decentralization gives firms more flexibility in their day-to-day operations.

Another advantage with decentralization is related to *financial responsibility*. Often, business units are responsible for the financial results of its operations. When this is the case, decentralization will enhance the business units’ control and performance measurement (Carlisle 1974). Baily (2005) even argue that if business units operates as profit centers, the business unit *should* also be
responsible for their own purchasing activities, since materials represent a large proportion of total costs. The argument is that “if management are not allowed, for example, to select and deal with their own suppliers, how can they be held responsible for output which relies so heavily on supplier efficiency?” (Baily et al. 2005, p. 77). According to Baily et al., if business units have responsibility over both their financial result and purchasing, this will produce “better liaison and control” by local top management.

It is also argued that decentralization has advantages related to the purchasing personnel. First, Leenders et al. (2006) argues that decentralization suites purchasing personnel’s preference and gives a broader and more flexible job definition. Carlisle (1974) argues that decentralization leads to more motivated staff. His argument is that individuals often seek a feeling of recognition, status and accomplishment. With a decentralized purchasing function, where staff can be involved in decision-making and management activities, motivational effects can be achieved. According to Carlisle, this will lead to greater individual productivity. He also argues that decentralization can reduce the workload of overburdened executives.

Another advantage with decentralization is that the purchasing function has local proximity to both its internal and external environment. Hence, the structure utilizes the local buyers’ knowledge of e.g. the needs of his or her business unit, local suppliers, and transportation and storage facilities (Baily et al. 2005). This allows for effective use of local resources and thereby business unit autonomy (Leenders et al. 2006). According to Carlisle (1974) awareness of local conditions might be difficult in a centralized structure, where individuals at higher levels in the organization are more remote.

Table 1 on the next page, summarizes the main advantages with a centralized and a decentralized purchasing function.
4.3.3 Summary – Control and flexibility

If one looks at the advantages related to the two extreme structures presented in table 1 above, one can summarize the advantages into the terms control and flexibility.

A centralized structure gives an organization several advantages related to control. First, a centralized structure gives control regarding the purchasing requirements throughout the different business units or divisions, and enables the company to consolidate these. Second, centralization also gives companies control on the purchasing activities in order to avoid duplication of efforts. Third, centralization enables companies to control the knowledge and expertise that is possessed by individuals in the organization. Finally, a centralized approach gives companies the opportunity to have control within the long term planning for the entire organization.

On the other hand, a decentralized structure gives companies advantages related to flexibility. First, a decentralized structure gives flexibility to handle potential emergency situations fast and efficiently. Second, decentralization together with financial responsibility gives the business units flexibility to themselves decide on the most suited suppliers. Third, a decentralized structure gives the purchasing staff more varied and flexible job descriptions, which is said to have a
motivational effect. Finally, decentralization enables companies to be flexible in terms of utilizing local knowledge and resources.

The advantages and disadvantages related to centralization and decentralization can, as presented above, be summarized by using the terms flexibility and control. To recap, Carlisle (1974) argued that since the two represents the extremes of organizational design, it is often that the advantages of centralization is the corresponding disadvantage of decentralization, and vice versa. Hence, while control is related to the major advantages of centralization, it is also one of the major disadvantages of decentralization; a decentralized structure may hamper the elements related to control found in a centralized structure. Similarly, while flexibility is the major advantage of a decentralized structure, it is also one of the disadvantages with centralization; with a centralized structure companies looses the elements related to flexibility found in a decentralized structure.

4.4 Hybrid Structures

From the discussion above one can clearly see that the two different organizational structures possess significantly different advantages. We recall the statement of Gadde and Håkansson (2001, p. 113), that organizations usually “try to reap the benefits of one organizational form and then minimize its corresponding disadvantages”. This has lead to an increased use of hybrid structures; Leenders and Johnson (2000) found in their study that in 1988, 61 percent of the respondents had a hybrid structure, while by 1995 this had increased to 68 percent. The hybrid structures try to capture the advantages and eliminate the disadvantages from both a centralized and decentralized structure, as illustrated in figure 2.

![Figure 2: Hybrid Structures, source: (Leenders and Johnson 2000)](image-url)
Hybrid structures are found in many variations. Cavinato (1991) identified five commonly used hybrid structures; centralized coordinator, area planner concept, supply manager concept, commodity teams and logistic pipeline approach.

Centralized Coordinator: This model is similar to the decentralized procurement model with procurement at field locations reporting to divisional manager. The distinction is that there is also a centralized coordinating group. Cavinato states that the advantage of this structure is that it attains the scope of a central group that enables the firm to utilize synergy and economies without having to “carry the full overhead cost often found with full centralized groups” (Cavinato 1991, p. 35).

Area Planner Concept: In this model a firm has a central procurement group, creating and managing the relationships with the suppliers; vendor selection, analyzing, negotiating and monitoring. The field staff (area planners) uses these relationships and personnel “to handle the day-to-day orders for inbound movements, expediting and follow up” (Cavinato 1991, p. 37). Cavinato argues that a direct link between the buying firm’s area planners and the supplier is speedy and enables special arrangements between the parties.

Supply Manager Concept: In this model, one person (supply manager) has responsibility for nearly complete product lines. This responsibility includes more than just supply of goods. The supply manager is also responsible for acquisition, materials selection, production scheduling, make or buy decisions and inventory management for that product. This approach requires that the supply manager possess a vide range of skills, and the model is according to Cavinato (1991, p. 40) “perhaps the broadest application and of what is considered as procurement or supply chain management”.

Commodity Teams: With this model, the procurement is organized in cross-functional teams with staff from engineering, design, production, procurement, distribution and marketing. Cavinato argues that the implications of organizing procurement in commodity teams are that inventory, transportation warehousing, packaging and other concerns are taken into account within the context of the overall product cost and value. The commodity teams usually take a customer
perspective. According to Cavinato, this model of organizing procurement was originally found in the construction industry.

*Logistic Pipeline Approach:* In this cooperative approach, overlapping logistic functions between buyer and supplier are eliminated. According to Cavinato, the result of this organization is that the buyer’s procurement and the seller’s order entry is combined. These two functions will be managed as one. The logistic pipeline model provides advantages for both parties. First, one achieves cost reduction since overlapping functions are eliminated. Second, the seller can monitor the inventory of the buying firm and implement automatic replenishment routines. Cavinato argues that this would reduce the risk of surprise stock outs.

### 4.4.1 Historical Development – Pendulum Swing

Even though there has been an increased use of hybrid structures, the use of centralization or decentralization has varied over time. The historical shift between centralization and decentralization is often referred to as the “swing of the centralization-decentralization pendulum” (Corey 1978). One of the reasons for this pendulum swing is that “a company exploiting the centralization advantages to the maximum will soon realize the advantages of moving in the decentralization direction, and vice versa” (Gadde and Håkansson 2001, p. 32).

In the 1970s there was a trend of moving to a centralized purchasing function (Corey 1978). Whereas during the 1980s the trend moved towards decentralization of responsibilities and local profit centers (Gadde and Håkansson 2001). More recently, the pendulum swing is moving away from full decentralization (Gadde and Håkansson 2001). One of the reasons for this is the strong focus on consolidation during the early 2000s (Gadde and Håkansson 2001). The consequence of this has been horizontal integration and several merger and acquisition, resulting in larger organizations, thus “the larger the companies grew the more some of the centralization benefits increased” (Gadde and Håkansson 2001, 32). Even though the pendulum is swinging away from a full decentralization, it does not mean that it swings towards a full centralization, but rather towards a situation where companies try to combine the advantages and disadvantages of the two structures (Gadde and Håkansson 2001).
4.4.2 Summary

Since the hybrid structures try to reap the advantages and avoid the disadvantages related to the two extreme organizational structures, a hybrid structure possesses characteristics of both of them. By combining these structures, it is possible to achieve both control and flexibility.

4.5 Purchasing Structures in the Construction Industry

It is important for any organizations to understand the industry context in which it operates, and especially the characteristics of this context (Wit and Meyer 2004). Such characteristics are often called the “rules of the game” (Prahalad and Doz 1987) or industry conventions (Hamel 1996). The industry rules can be defined as “demands dictated to the firm by the industry context, which limits the scope of potential strategic behaviors (Wit and Meyer 2004). One example of such strategic behavior is the question of centralized or decentralized organizational structure. Prahalad and Doz (1987) has argued that understanding the industry characteristics is important when determining the level of integration of activities, compared to the level of local responsiveness in a company. He argues that understanding the economic, technological and competitive characteristics of an industry will enable the organization to define the pressures for either centralized management of “geographical dispersed activities” or local decision making (Prahalad and Doz 1987).

The construction industry differs significantly from other manufacturing industries (Cox and Thompson 1997), and this can be seen through some of its characteristics. Within construction there is a strong reliance on decentralized decision making and financial control (Dubois and Gadde 2002). The reason for this decentralized structure in construction is among other things some elements found in construction; project uniqueness, complexity and uncertainty. In addition, there is a risk of high failure cost as a consequence of failure on supply. All of these elements will affect how construction firms structure their purchasing function.
4.5.1 Project Uniqueness

Construction industry is a project-based industry (Morledge, Knight, and Grada 2009; Cox and Thompson 1997). Cox and Thompson argue that “each piece of construction work is site specific and thus being unique” and that within construction “repetitions are rare and works are procured typically on a one-off project-by-project basis” (Cox and Thompson 1997, p. 128). This is supported by Oyegoke (2006, p. 13) who states, “the construction industry is characterized by its temporary and multi-organizational nature […] and no two projects are entirely the same”, and by Oglesby, Parker and Howell (1989, p. 15) who states that “construction is a custom rather than a routine, repetitive business”. The uniqueness of a project is determined by several factors, such as the resources and specifications needed, in addition to the specification made by the clients (Morledge, Knight, and Grada 2009). Hence, construction projects are often “bespoken” according to these factors.

The project uniqueness and the emphasis on site-specific activities, lead to that construction firms have a high focus on individual projects (Dubois and Gadde 2002). According to Dubious and Gadde (2002) this often results in a structure where decision authority and financial control are decentralized. This reliance on decentralization often occurs since management is unfamiliar with local resources and local environment.

4.5.2 Complexity and Uncertainty

Another characteristic within construction that affects purchasing structure is project complexity. Project complexity may be defined as “the measure of the difficulty of implementing a planned production work flow in relation to any one or a number of quantifiable objectives” (Gidado 1996, p. 215). Gidado states that a construction process “is always made up of a multitude of interacting parts. Therefore, in simple terms, this may suggest that construction is generally complex in nature” (Gidado 1996, p. 214).

Gidado found that uncertainty is a central element in project complexity. Uncertainty refer to factors that cannot be explained or foreseen, such as (1) lack of complete specification for the activities to be executed, (2) management is
unfamiliar with the environment, (3) lack of uniformity of work, and (4)
unpredictability in the environment (Gidado 1996). Dubious and Gadde argues
that some of these uncertainty factors create a need for local adjustments on the
construction sites. One of the reasons for this is the risk of high failure costs found
in construction. Failure cost can be defined as any cost resulting from unforeseen
problems in construction projects. Cox and Thomson argue that failure costs are a
result of the high degree of uncertainty in construction (Cox and Thompson
1997). However, failure cost can also be a result of purchasing practices. Staveren
argues that failure costs are often due to out of date procurement practices. Due to
the small margins in the construction industry, the selection of suppliers is often
only based on the best price criterion, which often results in incorrect deliveries
(Staveren 2006). Failures in construction put severe pressure on budgets and
planning, since they often have to be corrected during construction (Staveren
2006). Thus, the complexity and uncertainty found in construction, together with
the risk of high failure costs might further explain the need for a decentralized
structure, since decentralization enables increased speed of response to potential
emergency situations (Baily et al. 2005).

4.5.3 Summary

There are several factors found in the construction industry that affects how firms
structure their purchasing function. Above, elements are presented that explain
why, in construction, there is a strong reliance on decentralized decision-making
and financial control. The construction industry is project based, with often unique
and different projects with short duration, which clearly separates it from other
manufacturing industries with often a more stable environment and have resulted
in a decentralized structure. In addition, complexity and uncertainty creates a risk
of high failure cost, which creates a need for local adjustments through
decentralization.

4.6 Lessons from the Theories

In this chapter we have presented alternative structures for the purchasing function
identified in the literature. We have also presented factors that influence the
choice of this structure. The presented list of factors is not a complete list of all
factors that influences this choice. However, the list might be sufficient since it covers important areas. We have also presented insights regarding purchasing structures in construction, since this is the empirical setting of this study. We believe that the framework will provide a solid foundation for getting insight into our problem area, and answering our research question. To recap, our first research question is formulated as:

*How do companies in the construction industry structure their purchasing function?*

This question can be addressed by using insight from the literature in combination with our case study. This chapter presented the classical distinction between a centralized and decentralized structure. It was also argued that several hybrid structures have evolved between the two extremes. In the construction specific literature, the industry is characterized by decentralized decision-making and financial control. However, seeing the purchasing structures presented in light of the ME case, will provide further insight into how firms in the construction industry structure their purchasing function.

Our second question relates to the factors that influences the choice of structure, and is formulated as:

*What factors influence the choice of purchasing structure in the construction industry?*

The influencing factors found in the literature are summarized in table 2 on the next page. These factors will make a good starting point for studying the second research question.
As seen from the table above, the factors influencing the choice of purchasing structure are classified into context related, information and power related and purchasing related factors. These factors are not specified particularly for firms in the construction industry. Some of these factors might prove to be more prominent than others thus it would be interesting to see these in light of the construction industry through the ME case study.

Our third research question relates to the advantages and disadvantages of the different purchasing structures, and is formulated as follows:
What are the potential advantages and disadvantages related to the different purchasing structures?

The literature presented several potential advantages and disadvantages of the two different purchasing structures, as presented in table 1 below.

<table>
<thead>
<tr>
<th>Centralized</th>
<th>Decentralized</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Consolidation of buying requirements.</td>
<td>• Increased speed of response. Enables the firm to better handle emergency situations.</td>
</tr>
<tr>
<td>Reduced cost of supply.</td>
<td>• Financial responsibility. Gives better liaison and control by top management.</td>
</tr>
<tr>
<td>• Coordination and control of purchasing activities.</td>
<td>• Motivated staff. Suits personnel’s preference and gives staff a feeling of recognition, status and accomplishment.</td>
</tr>
<tr>
<td>Avoidance of duplication of efforts and price anomalies.</td>
<td>• Local proximity. Utilizes local knowledge and resources. Increased focus on business unit needs.</td>
</tr>
<tr>
<td>• Concentrates knowledge and expertise. More efficient allocation of human capital and increases the ability to pay for talent.</td>
<td></td>
</tr>
<tr>
<td>• Gives strategic focus. Enables long term planning for the entire organization.</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 – Main advantages associated with centralization and decentralization.

Since the two structures represent the extremes within purchasing structure, the advantages of centralization are the corresponding disadvantage of decentralization, and vice versa. From the table above, one can see that the advantages related to the two structures are very different. While centralization provides control, decentralization provides flexibility. Studying the theories presented in literature in combination with the insight from the ME case study, will give good insight into the advantages and disadvantages related to different purchasing structures.

Within the context of the construction industry, we are using elements identified in the theory and insights from the Mesta case to discuss how a construction firm may organize its purchasing function, which factors that may affect the choice of structure, and the advantages and disadvantages related to different structures. The presented theoretical framework provides a good foundation for analyzing and discussing the ME case. As a result, the Mesta case may, hopefully, provide additional insights and viewpoints regarding the three research questions presented above.
5 Case Presentation and Analysis

- Overview of the Purchasing Function at ME
- Centralization vs. Decentralization in the Purchasing Structure at ME
  - Chief Purchasing Officer
  - Product Managers
  - Project Purchasing Managers
  - Purchasing Policies and Guidelines
  - Summary
- Influencing Factors Found in the ME Case
  - Context Related Factors
  - Information and Power Related Factors
  - Purchasing Related Factors
  - Summary
- Advantages and Disadvantages of the Purchasing Structure
  - Advantages of the Present Purchasing Structure at ME
  - Disadvantages of the Present Purchasing Structure at ME
- Summary of the Findings
5 CASE PRESENTATION AND ANALYSIS

In this chapter we will present and analyze the ME case. This chapter follows a systematic combining logic, where one simultaneously presents and analyzes the case, and is structured into four main parts. First we provide an overview of the purchasing function at ME. Second, we present a thorough description and analysis of how purchasing is currently being organized and conducted at ME. The description includes important actors and activities, and the analysis centers on identifying centralized and decentralized elements found within purchasing at ME. Third, we present some insights to why purchasing at ME is organized and conducted as it is through analyzing the influencing factors found in the case; and finally we present some perceived advantages and disadvantages related to how purchasing is organized at ME.

5.1 Overview of the Purchasing Function at ME

ME is, alongside Mesta Drift, the subsidiary of Mesta Konsern AS with the highest purchasing activity, accumulating to approximately NOK 1 200 mill in 2008. ME has a corporate purchasing department called “Material og UE-styring”, which may be translated to “Material and Sub-Contractor Control”. For the remaining of the thesis we will refer to this department as the centralized purchasing department at ME. This centralized purchasing department has been present since the establishment of ME in 2003 and is lead by the Chief Purchasing Officer (CPO), who has the final authority regarding all purchasing activities. At present time, the centralized purchasing department consists of 11 employees, including the CPO. The centralized purchasing department at ME further consists of eight Project Purchasing Managers (PPM), and two Product Managers (PM) (there are supposed to be three PMs, however at the time of the thesis one position was vacant). The CPO is located both at the Lysaker headquarter and at the operating-office at Berger, Skjedsmo, while the PPMs are located at the different project sites and the PMs are located at offices in Bergen, Berger and Skien, and travel between the different projects. The centralized purchasing department is in charge of developing agreements and entering contracts on behalf of the projects. However, project staff, such as foremen and project managers, is responsible for the operative purchasing activities, such as order placements, inspection and receivements of goods.
This brief overview of the purchasing function at ME reveals limited insights into the structure of the purchasing function. In addition to the centralized purchasing department, ME also has elements of decentralization in its purchasing function. Thus, the next section will elaborate on the elements of centralization and decentralization found in the structure.

5.2 Centralized and Decentralized Purchasing at ME

The illustration of purchasing at ME seen in figure 3 below might help in understanding the elements of centralization and decentralization of purchasing at ME.

The centralized purchasing department lead by the CPO is responsible for all of the purchasing activities for ME as a whole. This includes, among others, monitoring supplier markets, supplier selection and negotiation, in addition to developing purchasing policies and guidelines. The decentralized element in the purchasing structure at ME relates to the role of the PPMs; the PPMs are the centralized purchasing department’s representatives located at the different projects, and are responsible for the purchasing activities at the projects. The elements of centralization and decentralization in the purchasing structure at ME are further explained through looking at the role and responsibilities of the CPO, PMs, and the PPMs, together with other elements found in the purchasing structure at ME.
5.2.1 Chief Purchasing Officer

The CPO at ME is the head of the centralized purchasing department and has the highest decision authority. Some of the most important responsibilities for the CPO are to develop and maintain ME’s general agreements and to coordinate, control and monitor the different purchasing activities being performed in the organization. The CPO also supervises the calculation of projects and the choice of contracts in order to ensure coordination between projects.

5.2.2 Product Managers

The different PMs are responsible for supply of strategically important or high volume product groups and are important members of the centralized purchasing department. The PMs are dedicated to one product group each, which are concrete, water & sewerage and transportation.

The responsibilities of the PMs are to secure nation wide supply of the products within their own product groups, monitor the market for price and quality, search for potential suppliers, negotiate and maintain contracts and coordinate the supply between the different projects. During a project, the PM is responsible for following up the agreement with suppliers. This is usually done through monthly meetings between the representatives from the project and the suppliers. These meetings, lead by a PM, aim to evaluate the progress of the project and the performance of the actors, and are viewed as important for the collaboration between the parties.

The responsibilities of the PMs also include efforts for coordinating and consolidating purchasing requirements. One example can be to get the same suppliers of concrete to submit offers to several projects. Another example is to use contracts and suppliers from one project and investigate what benefits can be achieved by using these on a new project. However, such coordination may be hard to achieve, due to the geographical dispersed location of many of the projects and suppliers.

The first phase of any project is at ME referred to as the calculation and tender phase. In this phase, ME establishes a calculation team on a centralized level
responsible for making the tender that is to be submitted to the builder. The calculation team often consists of a project manager, site managers, a PPM, controllers, and other relevant staff members. In the calculation and tender phase, the responsibilities of the PMs are first to estimate the scope of the project within their respective product group; details are examined and a specification list is developed. The specification list contains, among others, an overview of what needs to be procured and delivered. Second, a written enquiry with all specifications and prerequisites is sent out to potential suppliers. The PM then obtains and evaluates these offers. Based on this evaluation, the PM recommends one supplier that should be used in the calculations for the project. The calculation team and the management are then in charge of the evaluation. If the tender is won, the PM has to establish the necessary contracts and agreements needed in the project.

5.2.3 Project Purchasing Manager

Whereas the PMs are dedicated to one or a limited number of products and responsible for the nation wide supply of these, the PPMs are dedicated to one or a limited number of projects and are responsible for the supply to these projects. Each project is thus assigned a PPM. Recently there has been a re-configuration of the role of the PPMs. Previously, the PPMs were in charge of the supply and purchasing at each project. However, they only occasionally visited the project sites; the PPMs were located at the centralized purchasing department at Lysaker. This arrangement did not provide the projects with the necessary follow up, nor did it provide the centralized purchasing department with the necessary control of the purchasing activities at the project site. The recent re-configuration has changed this. The role of the PPMs is now more decentralized and they are located at the project sites during the entire project lifetime. The PPMs are also paid by the projects, and thus becomes a cost for the project. At the same time they are members of, and report to, the centralized purchasing department. This enables the necessary follow up for the projects together with the necessary control for the organization.

The PPMs at ME are responsible for the purchasing activities at the different projects. These responsibilities include preparation of a procurement plan for the
project, in addition to developing *project agreements* with suppliers. These project agreements consist of the general agreements developed by the centralized purchasing department. However, where the need of supply for the project is not covered by these general agreements, the PPMs establish new supplier agreements. Thus, one important responsibility of the PPMs is to secure that all the necessary contracts with suppliers are established in time. However the PPMs do not conduct the operative purchasing activities such as order placements. These activities are done by the projects staff, such as foremen and site managers, and should be inline with the project agreements (see appendix 7). Hence, one of the major responsibilities for the PPMs is to monitor and control that the project agreements are being utilized by the projects. Project specific agreements and general agreements are further elaborated in section 5.1.6.

A PPM can have the responsibility for one or multiple projects depending on the size. (e.g. a NOK 500 mill project requires the full attention of a PPM, while other PPMs can have several NOK 20 mill projects.) When a PPM is fully dedicated to one project, he or she is physically located out on the project for the entire duration of the project. When a PPM has responsibilities for several projects, the PPM’s time is divided among the projects he or she is involved in. This is done because one wants to have a more systematic follow up and control of each project.

During the calculation and tender phase, one of the responsibilities of the PPMs is to determine which elements in the tender that can be done in-house and which elements need to be bought externally. The PPM searches for, evaluates and selects potential suppliers, and includes these into the final calculation. The project manager approves the suggestions from the PPM, and if ME is awarded the contract, the PPM is responsible for establishing contracts with vendors selected in the calculation phase. The PPM is also responsible for ensuring that all areas of the project are covered by supplier contracts. Again, it is the project manager that approves these contracts and assures that all areas are covered, both in terms of what is needed on the project but also on what the builder requests. In the early phases of a project the important contracts are prioritized while the rest is often dealt with on a later stage of the project.
5.2.4 Purchasing Policies and Guidelines

The centralized purchasing department has developed and is responsible for the general agreements used at ME. The general agreements contain lists of approved suppliers and quantities for specific materials and products. These agreements should be used by all of ME’s projects. However, not all of the agreements are necessary for all of the projects. Thus, as mentioned, the PPMs develop project agreements based upon a selection of the general agreements. The project agreements are divided into production agreements and administrative agreements. Production agreements contain an overview of the suppliers used directly for production and construction of the project, such as suppliers of concrete, steel and reinforcement. Administrative agreements provide an overview of the suppliers used in an administrative manner, such as office supplies, food and travel. Appendix 5 and 6 provide abstracts of such agreements used at the E6 Gardermoen project.

Usually the production agreements are absolute and are to be followed, while the administrative agreements are divided into three different categories: red, yellow and green, as seen in appendix 6. The agreements in the “red” category are absolute, and are to be followed. For the agreements in the yellow category, the project can to some extent find other suppliers in the market, and the green agreements are completely optional.

Occasionally, the loyalty to these agreements is weak. The interviewed PPM expressed its concern regarding this and stated that:” what is the point of making good contracts if no one follows them?”1. One of the reasons for this lack of loyalty is that old purchasing habits and practices from Statens Vegvesen sometimes make it difficult to adapt to the new routines and agreements. In addition, larger construction projects, like ME’s E6 Gardermoen project, might benefits from negotiating agreements with suppliers instead of utilizing the existing general agreements. This is because large projects have enough volume to get the necessary scale economies. However, for ME, the project portfolio consists, not only by large projects, but also by mid size and smaller projects. These projects do not have the necessary scale needed to negotiate contracts that

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1 Interview with Project Purchasing Manager at the E6 Gardermoen Project. Dal, 04.03.2009
are more beneficial than the already existing general agreements. Since it is often so that the prices specified in a general agreement are negative correlated with volume; the more you buy, the lower the unit costs, the CPO believes that the company as a whole benefits when also the larger projects efficiently utilizes the general agreements.

Traditionally, there has been little supervision of the loyalty towards the purchasing policies and guidelines by the centralized purchasing department at ME. The mentality has been that “as soon as the contracts are signed, the job is done”. These challenges have lead to a higher focus on control. It is important to assure that the operative purchasing activities are in line with the routines and agreements, predefined by the project agreements. So, in order to assure that these agreements are used as intended, the loyalty of the project to these agreements is being measured and the centralized purchasing department follows up any deviations. The PPMs and PMs are responsible for following-up the different purchasing activities, such as ordering and inspection. In addition, the PPMs provide the necessary staff, such as foremen, project-managers and other relevant personnel with training in procurement activities. This training covers the content of the agreements, how to handle them, and clarification of the authority.

In addition to general agreements, the centralized purchasing department defines the authority of purchasing for each project. This clarification of authority is presented as a matrix containing rank of staff and budget limits depending on the purchasing situation. Appendix 7 is an example of such a matrix specified for the E6 Gardermoen project. ME has also developed authority matrices within purchasing for the company as a whole, this matrix can be seen in appendix 8.

5.2.5 Summary

From the analysis above one can see that purchasing at ME has elements of both centralization and decentralization. It may as such be seen as a hybrid structure. The centralized elements are seen through the strong centralized purchasing department lead by the CPO. It also strives for coordinating the purchasing activities between the different projects, through the role and responsibilities of the different PMs. In addition the centralized purchasing department has
developed both general agreements and defined division of authority regarding purchasing at the different projects. This is mainly done in order to assure the adequate control on the company’s purchasing activities by the centralized purchasing department.

The decentralized elements of the purchasing structure can be seen through the fact that the different projects are responsible for their own purchasing activities through the different PPMs. Even though the PPMs are members of the centralized purchasing department and reports to the CPO, they are dedicated to, located at, and perceived as members of the project. Thus, the role of the PPMs is the major element of decentralization in the purchasing structure at ME, along with the fact that the operative purchasing is conducted by project staff.

The Purchasing structure at ME is a hybrid structure with relatively strong central control, through its purchasing department, together with local presence at the projects through the different PPMs; the PPMs are the connection between the centralized purchasing department and each of the projects.

5.3 Influencing Factors in the ME Case

We have previously identified several factors that are said to have an influence on the structure of the purchasing function from a theoretical point of view. By using ME as a case study, we get both empirical insights into these factors and new insights into which factors that are said to affect the choice of centralization vs. decentralization. The factors influencing this choice at ME can, similar to our theoretical chapter, be classified into context related factor, power and information related factors and purchasing related factors.

5.3.1 Context Related Factors

One of the factors influencing the structure of the purchasing function at ME was uncertainty. At ME, the purchasing needs for each project, in terms of volumes, standards and quality, are well specified by both the project owner and in the calculation phase of the project. This is then further specified in the production agreements. The interviewed PM argued that this leads to low uncertainty within
the purchasing activities regarding the large product groups\(^2\). However, during a
project there usually occur changes and adjustments related to supply and
progress. This is usually not specified before the start of the project, and may
require quick response in order to avoid project delays. The interviewed PPM
argued that there is a risk of full production stop as a consequence of lack of
supply, and since the costs of production stops at a project are extremely high,
there are risks of substantial costs due to failure in supply\(^3\). This is often caused by
lack of small parts, and not large and important components that are thoroughly
specified in the progress plan. In relation to this, the role of the PPMs was
highlighted: the PPMs are closely related to the project and have good insights to
the problem situations. Thus, they are able to handle unforeseen situations
effectively. There is usually low uncertainty related to the supply of the large
product groups covered by the PMs. However, there exists uncertainty
surrounding the progress of a project. Thus, uncertainty and high failure was a
major influencing factor for a decentralized structure at ME since each projects
need the flexibility to quickly respond and adjust to unforeseen events.

5.3.2 Information and Power Related Factors

Information and power related factors influencing purchasing structure at ME, is
to some extent based on the organizational culture inherited from Statens
Vegvesen. ME has tried to develop a new organizational culture with new
purchasing routines and protocols. However, old habits die hard: there still exist
perceptions and preferences among ME’s staff towards certain suppliers, which
often are incompatible with ME general agreements. Based on this, the CPO
argued that some parts of the organization are not, at the present time, mature
enough to handle the full purchasing responsibility: “the present maturity at ME is
not able to keep and develop the present purchasing system. A situation where the
projects are given full responsibility, could lead to a situation where each projects
negotiate their own deals and act independent of Mesta as organization”\(^4\).

\(^2\) Interview with Product Manager at the E6 Gardermoen Project. Skjedsmo, 27.05.2009.
\(^3\) Interview with Project Purchasing Manager at the E6 Gardermoen Project. Dal, 03.06.2009.
\(^4\) Interview with Sjef UE og Materialstyring (Chief Purchasing Officer) of Mesta Entreprenør.
Skjedsmo, 27.05.2009.
In addition, as mentioned above, large projects tend to not want the general agreements. Their argument is that these agreements are mostly targeted at smaller projects\(^5\). This may lead to purchases being made outside the general agreements and not in correspondence with the preferences of the central purchasing department and ME as a whole. Another issue at ME is the perception among some of the staff that “they are them self the best buyer”. The combination of this attitude and the old habits from Statens Vegvesen has lead to disagreement with the general agreements.

As seen, there exist several conflicting views and different perceptions at ME regarding its purchasing activities. This is a major argument for having a centralized purchasing structure, since this is needed to have control of the purchasing activities and thus the purchasing costs, in order to minimize potential agency costs. The CPO has argued that the effects of having a centralized organization and firm control outweigh the costs of running and maintaining the department; the potential agency costs outweigh the current bureaucracy costs\(^6\).

### 5.3.3 Purchasing Related Factors

Geographical location has been highlighted by all of the interviewees as having an effect on how ME has structured its purchasing function. It was argued that dispersed geographical location of ME’s projects and its suppliers hampers the coordination and consolidation of supply, but still was as a factor favoring a centralized structure. As presented early in the paper, ME has projects ranging all over Norway. Even though Norway is a small country in the global context, the dispersed geographical location of projects and suppliers are looked upon as a challenge at ME. These challenges are largely related to other factors such as supply market structure, price fluctuations and available information.

The supply structure often varies depending on the geographical location and type of product. In urban areas, such as large-medium sized cities and industrial areas, there are usually two or three suppliers. However in the country side there might

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\(^5\) Interview with Project Manager at E6 Gardermoen Project. Dal, 03.06.2009

\(^6\) Interview with Sjef UE og Materialstyring (Chief Purchasing Officer) of Mesta Entreprenør. Skjedsmo, 27.05.2009.
be just one qualified supplier. During our study we found that some product groups have several suppliers; however there usually exist only two to three qualified suppliers. Examples of such oligopolistic supply market structures are found within areas such as concrete, signs, safety and railings. In addition, the trend for the supply markets of ME is that even more markets may be characterized as oligopolistic: “A major concern is that an increasing share of the market is characterized by two to three actors. The large companies buy the smaller ones and grow even bigger and stronger”\(^7\). According to the CPO, such oligopolistic market situations should be handled at a centralized level in order to leverage the purchasing requirements and have control over the purchasing situation\(^8\). In addition it is important for ME to have control of the supply markets, through market knowledge and monitoring activities, e.g. through the role of a PM.

In an attempt to handle the situation of lack of qualified suppliers, ME has tried to search for suppliers abroad. Even though, such attempts have yielded limited success, ME believes its centralized purchasing structure manages the monopoly or oligopoly situations found in many markets in a good manner. However, ME emphasizes that in such situations, the purchasing process needs to be dealt with at several levels. A centralized approach ensures that there is one person, at a corporate level, acting as a key account manager responsible for negotiating terms and conditions with a supplier. At the same time, the projects may handle the ordering of goods and daily interactions with the supplier, as long as there exists an agreement. In addition, using a centralized approach has proven to increase the attention at the supplier organization. According to the CPO “It is important to approach as one entity in order to avoid that suppliers exploit our organization”\(^9\).

There exist large price fluctuations between different geographical parts of Norway, in addition to price fluctuations on the larger product groups, due to fluctuations in global supply and availability of raw materials. Due to this, it is

\(^7\) Interview with Project Purchasing Manager at the E6 Gardermoen Project. Dal, 03.06.2009
\(^8\) Interview with Sjef UE og Materialstyring (Chief Purchasing Officer) of Mesta Entreprenør. Skjedsmo, 27.05.2009.
\(^9\) Interview with Sjef UE og Materialstyring (Chief Purchasing Officer) of Mesta Entreprenør. Skjedsmo, 27.05.2009.
vital for ME to continuously monitor the markets in order to identify when it is most favorable to enter agreements and contracts of supplies. This is primary done by the PMs and the centralized purchasing department. The CPO argued that it is necessary for ME to monitor and try to foresee price fluctuations in order to negotiate and enter the most favorable supply contracts; it is necessary to have control on the different supply markets\(^\text{10}\). This is necessary in order to keep the purchasing costs as low as possible. However, it was argued that delegating these responsibilities to the different projects could hamper such supply market knowledge and control; for ME, it is vital that the central purchasing department is in control and is able to enter long-term agreements on behalf of the entire company.

Another factor that was said to favor a centralized structure at ME was in relation to human resources. ME operates in an industry that is in need of relatively high technologic and engineering expertise. In addition it is necessary to maintain the purchasing professional skills\(^\text{11}\). Purchasing expertise is needed in order to ensure the necessary control and competence for making the good contracts and agreements. The PMs have good insights to both product and market of their respective product group. The PPMs on the other hand needs to have broad insights into several product groups. In addition, the PPMs are located at the project sites and are often responsible for training the relevant personnel in purchasing routines and activities. This is done in order to ensure that the staff follows the routines and regulations set by the centralized purchasing department and the project management. The training and purchasing expertise provided by the PPMs are supposed to aid in maturing the company, and requires good knowledge and expertise regarding the purchasing profession by the PPMs. At the same time, a more technological expertise is needed in order to ensure correct contract specification and the quality of agreements. The technical expertise is largely provided by the PMs, whom are responsible for the large product groups and the market situation of these. The CPO stressed that having a centralized purchasing department that ensures that the adequate level of expertise and

\(^{10}\) Interview with Sjef UE og Materialstyring (Chief Purchasing Officer) of Mesta Entreprenør. Skjedsmo, 27.05.2009.

\(^{11}\) Interview with Sjef UE og Materialstyring (Chief Purchasing Officer) of Mesta Entreprenør. Skjedsmo, 27.05.2009.
knowledge is secured and maintained, was important. He stated that “with a
decentralized purchasing structure, it would be impossible to have the necessary
expertise and knowledge as found in the centralized purchasing department”\(^\text{12}\).

At ME, there were several purchasing related factors influencing the choice of
purchasing structure. Since geographical location is related to price fluctuations
and supply market structure, it was a factor at ME for favoring a centralized
structure. In addition, the need for acquiring and maintaining both technical and
purchasing expertise were said to favor a centralized purchasing structure at ME.

### 5.3.4 Summary

The analysis above shows that there are several factors that have influenced the
choice of purchasing structure at ME. The factors influencing choice of structure
at ME was, similar to our theoretical chapter, classified into context related factor,
information and power related factors and purchasing related factors. Within
context related factors, uncertainty was mentioned as a factor favoring
decentralization, since the projects need to respond and adjust to unforeseen
events in order to avoid high failure costs. Information and power related factors
were said to favor centralization. In this context, centralization was needed in
order to achieve the necessary level of control due to conflicting views and
perceptions regarding purchasing activities and in order to minimize potential
agency costs. Within purchasing related factors, several factors were said to favor
a centralized purchasing structure. Geographical location was highlighted as
important since it influences other factors such as supply market structure and
price fluctuations. The supply market structure of ME is characterized as
oligopolistic and monopolistic markets, and the CPO argued that such market
conditions are well handled by a centralized purchasing department\(^\text{13}\). Price
fluctuations exist in different regions of Norway, and a centralized purchasing
department was said to manage these fluctuations in a good manner, since it may
monitor the markets and foresee price fluctuations. Another important factor

\(^{12}\) Interview with Sjef UE og Materialstyring (Chief Purchasing Officer) of Mesta Entreprenør.
Oslo, Lysaker, 24.02.2009.

\(^{13}\) Interview with Sjef UE og Materialstyring (Chief Purchasing Officer) of Mesta Entreprenør.
Skjedsmo, 27.05.2009.
within purchasing related factors favoring centralization at ME is the expertise required. A centralized purchasing enables a pooling of human resources and expertise, and is thus able to secure an adequate level of knowledge and expertise.

### 5.4 Advantages and Disadvantages of the Purchasing Structure

As described previously, the purchasing structure at ME can be classified as a hybrid structure. In addition, we have identified what factors influences this structure at ME. In this section we will examine the purchasing structure in terms of advantages and disadvantages.

#### 5.4.1 Advantages of the Present Purchasing Structure at ME

According to ME, its current purchasing structure possesses several advantages. First, the CPO argued that by having a centralized purchasing department, one assures that all the purchasing policies and guidelines are followed by the projects\(^{14}\). According to the CPO this ensures control over the purchasing costs for each project. The CPO also argued that some of the advantages with the present purchasing structure at ME are related to the roles of both the PMs and the PPMs.

The PPMs equip both the projects and ME with the necessary maturity regarding purchasing profession. In addition, the PPMs provide the necessary training of relevant staff at the projects, which ensures that the purchasing activities are performed according to ME procedures and routines. As mentioned by the CPO, this would have been difficult without the control of the PPMs. Another advantage regarding the role of the PPMs is the continuity that is ensured since PPMs stay with the project from the tender phase until the end of the project. The interviewed PPM argued that this allows the purchasing function to be familiarized with the project, the progress of the project, its suppliers and equipment\(^{15}\). This has proven to be advantageous for both the projects and ME. With the involvement of the PPMs, the purchasing function is always on top of

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\(^{14}\) Interview with Sjef UE og Materialstyring (Chief Purchasing Officer) of Mesta Entreprenør. Skjedsmo, 27.05.2009.

\(^{15}\) Interview with Project Purchasing Manager at the E6 Gardermoen Project. Dal, 03.06.2009.
the project and the command line between the field and the responsible purchaser is short. The short line of communication between the project and the purchasing function, through the local presence of the PPMs, are also stressed as one of the advantages with the purchasing structure at ME. The interviewed PPM argued that since they are located close to the project, emergency situation could be dealt with efficiently16.

Regarding the role of the PMs, it was argued that coordination in the purchasing activities was an advantage. As mentioned before, the role of the PMs enables ME to achieve economies of scale by pooling the purchasing requirements for several projects. However, the interviewed PM argued that this is an area where ME has greater potential17. In addition, the PM argued that by having centralized structure with different PMs responsible for the larger product groups, ensures that ME has control and knowledge regarding the supply market, including price fluctuations and supplier capacities.

5.4.2 Disadvantages of the Present Purchasing Structure at ME

The purchasing structure at ME also possesses to some disadvantages. Both the CPO and the PPM argued that much of these disadvantages are related to the role of the PPMs. The interviewed PPM argued that since there is only one PPM located at each project site, they are often isolated from the rest of the purchasing function. According to the PPM, this may lead to duplication of effort in the purchasing activities at ME. The PPM argued that “since we are “alone” at the project sites, we do not have many to lean on. I sometimes face problems, which others may have solved before. Thus, there is a risk to “reinvent the wheel” multiple times”18.

The CPO argued that since the PPMs are located at, and inflict costs for the project, the project management often wishes to have control and utilize the PPMs according to their own needs. According to the CPO, this can lead a situation where the role of the PPMs becomes just a clerical function for the projects;

16 Interview with Project Purchasing Manager at the E6 Gardermoen Project. Dal, 03.06.2009.
17 Interview with Product Manager at the E6 Gardermoen Project. Skjedsmo, 27.05.2009.
18 Interview with Project Purchasing Manager at the E6 Gardermoen Project. Dal, 03.06.2009
instead of ensuring that the purchasing activities follows the predetermined guidelines, including the general agreements and the division of authority, the PPMs are set to do support activities for the projects such as invoice control\textsuperscript{19}.

Another disadvantage with the purchasing structure at ME is that the needs of smaller projects risk being neglected by the centralized purchasing function. The PM argued that by having a centralized structure, often much of the focus is directed towards the larger projects\textsuperscript{20}. Within the purchasing function at ME there are challenges related to giving the needed support to the smaller projects.

5.5 Summary of the Findings

The purchasing structure at ME is classified as a hybrid structure with elements of both centralization and decentralization. ME has a centralized purchasing department which develops purchasing policies and guidelines that are to be followed by the different projects. Important members of this centralized purchasing department are the CPO, PMs and PPMs. The PPMS however, are also an important part of the decentralized elements in the purchasing structure at ME since they are located at the projects and responsible for all of the projects purchasing activities.

The structure at ME was chosen based upon some influencing factors. These factors are similar to the ones found in the literature, and may thus be classified into context, information and power and purchasing related factors. Within context related factors, uncertainty had a major influence regarding the choice of structure. At ME, uncertainty is related to specification of purchasing requirements, and especially related to supply of smaller parts, not covered by the different PMs. At ME, such uncertainty called for decentralization in order to respond efficiently to potential emergency situations. Information and power related factors also affected the choice of structure at ME. Due to conflicting views regarding purchasing activities, centralization is needed in order to have the sufficient control of the purchasing activities and in order to avoid potential

\textsuperscript{19} Interview with Sjef UE og Materialstyring (Chief Purchasing Officer) of Mesta Entreprenør. Oslo, Lysaker, 24.02.2009.

\textsuperscript{20} Interview with Product Manager at the E6 Gardermoen Project. Skjedsmo, 27.05.2009.
agency costs. The purchasing related factors that influence the choice of structure at ME was geographical location, supply market structure, price fluctuation and expertise required. These factors all called for a centralized structure in order to get the necessary control over the geographically dispersed suppliers, price fluctuations and to secure the high expertise required.

ME experiences both advantages and disadvantages with its present purchasing structure. Some of the advantages with the hybrid structure, as perceived by ME, are that it provides the organization with the necessary maturity and training of purchasing staff. In addition, the decentralized PPMs provide the purchasing function with continuity at the projects, short line of communication and local presence. The disadvantages of the hybrid structure at ME relate to risk of isolating the PPMs from the rest of the purchasing function. This may lead to duplication of efforts and a situation where the PPMs become a clerical support function for the projects.
6 Discussion

- Purchasing Structure at ME
- Factors Affecting Purchasing Structure
  - Context Related Factors
  - Information and Power Related Factors
  - Purchasing Related Factors
  - Summary
- Advantages and Disadvantages
  - Advantages Related to Purchasing Structure
  - Disadvantages Related to Purchasing Structure
  - Summary
6 DISCUSSION

This chapter will elaborate and discuss different elements of the purchasing structure at ME in light of the presented literature. This chapter will follow the same outline as the previous chapters. First, this chapter will take a closer look at purchasing structures. Second, this chapter will discuss the rationale and influencing factors for choosing the different purchasing structures. Finally, this chapter will take a closer look at the potential advantages and disadvantages related to purchasing structures.

6.1 Purchasing Structure at ME

The presented literature highlights the construction industry as being inherently decentralized. However, the case analysis has shown that the purchasing structure at ME is a hybrid solution. As mentioned earlier, a hybrid structure is a mix of both a centralized and decentralized structure. However, classifying the structure as a hybrid solution does not reveal to which extent the structure is more of a centralized or a decentralized structure. By examining the purchasing structure at ME, in light of the descriptions of the two extreme purchasing structure presented in the literature, one could argue that the hybrid structure at ME in fact leans towards centralization. First, this can be seen by the strong purchasing guidelines and routines regarding how to perform purchasing and who is allowed to perform purchasing at the different projects, in addition to general agreements concerning which suppliers should be used. Second, ME strive for coordination and consolidation of their purchasing requirements in order to achieve economies of scale. According to van Weele (2005), such product specification, supplier selection, and contract negotiation and coordination of activities are characteristics of a centralized purchasing department. Even though the case analysis also showed that the hybrid structure at ME had elements of decentralization, one could argue that there are stronger elements of centralization than decentralization in the purchasing structure at ME. This is in contrast with the literature which states that the construction industry is inherently decentralized due to the project uniqueness and complexity found in construction. In order to get a further understanding for why ME has structured its purchasing function the way it has, it is useful to take a closer look and discuss the factors which are said
to influence the purchasing structure in the literature and combining these with the findings in the ME case.

6.2 Factors Affecting Purchasing Structure

The factors affecting purchasing structure identified in literature were classified into context related factors, power and information related factors, and purchasing related factors. From the case analysis, it can be argued that the influencing factors at ME compares to the factors found in the literature. However, there are some elements in the ME case that can contribute to further understanding of why firms in the construction industry choose their structure. In the following sections, the three categories of influencing factors will be discussed by using insights from our case analysis together with the lessons learned from the theory.

6.2.1 Context Related Factors

In the literature, size, task interdependence and task uncertainty were by the structural contingency theory identified as some of the context related factors influencing the choice of purchasing structure. In the ME case study, size and task interdependence were not said to influence the choice of purchasing structure. However, task uncertainty was identified as an important context related factor favoring a decentralized structure. This is in line with the structural contingency theory, where high task uncertainty leads to a situation where “less work can be scheduled in advance” and the firm need to rely more on ad hoc solutions (Donaldson 1999, p. 52). Hence, there should be a reduction in formalization and the firm should have a more decentralized structure (Donaldson 2001). As mentioned, the task uncertainty in the purchasing activities at ME relates to purchasing requirements; what supply is needed, when is the supply needed and where is the supply needed. Since uncertainty in purchasing requirements may cause failure in supply, which again may cause a risk of full production stop, ME has an element of a decentralized purchasing structure through the PPMs presence at the project sites. Thus, task uncertainty was found to be an important factor for a decentralized structure.
However, in addition to being a driver for a decentralized structure, the ME case showed that task uncertainty also was a driver for centralization. In order to reduce the task uncertainty, and thus the need for ad hoc solutions, ME has a centralized purchasing department. At ME, the centralized purchasing department monitors the progress of the projects. Vital in this, are the different PMs. By having the responsibility of the larger product groups, the PMs manage to reduce the uncertainty related to the supply, through good supply marked knowledge and close follow up of the suppliers during the lifetime of the different projects. This way, the ME manages to reduce the uncertainty related to the supply of the larger product groups, and supply of these are more predictable and can be scheduled in advanced.

Hence, the ME case supports the theory in that task uncertainty is a driver for a decentralized structure, in order to cope with the uncertainty found in the purchasing requirements. However, the ME case also shows that a centralized purchasing structure may be needed when faced with uncertainty in order to minimize the uncertainty in the purchasing requirements. Thus, at ME, uncertainty is often related to the supply of smaller parts, and not supply related to the larger product groups.

6.2.2 Information and Power Related Factors

The literature also identifies power and information related factors affecting purchasing structure. At ME, these factors were said to be the major influencing factors for a centralized structure. To recap, the agency theory holds that potential agency costs occurs when there are conflicting goals between the principal and the agent, and when it is difficult or expensive for the principal to monitor and control what the agent is doing (Eisenhardt 1989). At ME, such potential agency costs were among other things seen in projects as disloyalty towards the general agreements. It was argued that the corporate culture inherited from Statens Vegvesen, together with the immaturity of the organizations where reasons for the agency costs found in the ME case. However, there might also be some construction specific elements that enhance the risk of agency costs at ME.
Construction companies have a high focus on the individual projects. This is also the case with ME where the projects are responsible for its own financial results, and gets measured after the performance of the project. At ME, this has led to a situation where project management wants to control the costs and hence the purchasing activities, since they are measured by the financial performance. This focus on the individual projects, might lead to little focus, from the projects management’s perspective, on ME’s performance as a whole. This can enhance the conflicting goals between the centralized purchasing department and the project management, and further increase the potential agency costs; the project management are mostly concerned with their own performance, whereas the centralized purchasing function are responsible of the purchasing activities for ME as a whole.

The above might to some degree explain why power and information related factors are so emphasized. ME needs to have control over the purchasing activities and thus needs to have the scope of the company as a whole, in order to have control over the cost of purchasing, which accounts for about 70 percent of the total costs. If the projects are themselves responsible for their purchasing activities, it might be vital that the projects are not only measured on their individual performance, but also after the performance of ME as a whole. With such measurement in place, it would also be important to establish incentives for the projects to act according to the goals for the entire organization, and not only according to the goals of the individual projects. This way, the general agreements might be efficiently utilized without the monitoring of the centralized purchasing department. However, with the current situation at ME, the need for control of the projects’ purchasing activities is a major factor for a centralized purchasing structure.

6.2.3 **Purchasing Related Factors**

The purchasing structure at ME was also chosen based upon some purchasing related factors. In the literature, several factors affecting purchasing structure were identified in the SCM and purchasing literature, including product type, geographical location, supply market structure, savings potential, expertise required, price fluctuations and political climate, and customer demands. In the
ME case, some of these factors was emphasized and some was looked upon as less relevant.

Product type and savings potential were two factors presented in the literature affecting purchasing structure. These factors have had an influence on the purchasing structure at ME, since the PMs are responsible for the supply of the larger product groups. However, within the literature both these influencing factors are strongly related to consolidation of purchasing requirements. Van Weele (2005) argues that the greater the communality of the products being purchased, the more benefits can be obtained by having a centralized structure. In addition, he argues that when the price of supply is sensitive to volume, a centralized purchasing structure can accumulate the quantity in order to reap saving potential (van Weele 2005). At ME however, consolidation of purchasing requirements was not emphasized as important when choosing purchasing structure. The reason for this might be due to project uniqueness.

The majorities of ME’s projects are constructed for Statens Vegvesen, and often fall into the category construction of transportation infrastructure. The CPO at ME explained that the fact that many projects have the same project owner, often leads to similarities in the project specifications and standards. Hence the uniqueness of ME projects may be less substantial than for other constructing firms. However, the uniqueness of a project is not only determined by the project specifications. Project uniqueness can be found in the ME case in terms of geographical location and project lifetime. As mentioned, ME has currently 20 projects, with geographical location ranging from Lindesnes to Honningsvåg. Hence, the location of each project is unique. In addition, almost all of ME projects are in different stages in their project lifetime. During a project, the need for supply differs from stage to stage; supply needed in early stages, differs from the needs of later stages. Hence, one can argue that the projects in the ME case is unique in terms of purchasing requirements. However, as mentioned above, there are similarities found between the projects’ purchasing requirements within the larger product groups handled by the different PMs, while the remaining purchasing requirements are often classified as unique and hard to consolidate. In addition, as previously mentioned, each project is to large extent viewed as an own entity. The
project uniqueness at ME makes it difficult to achieve synergies and scale economies between them.

Even though project uniqueness makes it hard for ME to achieve synergies between the projects regarding purchasing requirements, ME still has centralized PMs responsible for the larger products groups. Within these product groups, there are some efforts for consolidation in order to get scale advantages. However, the potential of the consolidation of purchasing requirements within these product groups are greater than what is currently being utilized by the PMs. The reason for this is that the main rationale behind having the centralized PMs may not be consolidation of purchasing requirements, but relates more to some other purchasing related factors; geographical location, supply market structure and price fluctuation.

To recap, van Weele (2005) argued that with geographical dispersed business units, many firms utilizes a decentralized purchasing structure, due to difficulties to achieve coordination across international and cultural boards. However, at ME geographical location is a stronger driver for a centralized purchasing structure. The reasoning for this is its connection to supply market structure and price fluctuations. Since supply structure and prices varies depending on geographical location, it is important to monitor and have control of the market in order to secure delivery of supplies to the projects. Through the different PMs, ME secures that the purchasing function has good supply market knowledge. It enables ME to closely follow the price fluctuations, in order to have a better understanding of what the current market prices are. Since many of the supply markets have only one or two qualified suppliers, such understanding might be important when negotiating prices. In addition, when facing price fluctuations, the PMs give ME the possibility of strategically buying larger quantities of goods for storage when prices are good. The PMs then has the possibility to allocate such stored goods to the projects when needed.

Thus, even though it might be difficult for ME to achieve cost savings through consolidation, ME utilizes cost savings through the centralized PMs since it gives ME good supply market knowledge, and enables ME to take advantage of price fluctuation in the market.
6.2.4 Summary

As seen from the discussion above, looking closer at the factors influencing purchasing structure in the ME case might explain why ME has a strong element of centralization in its purchasing structure. The factors found in the ME case are similar to the factors identified in the literature. However, as discussed above, the ME case study has been an example of some elements regarding the influencing factors that deviate from the presented literature. First, the context related factor, task uncertainty, was in literature said to favor a decentralized structure due to the need for ad hoc solutions. In the ME case however, task uncertainty where also a driver for a centralized structure in order to minimize uncertainty related to purchasing activities. Second, the discussion above shows that power and information related factors had a major importance for choosing a decentralized structure at ME, especially due to high focus on individual projects. Finally, dispersed geographical location of the projects was at ME a driver for centralization due to its connections with price fluctuations and supply market structure. This way ME can achieve savings potential, not through consolidation, but through monitoring the supply markets, and through securing supply market knowledge.

6.3 Advantages and Disadvantages

The advantages related to the two extreme structures, centralization and decentralization could as mentioned in section 4.3.3 be summarized into the terms control and flexibility. In the literature, Leenders and Johnson (2000), argues that hybrid structures strives at eliminating the disadvantages of both centralized and decentralized structures, while at the same time trying to keep the advantages of both of them. With its hybrid structure, ME has tried to achieve this through balancing control and flexibility in its purchasing structure. By doing this, the purchasing structure at ME possesses many of the advantages of both centralization and decentralization presented in the literature. In addition, the ME case shows that there are distinctly different advantages related to the centralized and decentralized elements of its hybrid structure. Thus, the ME case supports the advantages and disadvantages presented in theory, in addition to the argument by Leenders and Johnson who stated that the advantages related to centralization and decentralization are significantly different. However, unlike the theory, also
presented by Leenders and Johnson, there are still some disadvantages related to
the hybrid structure at ME. This, and other elements related to the advantages and
disadvantages will be discussed below.

6.3.1 Advantages Related to the Existing Purchasing Structure at ME
As mentioned above, the hybrid structure at ME possesses many of the
advantages of centralization and decentralization presented in the literature. One
of the major advantages related to the hybrid structure at ME, is that it gives both
control and flexibility.

As discussed above, the centralized purchasing function at ME gives the needed
control on the purchasing activities at the individual projects, and thus reduces the
potential agency costs that might occur. However, in addition, centralization gives
ME control on regarding its human resources and expertise. The purchasing
structure at ME enables ME to employ highly skilled PMs with expertise
regarding their product groups. This level of expertise could be difficult to obtain
by having a purely decentralized purchasing structure. One might assume that the
larger projects could both acquire and justify having personnel with such expertise
responsible for supplying specific product groups, however, with smaller projects
this might not be the case. Hence, without the centralized PMs, ME would loose
the supply market control and potential cost savings related to the role of the PMs,
and one could assume that this would “hit” the smaller projects the hardest.

The hybrid purchasing structure at ME also gives ME flexibility in its purchasing
activities. By having decentralized PPMs located at the project sites, ME achieves
many of the advantages related to decentralization presented in literature. By
having the decentralized PPMs responsible for all the purchasing activities at the
project sites, ME gets an increased speed of response in case of emergency
situation, and local proximity to the projects where the PPMs get a better
understanding of the projects needs due to their involvement in the projects from
the calculation phase to the projects are finished. The literature also presented
advantages of decentralization relating to motivation of staff and the financial
responsibility of the business. However at ME, these elements might be more
related to the disadvantages of its hybrid purchasing structure.
6.3.2 Disadvantages Related to the Existing Purchasing Structure at ME

According to the theory, firms utilizing a hybrid purchasing structure seek to eliminate the disadvantages related to both centralization and decentralization (Leenders and Johnson 2000). However, in the ME case, there are some disadvantages related to the purchasing structure and one can argue that these relates to motivation of staff and financial responsibility.

A decentralized purchasing structure is said to give more motivated staff (Carlisle 1974). The reasoning is that decentralization gives a broader and more flexible job definition. In addition, purchasing personnel are more involved in the decision-making and management activities, which may satisfy individuals need for recognition, status and accomplishment (Carlisle 1974). Within the hybrid structure at ME, the decentralized element is the different PPMs located at the project sites. In a fully decentralized purchasing structure, a purchasing function exists at business unit, division or project level. In the ME case, it would be reasonable to assume that at least the larger projects would have a purchasing function consisting for more than one PPM, given the scale of their operations. In this case, the motivational effects could be achieved as described in the literature, since one can assume that the purchasing personnel would to a larger extent be involved in decision-making and management activities. This is because one can assume that they would be integrated members of the project organization.

However, as presented in our case analysis, having the PPMs decentralized at the projects, does not have the motivational effects presented in literature. First, the centralized purchasing department is developing the purchasing guidelines and policies, and the services of the different PPMs are just being “rented out” to the projects. In addition, there is only one PPM located at each of the projects. This might lead to, as mention in the case analysis, a situation where the PPMs have a feeling of being alone without having any to lean on. So, instead of having motivational effects on the purchasing personnel, decentralization may lead to a feeling of isolation and distance from the rest of the purchasing function. As mentioned in the case analysis, this might lead to duplication of efforts regarding the purchasing activities. However, it might also lead to a situation where the PPMs loose their role as the purchasing representative at the projects. This last point is further explained by the fact the projects are responsible for their financial performance without having the control of their purchasing related costs.
As mentioned before, the PPMs are responsible for all the purchasing activities at the projects which they are located at. In addition, their presence also inflicts a cost for these projects. Baily et al. (2005) argued that if business units operate as costs centers, the business units should be responsible for their own purchasing activities, since materials represents a large portion of total costs. As seen in the case analysis, this argument is also found at ME. Since the projects are, among other things, measured after their financial performance, project management at ME wants to control the costs of purchasing. Thus, there are conflicting goals between the centralized purchasing department and project management. The fact that the PPMs are locate at the project sites might lead to a situation where the PPMs are more loyal towards the individual projects than the centralized purchasing function and becomes a clerical support function under the project management instead of the purchasing departments representative. Without a strong link between the decentralized and centralized elements of the purchasing structure, the company’s ability to monitor and control the purchasing activities at the different projects could be hampered. E.g. general agreements and purchasing policies that are looked upon as irrelevant for the projects might be ignored. Hence, one could argue that by not having a close link between the centralized and decentralized elements of a hybrid structure, causes the different business units, divisions or projects to loose the scope of the company as a whole; individual business units, divisions or projects only considers their own needs, and looses the company wide perspective.

6.3.3 Summary

As seen from the discussion above, the purchasing structure at ME is related to both advantages and disadvantages found in the literature. The disadvantages in found in the ME case relates to motivation of staff and financial responsibility. These are in the literature presented as advantages with decentralization, and thus the corresponding disadvantage with centralization. In addition to what is discussed above, the reason for these disadvantages might be that the hybrid structure at ME leans more towards centralization, and thus also possesses some of its disadvantages. However, as seen from the discussion above, establishing a
stronger link between the centralized purchasing department, and the decentralized PPMs could reduce or eliminate some of these disadvantages.
7 Conclusion and Implications of Study

- Conclusion and Implications
- Further Research
- Concluding Remarks


7 CONCLUSION AND IMPLICATIONS OF STUDY

In this chapter we will present the conclusions and implications of our study based on our three research questions. In addition we will provide some suggestions for further research.

7.1 Conclusion and Implications

The aim of this paper has been to get insights into and examine purchasing structures within the construction industry. This has been done through extensive literature research and using ME as a single case study. Our study has been based on three research questions. Our first question was:

*How do companies in the construction industry structure their purchasing function?*

The literature has presented several purchasing structures. The most common is the classical distinction between a centralized and a decentralized structure. The literature also presented hybrid structures, which are combinations of the two extremes. The construction industry was in the literature characterized by decentralized decision making and financial control, while the ME case showed an example of a hybrid structure with strong elements of centralization. In the previous discussion, the need for centralization in the ME case was further explained by looking at the factors influencing purchasing structure. This indicates that by purely looking at construction specific literature might be insufficient regarding purchasing structure. However, while combining and supplementing it with the more general literature such as SCMs theories, contingency theory and agency theory, one can get a more complete understanding of how firms in the construction industry structure their purchasing function and why such structures are chosen. This last point concerns the second research question for this study:

*What factors influence the choice of purchasing structure in the construction industry?*
According to the structural contingency theory, there is no universal answer for how firms should structure its purchasing function. Instead, Bailey et al. (2005) argued that effective management should seek to choose structure based upon some objective foundations. The purchasing structure at ME were chosen based on such objective foundations, which were similar to the influencing factors found in the literature. Within context related factors, uncertainty had great influence on the choice of purchasing structure at ME. In line with the presented literature, uncertainty was major driver for a decentralized structure at ME. However, the ME case also showed that centralization might be needed when faced with high uncertainty, in order to minimize the uncertainty related to purchasing requirements. Information and power related factors were in the ME case major drivers for a centralized structure. The reason for this is that the potential agency costs might be enhanced by the high focus on individual projects. Finally, purchasing related factors also influenced the choice of purchasing structure at ME. Important factors were geographical location, supply marked stricture, price fluctuations and expertise required. Even though the influencing factors found in the literature are not all embracing, the findings from the ME case still indicates that using context, power and information, and purchasing related factors may be effective and relevant when determining purchasing structure.

Another implication of this study are the importance of considering the choice of purchasing structure using different “lenses”, since purchasing structure affects many aspects of a company. From the discussion above, one can see that the three classifications of influencing factors consider different elements regarding the choice of purchasing structure. This is clearly seen if one considers how context related and information and power related factors affected the purchasing function at ME. On one hand side, the context related factor, task uncertainty, was emphasized by ME as an important driver for both a centralized and decentralized structure. The reason for this was that it captures the complexity and uncertainty found in ME’s external environment; the construction industry. On the other side, power and information related factors enlighten some of the internal environment at ME, and considered the relationship between the centralized purchasing department and the different projects. Hence, one can argue that since purchasing structure affects processes, procedures, systems and relationships of the
purchasing function (Leenders et al. 2006), it is important to utilize influencing factors that enlighten all these aspects of the purchasing function.

The final research question related to this study has been

*What are the potential advantages and disadvantages related to the different purchasing structures?*

The literature has presented several advantages and disadvantages related to the two extreme organizational structures, where the one’s advantages were said to be the other’s disadvantages. The advantages of centralization may be related to control, while the advantages of decentralization may be related to flexibility.

The ME case also supports the literature in that there are different advantages related to centralization and decentralization. Since the advantages related to the two purchasing structure are so different, one can argue that it is important to be aware of these when determining purchasing structure. The influencing factors presented in literature are, as discussed above, relevant, efficient and important in this respect. However, it might be equally important to both be conscious on the company’s needs and to have knowledge on how purchasing structure might satisfy these needs, through utilizing either a centralized, decentralized or hybrid structure.

Leenders and Johnson (2000) argue that the use and development of hybrid structures were aimed at reaping the benefits while avoiding the disadvantages of both the two extreme structures. However, the ME case has been an example of “what looks fine in theory, may be harder to achieve in practice”, since it has not managed to eliminate all of the disadvantages related to decentralization. Even though the findings from the ME case showed that ME failed in eliminating all the disadvantages, it showed that ME achieves a good balance of control and flexibility through its purchasing structure, and thus the ME case is still in our opinion a *good example* of how to reap many of the benefits of both centralization and decentralization through a hybrid purchasing structure.
7.2 Further research

During our study we truly experienced that this is a field which have gotten little attention from other researchers, thus it has been difficult to find varied and relevant literature. There might be other factors that may influence the choice of purchasing structure that have not been touched upon in this thesis. Due to this, one suggestion for further research is to perform studies with a greater population, which may provide statistical generalization to the findings. Such studies may reveal other purchasing structures used in the construction industry and the advantages and disadvantages related to these, in addition to revealing other influencing factors.

Another suggestion for further research is to investigate how purchasing structures affects supplier relationships. Due to the scope of this thesis, this interesting topic was not included in our study. The purchasing portfolio models, such as Kraljic’s (1983) portfolio matrix and the modified version by Olsen and Ellram (1997), can be a useful starting point when discussing the structure of the purchasing function in relation to supplier relations. One feature of these models is that they give recommended strategies for managing supplier relations. One can therefore look at where the relationship should be facilitated and managed within the organization.

7.3 Concluding remarks

This study has given insight into a strategically important area of purchasing, which often gets limited attention. We feel that we have shown the importance of this topic through enlightening different purchasing structures, factors affecting the choice of structure and advantages and disadvantages related to purchasing structures. Being a single case study, statistical generalization of the findings from our study would be incorrect. However, there might still be some practical implications relevant for firms in both construction and other manufacturing industries. First, this study shows the importance of considering the choice of purchasing structure based upon some objective foundations. This is an important issue since Baily et al. (2005) argued that purchasing structures are often decided by fashion, by organizations copying the structure of another successful organization, or by leading management consultants promoting their favorite
structure. The objective foundations in this study have been presented in terms of factors influencing the choice of structure. The context, information and power, and purchasing related factors presented in both the literature and the ME case may be useful for other firms when considering the choice of centralization vs. decentralization. Second, this study emphasizes the importance of considering the choice of purchasing structure using different lenses, and to use influencing factors that considers different aspects of purchasing structures. This is important since purchasing structure affects many aspects of a company, and the advantages related to the two extremes are significantly different. In addition, it is important that firms are aware of how the structure of the purchasing function affects their business. Thus, understanding the advantages and disadvantages related to different structures, might better enable companies in both construction and other industries to utilize purchasing structures as a strategic tool.
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### 8.4 Interviews


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8.5 Others


9 Appendices

Appendix 1: Interview Guide First Meeting with PM
Appendix 2: Interview Guide First Meeting with PPM
Appendix 3: Interview Guide Regarding Influencing Factors, CPO, PPM and PM
Appendix 4: Interview Guide Project Manager at E6 Gardermoen Project
Appendix 5: Extract of Production Agreements at E6 Gardermoen Project
Appendix 6: Extract of Administrative Agreements E6 Gardermoen Project
Appendix 7: Purchasing Authority at E6 Gardermoen Project
Appendix 8: Purchasing Authority at Mesta Entreprenør
9.1 Appendix 1: Interview Guide, First Meeting with PM

Navn:
Stilling:

Kartlegging av Mesta Entreprenør sin innkjøps funksjon:

- **Du er produktansvarlig for betong. Hva betyr det?**
  - Hva er dine arbeidsoppgaver/ansvarsområde?
  - Hvilke andre funksjoner i Mesta må du forholde deg til?

- **Hvis vi ser for oss oppstarten av et nytt prosjekt:**
  - Hvordan er planleggingsprosessen, og hvem er med i den prosessen.
    - Hva er din rolle i den prosessen
    - Er du mest aktiv i planleggingsfasen i et prosjekt eller har du en aktiv rolle gjennom hele prosjektet?
      - Føler du at du burde vært mer/mindre involvert i noen av prosjektfasene?
    - Under et prosjekt. Hvor er autoriteten for å kjøpe inn?
      - Hvordan fungerer koordineringen mellom deg og anleggs leder/innkjøper?
      - Hvem har ansvar/kontroll/autoritet for produktgruppen i hele prosessen?

- **Koordinering mellom prosjekter.**
  - Er det hovedsakelig ditt ansvar?
  - Blir det gjort?
  - Hvor viktig er det for dere i Mesta entreprenør?
    - Føler du at det er mye å hente på det når det gjelder pris?
    - Har dere et større potensial?
    - Er dette noe man fokuserer på?

- ** Hvordan føler du strukturen på innkjøpet til Mesta Entreprenør fungerer i dag?**
  - Hvordan påvirker strukturen deg/din rolle i systemet?
  - Hva er fordelene med en slik struktur?
  - Hva er utfordringene?
  - Er det noe som kunne vært annerledes?
  - Hva er de største utfordringene du ser innenfor innkjøp?
9.2 Appendix 2: Interview Guide, First Meeting with PPM

Navn:
Stilling:

Kartlegging av Mesta Entreprenør sin innkjøps funksjon:

- Du er innkjøpsleder på prosjekt. Hva betyr det?
  o Hva er dine arbeidsoppgaver/ansvarsområde?
  o Hvilke andre funksjoner i Mesta må du forholde deg til?

- Hvis vi ser for oss oppstarten av et nytt prosjekt:
  o Hvordan er planleggingsprosessen, og hvem er med i den prosessen.
  o Hva er din rolle i den prosessen
    - Innenfor innkjøp: hva blir planlagt innenfor de forskjellige fasene av planleggingsprosessen. (for eksempel rammeavtalene, commodity teams osv.)
    - Er du mest aktiv i planleggingsfasen i et prosjekt eller har du en aktiv rolle gjennom hele prosjektet?
      - Føler du at du burde vært mer/mindre involvert i noen av prosjektfasene?
    - Under et prosjekt. Hvor er autoriteten for å kjøpe inn? Hvordan fungerer koordineringen mellom deg og anleggs leder/innkjøper?
    - Under et prosjekt, hvem har ansvaret for innkjøp på prosjektet? Er dette en formann? Eller har man en innkjøps ansvarlig på hvert prosjekt?
    - Hvem har Ansvar/kontroll/autoritet for innkjøpet i hele prosessen?

- Koordinering mellom prosjekter.
  o Hva er ditt ansvar?
  o Føler du at det er nok koordinering?
  o Hvor viktig er det for dere i Mesta entreprenør?
    - Føler du at det er mye å hente på det når det gjelder pris?
    - Har dere et større potensial?
    - Er dette noe man fokuserer på?
  o Hvordan føler du at koordineringen blir gjennomført?
    - Er det noen produktgrupper som har bedre koordinering enn andre?

- Håndtering av rammeavtaler (rød, gule og grønne)
  o Hvordan føler du denne ordningen fungerer?
  o Bruker man ofte samme leverandører selv der man kan velge fritt?
  o Blir alltid de røde avtalene fulgt?
- **Hvordan føler du strukturen på innkjøpet til Mesta Entreprenør fungerer i dag?**
  - Hvordan påvirker strukturen deg/din rolle i systemet?
  - Hva er fordelene med en slik struktur?
  - Hva er utfordringene?
  - Er det noe som kunne vært annerledes?
  - Hva er de største utfordringene du ser innenfor innkjøp?
9.3 Appendix 3: Interview Guide Regarding Influencing Factors, CPO, PPM and PM

I forrige runde fokuset vi på å kartlegge hvordan den organisatoriske strukturen på innkjøpsfunksjonen til Mesta Entreprenør ser ut. I denne runden ønsker vi å finne mer ut av hvorfor man har valgt å strukturere den slik, og hva fordelene og ulemper er med en slik struktur. Dette er nok mer krevende å svare på, derfor sender vi over spørsmålene på forhånd, slik at man har mulighet til å forberede seg. Noen av spørsmålene kan ha vært stilt før, men for å sikre validiteten på studien vår blir disse nevnt igjen.

Intervju objekt:
Posisjon i selskapet:

- Nedenfor er det presentert to definisjoner på henholdsvis en sentralisert og desentralisert struktur. Hvilken av disse føler du beskriver best innkjøpsstrukturen i Mesta Entreprenør?

**Sentralisert innkjøp**
Sentralisert innkjøp er definert som "alt innkjøp er kontrollert på en sentral plass for hele bedriften". Slik struktur beskriver en situasjon hvor en sentral innkjøpsavdeling opererer på et strategisk og taktisk nivå i bedriften. Avdelingen er ansvarlig for produktspesifikasjoner, leverandørvalg og koordinering av innkjøpsaktiviteter. Bedriftens prosjekter foretar det operasjonelle innkjøpet. En sentralisert innkjøpsfunksjon omfatter ikke bare hvor man rent fysisk er plassert i organisasjonen, men også hvorvidt innkjøpspolicyer og rutiner er diktet sentralt i organisasjonen; lavere nivåer kan være beslutningstakere, men så lenge disse avgjørelsene er styrt av en sentralt forankret policy, så er innkjøpsfunksjonen sterkt sentralisert.

**Desentralisert innkjøp:**
Desentralisert innkjøp er definert som "alt innkjøp er kontrollert hos bedriftens prosjekter/avdelinger eller divisjoner". Dette betyr at hvert prosjekt er ansvarlig for sitt eget innkjøp. Innkjøperen er ofte ofte ansvarlig for et stort utvalg av produkter, og kjøper ofte i små kvantum. I en fullt desentralisert struktur finnes det ingen sentral koordinering, det finnes heller ikke noen innkjøpspolicyer som fungerer som retningslinjer for innkjøpspersonalet.

- Hva er grunnen for at Mesta Entreprenør sin innkjøpsstruktur ble valgt, og hvilke fordeler/ulemper er det knyttet til denne strukturen slik som du ser det?

Innenfor litteraturen er det identifisert noen faktorer som påvirker valg av struktur. De neste spørsmålene er basert på disse.

- Føler du at størrelsen på bedriften, (f. eks antall prosjekter, antall ansatte) gjør det vanskelig å utføre alt av innkjøpsaktiviteter i en sentral
innkjøpsfunksjon.
  o  Begrunnelse/eksempel

- Er det knyttet *usikkerhet* til innkjøpet i Mesta (f. eks usikkerhet om hva som trengs, hvor det trengs og når det trengs) som gjør det vanskelig å planlegge og koordinere bedriftens innkjøp på forhånd?
  o  Begrunnelse/eksempel

- Er innkjøpsaktivitetene på de forskjellige prosjektene *avhengige av hverandre*? Hvor viktig er det å få til en god koordinering mellom disse prosjektene når det gjelder innkjøp?
  o  Begrunnelse/eksempel

- Er det noen *motstridende synspunkter* innenfor innkjøp, mellom den sentrale innkjøpsorganisasjonen og de forskjellige prosjektene?
  o  Begrunnelse/eksempel

- Er det store *produkt likheter* på det som blir kjøpt inn til de forskjellige prosjektene? Er det noe konsolidering/koordinering av innkjøp på tvers av prosjektene? Ser du et *potensial for å redusere kostnader* ved mer konsolidering/koordinering av Mesta Entreprenør sitt innkjøp?
  o  Begrunnelse/eksempel

- Vil du si at det er en stor *geografisk spredning* av Mesta sine prosjekter og dens leverandører? Føler du at denne geografiske lokaliseringen gjør det vanskelig å koordinere og konsolidere innkjøp på tvers av prosjektene?
  o  Begrunnelse/eksempel

- Hvordan kan *strukturen til de forskjellige leverandørmarkedene* til Mesta beskrives (f. eks antall kvalifiserte leverandører)? Er det noen leverandører som er i et oligopol marked (marked som karakteriseres av to eller tre store tilbydere som har store deler av markedet)? Er det store *prisforskjeller* i leverandør markedene?
  o  Begrunnelse/eksempel

- Føler du at fagmiljøet og evt. ekspertisen til innkjøperne er viktig for Mesta Entreprenør og dens prosjekter? Klarer man å ivareta dette ved dagens innkjøpsstruktur? Har det vært problemer med å få tak i den nødvendige ekspertisen?
  o  Begrunnelse/eksempel

- Foreligger det *sterke føringer fra byggherre* på hva som skal kjøpes inn til hvert enkelt prosjekt (f. eks krav til spesifikke leverandører, samt krav til spesifikke løsninger/produkter)?
  o  Begrunnelse/eksempel
Produkttyper:

*Følgende spørsmål er relatert til produktene Mesta kjøper inn. Disse produktene kan deles inn i fire produktgrupper: ikke-kritiske artikler, tungvektsartikler, flaskehalsartikler, og strategiske artikler.*

**Ikke-kritiske artikler** er produkter hvor innkjøpet ikke vurderes som viktig, grunnet lite betydning for sluttproduktet, liten andel av totalkostnad o.l. samtidig som produktet er lett å anskaffe grunnet enkel logistikk, mange leverandører o.l.

- Hva slags typer produkter vil du kalde for ikke-kritiske produkter for Mesta Entreprenør? Hvem har ansvaret (f. eks: sentral innkjøps organisasjon, eller prosjektene) for innkjøpet av produkter i denne produktgruppen?

**Tungvektsartikler** er produkter hvor innkjøpet er viktig, grunnet stort volum eller stor betydning for sluttproduktet, eller høy andel av totalkostnadene, samtidig som produktet er lett å anskaffe, grunnet enkel logistikk, mange leverandører o.l.

- Hva slags typer produkter vil du klassifisere som tungvektsartikler for Mesta Entreprenør? Hvem har ansvaret (f. eks: sentral innkjøps organisasjon, eller prosjektene) for innkjøpet av produkter i denne produktgruppen?

**Flaskehalsartikler** er produkter hvor innkjøpet ikke nødvendigvis er viktig for bedriften, men hvor leverandørmarkedet er komplekst, grunnet f. eks få leverandører eller vanskelig logistikk. Slike produkter kjennetegnes ofte av produksjonsknapphet.

- Hva slags typer produkter vil du klassifisere som flaskehalsartikler for Mesta Entreprenør? Hvem har ansvaret (f. eks: sentral innkjøps organisasjon, eller prosjektene) for innkjøpet av produkter i denne produktgruppen?

**Strategiske artikler** er produkter hvor innkjøpet vurderes som viktig for bedriften, grunnet stor betydning for sluttproduktet, høy andel av totalkostnad o.l. leverandørmarkedet er relativt kompleks., grunnet få leverandører, vanskelig logistikk o.l. slike produkter er ofte utsatt for naturlig knapphet, råvareknapphet.

- Hva slags produkter vil du klassifisere for strategisk viktige artikler for Mesta Entreprenør? Hvem har ansvaret (f. eks: sentral innkjøps organisasjon, eller prosjektene) for innkjøpet av produkter i denne produktgruppen?
### 9.4 Appendix 4: Interview Guide Project Manager at E6 Gardermoen Project

Vi har gjennomført flere intervjuer i forbindelse med å kartlegge hvordan den organisatoriske strukturen på innkjøpsfunksjonen til Mesta Entreprenør ser ut. Disse intervjuene er blitt gjennomført med personer som er i direkte tilknytning til innkjøp og innkjøpsstrukturen. Ved dette intervjuet ønsker vi å belyse innkjøpsfunksjonen fra en annen innfallsvinkel i selskapet, for å avdekke synspunkter og meninger fra dem som ikke jobber direkte med innkjøp.

Intervju objekt:
Posisjon i selskapet:

- **Du er prosjektleder. Hva betyr det?**
  - Hva er dine arbeidsoppgaver/ansvarsområde?
  - Hvilke andre funksjoner i Mesta må du forholde deg til?

**Innkjøp og innkjøpsstruktur:**

- Nedenfor er det presentert to definisjoner på henholdsvis en sentralisert og desentralisert struktur. *Hvilken av disse føler du beskriver best innkjøpsstrukturen i Mesta Entreprenør?*

#### Sentralisert innkjøp
Sentralisert innkjøp er definert som ”alt innkjøp er kontrollert på en sentral plass for hele bedriften”. Slik struktur beskriver en situasjon hvor en sentral innkjøpsavdeling opererer på et strategisk og taktisk nivå i bedriften. Avdelingen er ansvarlig for produktspesifikasjoner, leverandørvælg og koordinering av innkjøpsaktiviteter. Bedriftens prosjekter foretar det operasjonelle innkjøpet. En sentralisert innkjøpsfunksjon omfatter ikke bare hvor man rent fysisk er plassert i organisasjonen, men også hvorvidt innkjøpspolicyer og rutiner er diktert sentralt i organisasjonen; lavere nivåer kan være beslutningstakere, men så lenge disse avgjørelsene er styrt av en sentralt forankret policy, så er innkjøpsfunksjonen sterkt sentralisert.

#### Desentralisert innkjøp:
Desentralisert innkjøp er definert som ”alt innkjøp er kontrollert hos bedriftens prosjekter/avdelinger eller divisjoner”. Dette betyr at hvert prosjekt er ansvarlig for sitt eget innkjøp. Innkjøperen er ofte er ofte ansvarlig for et stort utvalg av produkter, og kjøper ofte i små kvantum. I en fullt desentralisert struktur finnes det ingen sentral koordinering, det finnes heller ikke noen innkjøpspolicyer som fungerer som retningslinjer for innkjøbpspersonalet.
• Hvordan føler du strukturen på innkjøpet til Mesta Entreprenør fungerer i dag?
  o Hvordan påvirker strukturen deg/din rolle i systemet?
  o Hva er fordelene med en slik struktur?
  o Hva er utfordringene/ulempene med en slik struktur?
  o Er det noe som kunne vært annerledes?
  o Hva er de største utfordringene du ser innenfor innkjøp?

• Er det noen motstridende synspunkter innenfor innkjøp, mellom den sentrale innkjøpsorganisasjonen og prosjektene?
  o Begrunnelse/eksempel

• Koordinering mellom prosjekter.
  o Blir det gjort innenfor innkjøp?
    ▪ Hvordan påvirker dette dine arbeidsoppgaver?
  
  o Hvor viktig er dette for dere i Mesta Entreprenør?
    ▪ Føler du at det er mye å hente på det når det gjelder pris?
    ▪ Har dere et større potensial?
    ▪ Er dette noe man fokuserer på?
## 9.5 Appendix 5 – Extract of Production Agreements at E6

### Gardermoen Project

<table>
<thead>
<tr>
<th>Product Group</th>
<th>Contact Person</th>
<th>Telephone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>E6 Produsent</td>
<td>Trond Pettersen</td>
<td>98059461</td>
<td><a href="mailto:infoe6@kegelmann.kl.no">infoe6@kegelmann.kl.no</a></td>
</tr>
<tr>
<td></td>
<td>Lars Hjorth</td>
<td>90015466</td>
<td><a href="mailto:infoe6@kegelmann.kl.no">infoe6@kegelmann.kl.no</a></td>
</tr>
<tr>
<td></td>
<td>Bjørn Stein</td>
<td>90077010</td>
<td><a href="mailto:infoe6@kegelmann.kl.no">infoe6@kegelmann.kl.no</a></td>
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### Appendix 5 – Extract of Production Agreements at E6

<table>
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<th>Producer</th>
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</tr>
<tr>
<td>Statoil</td>
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### Extract of Production Agreements at E6

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</tr>
<tr>
<td>001234568</td>
<td>Production Agreement</td>
</tr>
</tbody>
</table>

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**Note:** The table and text have been formatted to ensure readability and clarity. The content represents an extract from a production agreement at E6 Gardermoen Project.
9.6 Appendix 6 – Extract of Administrative Agreements E6

Gardermoen Project
### Innkjøpsfullmakt E6 Hovinmoen - Dal

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<tr>
<th>Navn</th>
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<th>Fullmakt til avrop på ingåtte avtaler</th>
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<th>Mail</th>
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<tr>
<td>Rune Mørken</td>
<td>Prosjektleder</td>
<td>5 mill</td>
<td>300 000,-</td>
<td></td>
</tr>
<tr>
<td>Roar Haugkolt</td>
<td>Entrepreneur</td>
<td>500 000,-</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Lars Christiansen Karsen</td>
<td>Entrepreneur</td>
<td>500 000,-</td>
<td>0</td>
<td></td>
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<tr>
<td>Vidar Rehn</td>
<td>Anleggslede</td>
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<td></td>
</tr>
<tr>
<td>Tom Kåre Heivåg</td>
<td>Anleggslede</td>
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<td>0</td>
<td></td>
</tr>
<tr>
<td>Jan Asle Einskiær</td>
<td>Anleggslede</td>
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<tr>
<td>Øyvind Solåen</td>
<td>Logistikleader</td>
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<tr>
<td>Kjell Dervola</td>
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<td>0</td>
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<td>Geir Amtsen</td>
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<td>Terje Holtekjelen</td>
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<tr>
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</tbody>
</table>
### 9.8 Appendix 8 – Purchasing Authority at Mesta Entreprenør

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</tr>
</thead>
<tbody>
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<td><strong>Innles, U.E., investeringsskipp</strong></td>
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<td></td>
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</tr>
<tr>
<td>innkopp av tjenester og andre kjøp, første gangs etablering</td>
<td>100 mill</td>
<td>25 mill</td>
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<td>2.0 mill</td>
<td>10.0 mill</td>
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<td>0.05 mill</td>
<td>0.05 mill</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rammearter</strong></td>
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<td>0</td>
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</tbody>
</table>

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Det er viktig å bemerke at denne oversikten er basert på en oversikten av de sentrale og lokale avtalen som eksisterer. Avtaler skal dokumenteres skriftlig. Det presser at dette også gjelder handelen.
Research Proposal

BI Norwegian School of Management

Structuring the Purchasing Function in the Construction Industry

GRA 19002
Master Thesis

 Supervisor: Lena E. Bygballe

Date of Submission: 15.01.2009
Study Place: BI Oslo, Nydalen
# Table of Contents

**SUMMARY** .......................................................................................................................... 2  

1 – **INTRODUCTION** ............................................................................................................. 1  

2 – **THE RESEARCH AREA AND PROBLEM STATEMENT** .................................................. 2  

3 – **THEORETICAL FRAMEWORK** ....................................................................................... 4  
   3.1 – **PURCHASING STRUCTURES** ....................................................................................... 4  
   3.1.1 – Centralized Purchasing Structure ............................................................................. 4  
   3.1.2 – Decentralized Purchasing Structure ........................................................................ 4  
   3.1.3 – Advantages and Disadvantages .............................................................................. 5  
   3.1.4 – Hybrid Structures .................................................................................................... 7  
   3.2 – **INFLUENCING FACTORS** ......................................................................................... 9  

4 – **METHOD** ...................................................................................................................... 14  
   4.1 – **SELECTION OF RESEARCH DESIGN** ..................................................................... 14  
   4.2 – **DATA COLLECTION** .................................................................................................. 15  
   4.3 – **QUALITY OF RESEARCH DESIGN** ......................................................................... 15  
   4.3.1 – Reliability .................................................................................................................. 15  
   4.3.2 – Construct Validity ..................................................................................................... 16  
   4.3.3 – External Validity ....................................................................................................... 16  

5 – **EMPIRICAL SETTING** .................................................................................................... 17  

6 – **IMPLEMENTATION PLAN** ............................................................................................ 19  

REFERENCES .......................................................................................................................... 20
Summary

This research proposal is a description of our master thesis in Supply Chain Management. First we give an introduction to the background of our topic. Secondly we present our research area and problem statement: How do companies structure their purchasing function and what factors influence this structure in the Norwegian construction industry? We then present an objective overview of the relevant theory for our research questions, which contains possible purchasing structure, potential advantages and disadvantages of these structures, and some factors that may influence the choice of purchasing structure. Further we present an appropriate methodological framework for solving our research question: a qualitative, single case study has been chosen. We then present the empirical setting for our study. In order to gain further insight regarding possible structures of the purchasing function in the Norwegian construction industry, we will use Mesta Entreprenør AS, a subsidiary of Mesta AS, as a case study. Finally, we present an implementation plan for our future work.

BI Norwegian School of Management, Oslo

Fredrik Karlsen

Lasse Tollefsen
1 – Introduction

Traditionally, most firms have regarded purchasing primary as a clerical function (Leenders et al. 2006). This can also be seen in Michael Porter’s value chain, where purchasing is classified as a support activity alongside a firm’s infrastructure, human resource management and technology development (Porter 1985). More recently however, top managers have increasingly recognized purchasing and supply chain management as key business drivers (Weele 2005). One of the reasons for this increased recognition is that analyses show that purchasing value may vary between 50 to 80 percent of the total cost of goods sold (ibid). Arjan van Weele defines purchasing as:

“The management of the company’s external resources in such a way that the supply of all goods, services, capabilities and knowledge which are necessary for running, maintaining and managing the company’s primary and support activities is secured at the most favorable conditions.”

Furthermore, he states that the purchasing function covers the following six activities: (1) determining the specification of the goods and services needed, (2) selecting the most suitable supplier and develop procedures and routines to select the best supplier, (3) prepare and conduct negotiations with suppliers and write up the contract, (4) place the order with the supplier, (5) monitoring and control of the order to secure supply, and (6) follow up and evaluation (ibid). Leenders, Johnson, Flynn and Fearon argue that the responsibility of purchasing often also include receiving, inspection, storage, materials handling, scheduling and disposal. Purchasing may also be responsible for the organization’s customers and their suppliers’ supplier. The latter is often called supply chain management, where the focus is “on minimizing costs and times across the supply chain to the benefit of final customer in the chain” (Leenders et al. 2006).

Because of the increased importance of purchasing, and the impact it has on a company’s overall financial performance, purchasing should be of highly strategic importance to companies and top management. An important aspect of purchasing and supply chain management theory, that is often given limited attention in scientific research, is the organizational structuring of the purchasing function.
The Research Area and Problem Statement

Wit and Meyer define a company’s overall organizational structure as the clustering of tasks and people into smaller groups. They state that organizational structure, alongside organizational process and culture, makes up a company’s organizational system. This organizational system is the foundation for a firm’s business system, which may be defined as “the way a company makes money” (Wit and Meyer 2004). Within the overall organizational structure, a firm may cluster the different tasks and people into divisions, functions and departments. One example of this may be the purchasing function. According to Leenders et al., almost every company has its own purchasing function. The structure of the purchasing function affects the processes, procedures, systems and relationships of the purchasing function (Leenders et al. 2006). Due to the magnitude of its impact, one can argue that the structure of the purchasing function should be of high strategic importance to top management. It would therefore be interesting to look at how firms structure their purchasing function. From this we have developed our first question we wish to answer with our thesis:

**What are the possible ways of structuring the purchasing function?**

There exist potential advantages and disadvantages that differ between each structure (Leenders et al. 2006). Because of this, there might be different elements in a firm’s internal and external environment that favour, or at least affect, the choice of a certain structural model. It might therefore be interesting to see what factors that influence a firm’s choice of purchasing structure. This has lead to the second question that we will seek to answer with our thesis:

**What factors influence the structure of the purchasing function?**

In order to limit the scope of our thesis, we want to focus our study on the (Norwegian) construction industry. The construction industry is selected as an area of research since it possesses some characteristics that may influence how firms structure their purchasing function. Firstly, Gidado states that a high level of complexity characterizes the construction industry. He argues that this complexity stems from the resources used, external environment, knowledge required and interdependence among tasks (Gidado 1996). Secondly, Dubois and Gadde argue
that the construction industry is characterized by a focus on individual projects and need for local adjustments at construction sites (Dubois and Gadde 2002). These characteristics, together with the fact that there has been done limited research on the structuring of a construction firm’s purchasing function makes this an interesting context for our study.

Based on the foregoing discussion, we can summarize our research problem into the following research question:

*How do companies structure their purchasing function and what factors influence this structure in the Norwegian construction industry?*

The importance of this topic is, as we see it, two folded. Firstly, as mentioned, there has been limited scientific research on the issue of purchasing structures in the construction industry. Hence, our thesis will hopefully provide additional insight in this field. Secondly, the issue of organizational structure of a firm’s purchasing function should be of great concern to top management and purchasing officials, due to the magnitude of its impact. We therefore hope to contribute to firms’ understanding of the issue, and also contribute to the scientific research of organizational structuring of the purchasing function in the construction industry.
3 – Theoretical Framework

It is important to build a theoretical framework that is relevant to our research question, and that will contribute to the results of our study. We have divided our framework into two parts. First, different structures will be presented and elaborated on, including their potential advantages and disadvantages. Second, we will present some important underlying factors that influence the choice of structure. Some of the theories use different terms when describing the purchasing process and structure. However, we assume that terms like purchasing, procurement, and supply management have the similar meaning since they are often used interchangeably (Leenders et al. 2006).

3.1 – Purchasing Structures

As mentioned before, the organizational structure affects processes, procedures, systems and the relationships of a purchasing function (Leenders et al. 2006). A central issue in the organizational design of the purchasing structure is the classical distinction between a centralized and a decentralized structure.

3.1.1 – Centralized Purchasing Structure

A centralized purchasing structure is defined as “when all main purchasing is controlled at one central location for the entire firm” (Leenders and Johnson 2000). Van Weele describes this structure as a situation where a central purchasing department, operating on the strategic and tactical level, is found at a corporate level. This department is responsible for product specification, supplier selection, contract negotiations and coordinating activities. The corporations’ different business units conduct the operational purchasing activities (Weele 2005). Cavinato provides in his article Evolving Procurement Organizations: Logistic Implication useful insight to the issue of purchasing structures. He argues that a centralized structure can be found in three different forms: Single site firms; multi-plant firm with procurement at headquarters; multi-plant firms that have procurement at the field locations, but these reports directly to the central headquarter (Cavinato 1991).

3.1.2 – Decentralized Purchasing Structure

A decentralized purchasing structure is defined as “when all main purchasing is controlled at the business units, plants, and/or divisions” (Leenders and Johnson 2000).
This structure can be found in companies with a business unit structure, and where the business unit management is responsible for all its purchasing activities (Weele 2005). In a decentralized structure there is no central coordinating organization, neither is there a set of purchasing policies that act as guidelines to the different business units purchasing staff. Rozemeijer found that in a decentralized structure, “cross business unit co-ordination, if any, is voluntary, ad-hoc and informal” (Rozemeijer 2000).

### 3.1.3 – Advantages and Disadvantages

There are several potential advantages and disadvantages of having either a centralized or a decentralized purchasing structure. Leenders and Johnson provide a comprehensive list (see table 1 and 2) of the potential advantages and disadvantages of these structures (Leenders and Johnson 2000).

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic focus</td>
<td>Lack of business unit focus</td>
</tr>
<tr>
<td>Greater buying specialization</td>
<td>Narrow specialization and job boredom</td>
</tr>
<tr>
<td>Ability to pay for talent</td>
<td>Cost of central unit highly visible</td>
</tr>
<tr>
<td>Consolidation of requirements – Clout</td>
<td>Corporate staff appears excessive</td>
</tr>
<tr>
<td>Coordination and control of policies and procedures</td>
<td>Tendency to minimize legitimate differences in requirements</td>
</tr>
<tr>
<td>Effective planning and research</td>
<td>Lack of recognitions of unique business units needs</td>
</tr>
<tr>
<td>Common suppliers</td>
<td>Focus on corporate requirements and not on business unit strategic requirements</td>
</tr>
<tr>
<td>Proximity to major organizational decision makers</td>
<td>Most knowledge sharing one way</td>
</tr>
<tr>
<td>Critical mass</td>
<td>Even common suppliers behave differently in geographic and markets segments</td>
</tr>
<tr>
<td>Firm brand recognition and stature</td>
<td>Distance from users</td>
</tr>
<tr>
<td>Reporting line – Power</td>
<td>Tendency to create organizational silos</td>
</tr>
<tr>
<td>Cost of Purchasing low</td>
<td>Customer segments require adaptability and unique situations</td>
</tr>
<tr>
<td></td>
<td>Top management not able to spend time on suppliers</td>
</tr>
<tr>
<td></td>
<td>High visibility of purchasing operating cost</td>
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Table 1: Potential advantages and disadvantages of *centralization*. 
<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Easier coordination/communication with operating department</td>
<td>• More difficult to communicate among business units</td>
</tr>
<tr>
<td>• Speed of response</td>
<td>• Encourages users not to plan ahead</td>
</tr>
<tr>
<td>• Effective use of local sources</td>
<td>• Operational versus strategic focus</td>
</tr>
<tr>
<td>• Business unit autonomy</td>
<td>• Too much focus on local sources – ignores better supply opportunities</td>
</tr>
<tr>
<td>• Reporting line simplicity</td>
<td>• No critical mass in organization for visibility/effectiveness – “whole person syndrome”</td>
</tr>
<tr>
<td>• Undivided authority and responsibility</td>
<td>• Lacks clout</td>
</tr>
<tr>
<td>• Suits purchasing personnel preference</td>
<td>• Sub optimization</td>
</tr>
<tr>
<td>• Broad job definition</td>
<td>• Business unit preferences not congruent with corporate preferences</td>
</tr>
<tr>
<td>• Geographical, cultural, political, environmental, social, language, currency appropriated</td>
<td>• Small differences get magnified</td>
</tr>
<tr>
<td>• Hide the cost of supply</td>
<td>• Reporting at low level in organization</td>
</tr>
<tr>
<td></td>
<td>• Limits functional advancements opportunities</td>
</tr>
<tr>
<td></td>
<td>• Ignores larger organizational considerations</td>
</tr>
<tr>
<td></td>
<td>• Limited expertise and requirement</td>
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<tr>
<td></td>
<td>• Lack of standardization</td>
</tr>
<tr>
<td></td>
<td>• Cost of supply relatively high</td>
</tr>
</tbody>
</table>

Table 2: Potential advantages and disadvantages of decentralization.

Other academics have also discussed the potential advantages of different purchasing structures. Baily states in his book “Purchasing principles and management” that the major advantages of a decentralized structure are that it firstly utilizes the local buyers knowledge of his or her business units needs, and secondly that it gives the local buyer the ability to respond quickly to emergency situations, such as surprise stock outs, because of short lines of communication and knowledge of local circumstances. Baily further argues that if business units operate as profit centres, with responsibility for their own financial results, the business unit should also be responsible for their own purchasing. His argument is that “if management are not allowed to select and deal with their own suppliers, how can they be held responsible for output which relies so heavily on supplier efficiency?” According to Baily, if business units have responsibility over both the financial result and the purchasing, this will produce “better liaison and control” by top management. Concerning the advantages of a centralized structure, Baily finds that economies obtained by consolidation, avoidance of
price anomalies between business units and economies of staffing are the major advantages (Baily 1998).

To sum up, many advantages of centralization are directed towards coordinating a firm’s supply, often in order to get scale advantages. This is supported by Cavinato, who states that: “A centralized procurement provides the firm with a single, collective sourcing and buying power”. He also argues that it enables the firm to coordinate the procurement practices of the different field locations (Cavinato 1991). Many of the major advantages of decentralization on the other hand are directed towards flexibility and avoidance of bureaucratic systems.

3.1.4 – Hybrid Structures

From the discussion above one can see that since the presented structures represents “two extremes” it is often so that the one’s advantage, is the others disadvantage. In their study *Major Structural Changes in Supply Organizations*, Leenders and Johnson argue that since the disadvantages of both a centralized and decentralized structure is so significant, firms are increasingly using hybrid structures. These structures try to capture the advantages and eliminate the disadvantages form both a centralized and decentralized structure, as illustrated in figure 1. Leenders and Johnson found in their study that in 1988, 61 percent of the respondents had a hybrid structure, while by 1995 this had increased to 68 percent (Leenders and Johnson 2000).

![Figure 1. Source: (Leenders and Johnson 2000)](image-url)
Cavinato also claims that “organizational concerns have evolved from the classical distinction of centralization and decentralization into new organizational forms" (Cavinato 1991). He argues in his article Evolving Procurement Organizations: Logistic Implications, that in addition to the traditional centralized and decentralized structures, five new organizational forms have evolved:

**Centralized coordinator:** This model is similar to the decentralized procurement model with procurement at field locations reporting to division manager. What differs however is that there is also a centralized coordinating group. Cavinato states that the advantage of this structure is that it attains the scope of a central group that enables the firm to utilize synergy and economies without “carrying the full cost often found with a pure centralized group” (ibid).

**Area planner concept:** In this model a firm has a central procurement group, creating and managing the relationships with the suppliers; vendor selection, analysing, negotiating and monitoring. The field staff (area planners) uses these relationships and “processes the requisitions into day-to-day orders for deliveries” (ibid). Cavinato argues that a direct link between the buying firm’s area planners and the supplier is speedy and enables special arrangements between the parties.

**Supply manager concept:** In this model, one person (supply manager) has responsibility for nearly complete product lines. This responsibility includes more than just supply of goods. The supply manager is also responsible for acquisition, materials selection, production scheduling, make or buy decisions and inventory management for that product. This approach requires that the supply manager possess a vide range of skills, and is according to Cavinato “perhaps the model with the broadest scope when it comes to what is considered as procurement” (ibid).

**Commodity teams:** With this model, the procurement is organized in cross-functional teams with staff from engineering, design, production, procurement, distribution and marketing. Cavinato argues that the implications of organizing procurement in commodity teams are that inventory, transportation warehousing, packaging and other concerns are taken into account within the context of the overall product cost and value. The commodity teams usually take a customer
perspective. According to Cavinato, this model of organizing procurement was originally found in the construction industry (ibid).

Logistic pipeline approach: In this cooperative approach, overlapping logistic functions between buyer and supplier are eliminated. According to Cavinato, the result of this organization is that the buyer’s procurement and the seller’s order entry is combined. These two functions will be managed as one. The logistic pipeline model provides advantages for both parties. Firstly, one achieves cost reduction since overlapping functions are eliminated. Second, the seller can monitor the inventory of the buying firm and implement automatic replenishment routines. Cavinato argues that this would reduce the risk of surprise stock outs (ibid).

3.2 – Influencing Factors

Each of the structures presented, may prove more beneficial than the other in different business environments. Van Weele states that “the location and structure of purchasing are very much dependent on business characteristics and situational factors” (Weele 2005). Several academics have performed studies to identify the underlying factors that affect the choice of structure. The factors are often presented as either favouring a centralized or a decentralized structure and are often not considering the hybrid structures. However, when looking at the factors collectively, a company can get a better understanding of whether to have a more centralized, hybrid or decentralized structure.

Arjan van Weele has presented seven criteria that may be used when deciding to choose between centralization or decentralization (Weele 2005).

- **Commonality of purchase requirements** – the greater the commonality of the products being purchased, the more benefits can be obtained by having a centralized structure.
- **Geographic location** – it may be difficult to achieve efficient coordination across international and cultural borders, as a consequence many firms are utilizing a decentralized structure.
- **Supply market structure** – when the supply market is characterized by one or a limited number of suppliers, which often gives the supplier an
advantage due to strong bargaining power, it may be necessary to utilize a centralized purchasing function in order to achieve a better negotiating position.

- **Savings potential** – many raw materials are sensitive to volume, by utilizing a centralized purchasing function one is able to accumulate the quantity in order to reap saving potential.

- **Expertise required** – when specific expertise is required for effective buying, it may be useful to have a centralized purchasing approach, since it may be difficult to provide the necessary expertise in several decentralized departments.

- **Price fluctuations** – if materials prices are highly sensitive to the political and economic climate, a centralized purchasing approach is.

- **Customer demands** – in situations where the customers dictate which products that should be purchased, a centralized approach will not be needed.

Other academics and scientists have also investigated the factors influencing the structural model of the purchasing function. Vagstad investigated in his article *Centralized vs. Decentralized Procurement: Does Dispersed Information Call for Decentralized Decision-Making*, if it is true that “increased importance of the information held by subordinates in a company is an argument for decentralization of purchasing function” (Vagstad 2000). Traditionally, dispersed information has favored a decentralized purchasing structure because, in order to utilize the available information, decisions should be made where the best information is available. However, Vagstad state that it is not always that simple and his findings may be, according to himself, counterintuitive: “increased importance of local information can be an argument for centralization not decentralization”. He argues that it is not the dispersed information that should decide the choice of organizational structure, but rather the tradeoff between two important factors: *bureaucracy cost* and *agency cost*. Vagstad argues that a centralized structure is costly and often not very efficient due to bureaucracy costs; costs that are related to the fixed costs of the daily operation of the department. At the same time, costs related to decentralized structure may be agency costs; costs that arise as a result of conflicting objectives between the principal and the agent. Meaning that when the bureaucracy costs are lower than the potential agency costs, a centralized
structure may be favored, while a decentralized structure may be favored when the potential agency costs is lower than the bureaucracy costs.

Xideas and Moschuris have performed a survey where they investigated how the product type influences the purchasing structure (Xideas and Moschuris 1998). Based on previous studies by other academics they are using two attributes in their analysis: product complexity and environmental uncertainty. Product complexity is related to technical complexity, specialized installation and to which degree the product needs technical after sale services. Environmental uncertainty is related to the availability and stability of supply in the market. Xideas and Moschuris find that both products characterized by product complexity and by environmental uncertainty favors a structured purchasing process and a centralized structure. The argument is that in the supply of products characterized by environmental uncertainty, there is especially need for assistance from a centralized function in vendor selection in order to secure a stable and long term availability of supply. For products characterized by complexity, there is a need for a structured planning process and sourcing policies, and assistance from a centralized purchasing function in designing specifications, standardization and other cost reduction techniques and supplier selection. It is also worth mentioning that the authors argue that “the purchasing process for complex products is more structured and centralized, than the purchasing process for items characterized by uncertainties in the supply market” (ibid).

Johnson and Leenders also studied drivers for structural changes in the supply function in their study, Major Structural Changes in Supply Organizations (Leenders and Johnson 2000). Their main findings were that almost all of the major structural changes to the supply organizations were driven by factors external to the supply function; “rather than giving the Corporate Purchasing Officer the opportunity to select the appropriate organizational structure for the purchasing function, the pressure to maintain similarity with the broader organizational structure was the primary factor” (ibid). More specific, changes to the overall corporate organizational structure were found to be the main driver of structural change in the supply function. Furthermore they state that the supply function does not possess any characteristics that require a different structure than the overall structure in the company. In addition, the researchers also claim that
the supply considerations were not taken into consideration when selecting a particular organizational structure.

To summarize the findings presented above, we are left with 11 factors or characteristics that work as drivers when deciding the structure of the purchasing function. These factors are summarized in the table below, with some comments on how they affect the purchasing structure.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commonality of purchase requirements</td>
<td>High degree of commonality favours a centralized structure.</td>
</tr>
<tr>
<td>Geographic location</td>
<td>A highly dispersed geographic location across international and cultural borders favours a local and decentralized structure.</td>
</tr>
<tr>
<td>Supply market structure</td>
<td>In markets characterized by one or few suppliers, a centralized purchasing structure is favoured for the buying firm in order to lever the bargaining power.</td>
</tr>
<tr>
<td>Savings potential</td>
<td>Raw materials that are price sensitive due to volume favours a centralized structure, due to the possible accumulation of purchased goods.</td>
</tr>
<tr>
<td>Expertise required</td>
<td>When specific expertise is required, a centralized structure is preferred, since it may be difficult to secure the needed expertise at several decentralized departments.</td>
</tr>
<tr>
<td>Price fluctuations</td>
<td>When prices of materials are highly sensitive to political and economic climate, a centralized purchasing approach is favored.</td>
</tr>
<tr>
<td>Customer demands</td>
<td>In cases where customers to a large extent dictate what products that should be purchased, a centralized structure is not needed.</td>
</tr>
<tr>
<td>Agency cost vs. Bureaucracy cost</td>
<td>When bureaucracy costs are lower than potential agency costs, a centralized structure is favoured, and vice versa.</td>
</tr>
<tr>
<td>Product complexity</td>
<td>A high degree of product complexity tends to favour a centralized structure.</td>
</tr>
<tr>
<td>Environmental uncertainty</td>
<td>A centralized structure is preferred in an uncertain environment.</td>
</tr>
<tr>
<td>Overall corporate organizational structure</td>
<td>The purchasing structure is determined by the overall organizational structure.</td>
</tr>
</tbody>
</table>

Table 3: Factors influencing the choice of purchasing structure.

Despite the fact that several studies have identified the above factors as potential drivers for an efficient purchasing structure, some academics claim that the choice between the two organizational structures are “decided by fashion; or that the organization copies the structure of another successful organization; or that leading management consultants promote their favorite organizational structure” (Baily 1998). The last argument is also supported by Leenders and Johnson, who
identified consultants as one major influencer when deciding organizational structure (Leenders and Johnson 2000).

Even though some argue that structures are chosen, irrelevant of their potential advantages and disadvantages, and the influencing factors presented above, Baily states that “an effective management will endeavor to construct its organizational structure upon objective foundations” (Baily 1998).
4 – Method

There are several possible methods that may be applied by researchers in order to solve a stated problem situation. In general there are two distinct type of analyses that may be applied: qualitative or quantitative (Dubois and Araujo 2007). The quantitative method include simulations and model building as well as statistical testing of survey data (Ellram 1996). This method is well suited in situations where the researchers are searching for generalities and patterns in collected data (Dubois and Araujo 2007). The qualitative method is an umbrella concept covering several forms of inquiry that helps to understand and explain the meaning of a phenomenon (Merriam 1998).

4.1 – Selection of Research Design

The appropriate class of research methods to choose from depends on the researcher’s goal and nature of the research question (Ellram 1996). Ellram presents a classification of research methods according to objectives; Exploration, Explanation, Description and Prediction. This classification may prove useful when deciding upon the most appropriate research design for the research question. Our study has both an exploratory and descriptive nature. It is exploratory since we will study a phenomenon that has gotten little attention in scientific research. However it is also descriptive since we will investigate how firms structure their purchasing function and what factors that will influence the structure. A case study methodology would be desirable in such circumstances because it provides depth and insight into a little known phenomenon. Another argument for applying a case study method is that the construction industry is characterized by a high level of complexity (Gidado 1996). According to Dubois and Araujo, research that focus on complexity is often associated with qualitative and case-oriented methods (Dubois and Araujo 2007).

The case study method generally emphasises qualitative, in depth study of one or a small number of cases (Ellram 1996). A central question that arises before conducting a case study is the choice between a single and a multiple case study. There are several rationales for choosing either a single or multiple case study design. One of the rationales for choosing a single case study design presented by Yin is the representative or typical case study (Yin 2003). Here, the case study looks at every day situations of e.g. a manufacturing firm that are
4.2 – Data Collection

In our case study, we will collect data through interviews and observation. Our interviews will be characterized as unstructured, since it will mainly be conversations where we search for key information. However we will develop and utilize an interview guide containing central questions, while at the same time follow up relevant information during the interviews. In addition we will observe and map out the purchasing process through direct and indirect observation, through the use of site visits, public accessible information, and internal documents. Other sources and methods of data collection will be developed and applied during our case study.

As described above, we will collect information from multiple sources, also called triangulation, since this will contribute to secure the quality of our research design.

4.3 – Quality of Research Design

Three main issues related to research quality design are: Reliability, construct validity and external validity.

4.3.1 – Reliability

"Reliability refers to the extent to which a measuring instrument contains variable errors, that is, errors that appear inconsistently from observation to observation during any one measurement attempt, or that vary each time a given unit is measured by the same instrument" (Frankfort-Nachmias and Nachmias 1996). This means that when performing a similar study with similar instruments one should get the same results. In order to provide for this we will include instruments used in our case study, such as interview guides and questionnaires, in a case study protocol.
4.3.2 – Construct Validity

Construct validity relates to establishing correct operational measures for the concepts being studied (Yin 2003). In our case study we will try to achieve this by using three principles presented by Yin in his book *Case Study Research, Design and Methods*: using multiple data sources in our data collection; establish and maintain a chain of evidence, meaning that the reader should easily be able to follow the logic and reasoning in our case study from the start to the end; and having review by key informants in order to secure that the collected data is accurate (ibid). We will also, when approved by the interview objects, record the interviews on tape. This will, together with the fact that two persons will be present at each interview, further secure the quality of the collected data.

4.3.3 – External Validity

“External validity reflects how accurately the results represent the phenomenon studied, establishing generalizability of results” (Ellram 1996). Generalization of a case study differs form statistical generalization where, if a sample is correctly selected, the results may be generalized to a broader population. In a single case study design however, this statistical generalization would be incorrect (Yin 2003). When applying a single case study design, the researcher should try to generalize the results through analytic generalization; the researcher tries to generalize the results, not to a broader sample, but to some broader theory (ibid). Hence, the generalization of our study will be a based on the discussion of our findings in relation to our theoretical framework.
5 – Empirical Setting

In order to perform a good case study, selection of an appropriate empirical setting is important and it needs to fit well with the proposed research problem, theoretical framework and the method chosen. As mentioned before we will in our thesis try to get a better understanding of how firms structure their purchasing function, and what factors that influence these structures in the Norwegian construction industry. In order to study our proposed problem in an empirical setting, we have chosen the purchasing function at Mesta Entrepreneur as a case. Mesta Entrepreneur is a subsidiary of Mesta AS.

Mesta AS is the largest Norwegian entrepreneur company within construction, maintenance and operations of roads (Mesta 2009). Mesta AS was established in 2003 when the production function of Statens Vegvesen was turned into an own entity and exposed to competition. Mesta AS has recently gone through a restructuring of the entire company. From being a single company with geographical divisions, the company now consists of eight fully owned subsidiaries: Geo Survey AS, Mesta Eiendom AS, Mesta Entreprenør AS, Mesta Asfalt AS, Mesta Stein AS, Mesta Elektro AS, Mesta Drift AS and Mesta Verksted AS (ibid). Mesta Entreprenør AS is one of the largest subsidiaries and their main area of business is construction of roads, tunnels, docks, bridges, power plants, and airports (Mesta 2009).

Mesta Entreprenør AS, hereby referred to as Entreprenør, has the responsibility for its own financial results, and has its own purchasing function. Based on some initial contact with the purchasing director at Entreprenør, we will describe the structure of the purchasing function as seen in figure 2.
Figure 2: Purchasing structure of Entrepenør.

The Chief Purchasing Officer (CPO) is responsible for all the firms purchasing activities, and sees the coordination between the projects as one of his main responsibilities. The purchasing function also consists of multiple Product Managers, each responsible for the supply of large product groups such as concrete and asphalt. The Project Purchasing Managers are responsible for the supply to a specific project, and contact the Product Managers when a project needs supply of materials covered by these groups. This contact often occurs in the planning phase of the particular project, where the Product Purchasing Managers develops supplier contracts. Both the Product Manager and the Project Purchasing Manager report directly to the CPO, who is in charge of the coordination of the different requests. At the lowest level in the structure is the foreman at each construction site. The foreman is responsible for the operational activity at each construction site and is thus, to a large extent, also responsible for the operational purchasing activity of the materials needed.

There is no reason to assume that Entrepenør’s purchasing function is an example of a “best case” in the Norwegian construction industry. It is however, a good example of a firm in the industry and may therefore be classified as what Yin describes as a typical or representative case (Yin 2003). We believe that using this case will contribute to further understanding on the issue of purchasing structures and the factors influencing these.
6 - Implementation Plan

Theory Building
During the fall of 2008 and the writing of this research proposal, we have performed an extensive theory search, however we do feel that collecting and reading theory will be an continuously process as we go along. This might be due to discovery of new and unexpected obstacles and other factors that might be hard to foresee. Even so, we have to set a deadline for the final theoretical framework of the master thesis. This is set to be 01.04.08

Data Collection
When we have collected, studied and structured the theory necessary to answer our research problem, we will start to collect data from Entreprenør. During this phase we will develop questionnaires, perform interviews and collect other data available from Entreprenør. In order to focus on this area, we need to be finished with the theoretical part. However, the preparation for the data collection may overlap with the previous theory-building phase. We set the deadline of this part to be 01.05.08.

Analysing and Writing
When we possess both a thorough theoretical framework and a good insight and data form our case, we will start to analyse and discuss the data, in order to answer our research problem. This might be a frustrating and time consuming phase of the thesis, and thus it might be difficult to set an exact deadline for this. However, we do need some time for the last editing and finishing of the thesis, and thus we hope to finish off with the analysis and writing by 31.06.08

Finishing the thesis
The final editorial work of a paper is often more time consuming than first excepted, and in order to have time to finalize and print the thesis we set the deadline of this phase to 25.09.09, a week before the final hand in date.
References

Articles:


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