

Organizational Benefits Created by Enhanced Strategic Purchasing at Bäckström Anläggning

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Acknowledgements

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Abstract

Today, purchasing is seen as a major value adding activity and a great competitive advantage. Hence, optimizing and making purchasing a vital part of the strategy is of greatest essence in any company. However, defining and implementing a beneficial purchasing strategy is not an easy task. This master thesis has sought to assist Bäckström Anläggning in mapping the current purchasing procedures at the company and suggest improvements. In order to carry out this analysis Bäckström Anläggning was positioned in the purchasing development model by van Weele (2014). Furthermore, the steps needed in order to accelerate were identified.

In order to map out the current process, a thorough case study was carried out. The qualitative data gathered from interviews was complemented by quantitative data extracted from the company's accounting system Hogia. The case study revealed that the purchasing procedures at Bäckström Anläggning are fully decentralized and no common purchasing strategy is currently in place or followed. The lack of communication amongst the employees, as well as from top management, create an frustration and a scattered way of working.

The empirical study led to a positioning of Bäckström Anläggning in the purchasing development model as a company applying commercial oriented purchasing. In order to further accelerate within the model, an overall strategy will have to be established. The strategy recommended is to optimize the purchasing procedures of all items separately by choosing the most beneficial supplier relationships based on the Kraljic matrix's classification of the item. A majority of the purchases are recommended to be managed through thoroughly elaborated framework agreements.

In order to succeed with the shift in the development model and realize the desired benefits, the company will have to increase the communication between the departments as well as from top management. When adapting this strategy the company will be able to create savings through synergies as well as reduce the administrative work.

Key words: *Infrastructure construction, Purchasing process, Purchasing strategy, Purchasing development, Kraljic matrix, Framework agreement.*

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List of Abbreviations

BA	Bäckström Anläggning AB
BM	Business Manager
CQD	Calculation and Quotation Department
HoOS	Head of Operations Support
KMA	Quality, Environment and Work environment
KPI	Key Performance Index
PM	Project Manager

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1 | Introduction

This chapter describes the background of the study as well a description of the company Bäckström Anläggning, further referred to as BA, and its business units. Thereafter, the problem formulation, the purpose of the study, the research questions, the focus and delimitation, as well as the target group are presented. Finally, a short presentation of the report structure is introduced.

1.1 Background

Today, globalization directly or indirectly influence the business procedures in almost any industry. Companies will have to compete on a global level where large players are accessing economies of scale and seemingly infinite resources. This force companies to maximize every part of their businesses in order to stay relevant and profitable. A major opportunity to increase the company's profitability is by incorporating effective supply chain management and assessment of purchasing costs of goods and services (Bozarth & Handfield, 2016; Deloitte, 2019; Oxford Collage of Procurement and Supply, 2019). The impact of purchasing and its strategic importance have thereby gained increased recognition recent years. The previous view of purchasing as a merely operational and administrative function has shifted, and is now seen as a major value adding activity and a great competitive advantage. Hence, optimizing and making purchasing a vital part of the strategy is of greatest essence in any company (Monczka, Handfield, Giunipero, & Patterson, 2009; van Weele, 2014; Karjalainen, 2011).

1.2 The Company

BA is a medium-sized Swedish infrastructure construction company operating in the Stockholm region. Their current market areas are construction work within energy, infrastructure, real estate and industry. The company has been active for roughly 20 years and in 2018, the company had a turnover of 661 million SEK and a profit of approximately 0.5 million SEK (AllaBolag, 2019).

As of right now, BA is using decentralized purchasing for all of their business units. They are experiencing that some working groups are making inefficient purchases that could have been made centralized or at least more coordinated.

1.3 Business structure

The structure and organization hierarchy of BA can be visualized in Figure 1.1 and as can be seen there is currently no central purchasing unit in place.

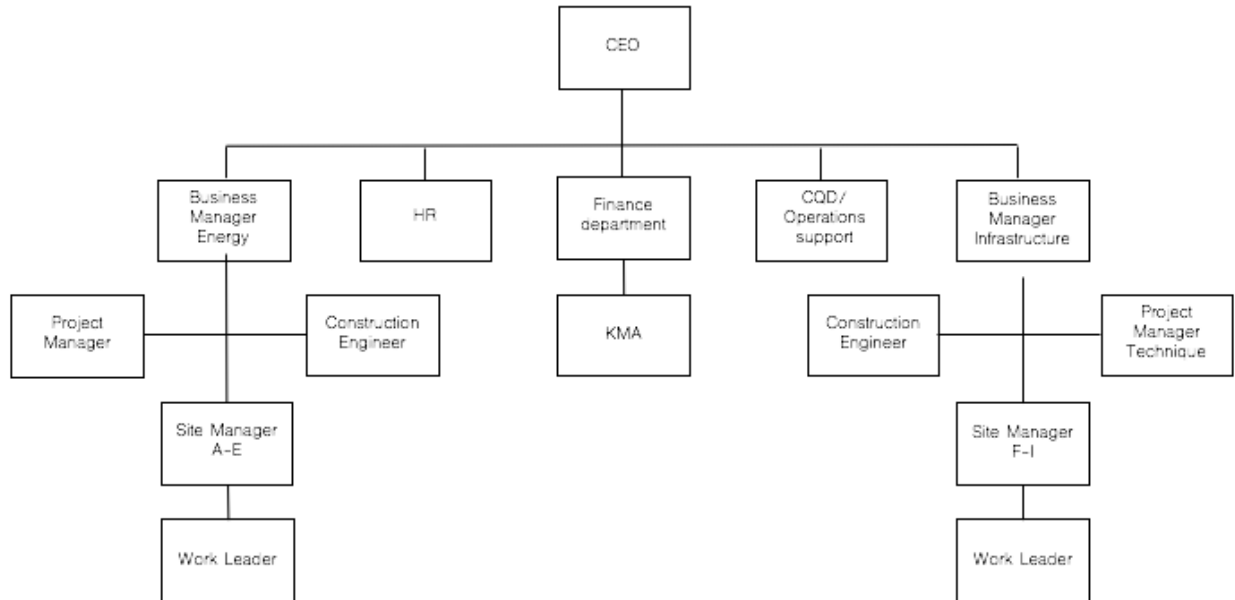


Figure 1.1: Organization map over BA

At the top of the organization the CEO is to be found. Under the CEO, the Business Managers, the Finance Department, Human Resources, the Calculation and Quotation Department (as well as the Operations Support) are located.

KMA is the Swedish translation and abbreviation of Quality, Environment and Work environment. The department is responsible for driving these areas forward internally and in the construction projects. KMA is part of the economy department. At equivalent level as KMA the Operations Support, is to be found. The Operations Support supports the Calculation and Quotation Department, which further will be referred to as CQD.

The Business Manager at BA have the overall responsibility of the projects in their business area. Hence, responsible for the customer satisfaction and making sure that the production is running efficiently and in accordance with the company's quality and environmental policies.

The Project Manager, positioned under the Business Manager, has the overall mission to support the business and technology functions as well as secure the projects overall development.

The Site Managers, continuously referred to as A to I in the thesis, are next in the organizational hierarchy level. The Site Managers are responsible of planning and leading the project all the way from start until completion. This includes responsibility of financial results and ensuring that the production is conducted in accordance with the company's operating policies. Each of the Site Managers have a Work Leader positioned under them assisting with the daily operations.

The Construction Engineer's responsibility is to act as a support resource within the production unit, ambulating between the different Site Managers. The overall mission is thus to assist the Site Managers in planning, negotiations, building meetings and financial work.

1.4 Problem formulation

Today, each Site Manager is entirely responsible for its own purchases and no notable coordination or central purchasing unit exist. BA has identified that inefficient and unnecessary time consuming purchases are made, and thereby request to adapt a more structured and united purchasing approach. Thus, BA have requested assistance in carrying out a thorough analysis and mapping of the current situation in order to increase efficiency and effectiveness in their purchasing processes.

1.5 Purpose and Research Question

1.5.1 Purpose

The purpose of this thesis is to investigate how enhanced strategic purchasing can create organizational benefits for Bäckström Anläggning.

1.5.2 Research Question

The main research question in this thesis is:

- RQ1: How is Bäckström Anläggning purchasing process currently performing and how is it aligned with the strategic agenda of the company?

- RQ2: How can different products benefit from being purchased more strategically?
- RQ3: How can Bäckström Anläggning's purchasing process develop in its performance and be more aligned with the strategic agenda of the company?

1.6 Focus and Delimitation

Due to the limited time frame of this thesis, a delimitation has been set. This delimitation derive from discussions with supervisors from both Lunds Tekniska Högskola, LTH, as well as from BA. The scope of the study is illustrated in Figure 1.2 below. As presented, the focus will be on hand machines, materials and tools.

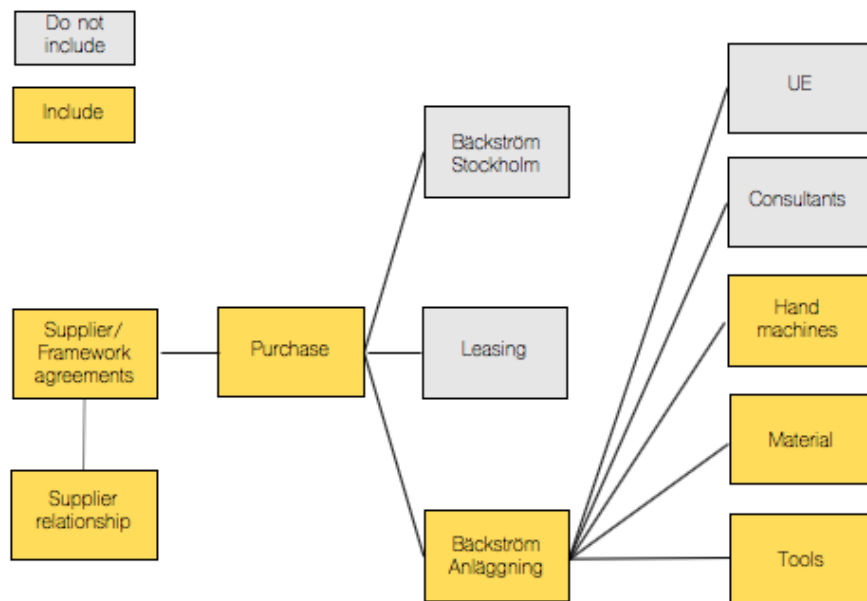


Figure 1.2: Delimitation map over the master thesis at BA

1.7 Target group

The target group of this master thesis is primarily BA. The aim of the study is to provide the company with valuable insights in the field of strategic purchasing in order increase efficiency and access organizational benefits. The thesis also addresses people interested in infrastructure construction purchasing and purchasing

strategy.

1.8 Structure of thesis

The thesis is built upon six chapters in the following order:

1. Introduction
2. Method
3. Literature Review
4. Empirical Study
5. Analysis
6. Conclusion

Methodology - this chapter is structured after the Research Onion inspired by Saunders and Tosey (2013), where the research philosophy, approach, strategy, method choice, time horizon and technique and procedure are discussed.

Literature review - in this chapter the theoretical foundation for the case study is established. It begins with an introduction presenting the development of purchasing management. Then, the theory present the purchasing process, strategic purchasing and supplier relationships, spend analysis as well as theory regarding purchasing in a centralized versus decentralized business structure.

Empirical Study - this chapter presents the findings of the embedded single case study. The chapter is divided into two parts: a quantitative and qualitative study. The first part is the quantitative study, which covers the financial aspects to the study. The second part, the qualitative study, is based on interviews with concerned representatives of the organization and covers the current purchasing procedures at BA. The subsection "Centralization" in the qualitative study will be structured in accordance with the top twelve purchased goods within the organization.

Analysis - in this chapter the analysis aim to answer the research questions. The objective is to compare the literature review with the findings from the empirical study. It will begin with a presentation of where the authors believe BA is positioned in the purchasing development map, and then present what to enhance in

order to shift to the next phase. Finally, the potential financial impact of improving the strategy will be presented. The analysis is wrapped up with a sensitivity analysis as well as the potential effects of the pre-set delimitation.

Conclusion - this chapter includes a brief summary of the thesis. The authors will answer the research questions as well as motivate how the purpose has been fulfilled. Future research suggestions as well as theoretical contribution will also be presented in this chapter.

2 | Method

This chapter is structured after the Research Onion inspired by Saunders and Tosey (2013), where the research philosophy, approach, strategy, method choice, time horizon and technique and procedure lay as a foundation of the research design.

2.1 Research design

In this study the *research onion* by Saunders and Tosey (2013) was the foundation of the applied method. It illustrates how the different layers of scientific research can be used for the structuring of the thesis. Figure 2.1 illustrates the research onion, where each layer represents a section of the methodology chapter. Furthermore, the circled elements in each layer represents the chosen research in this thesis.

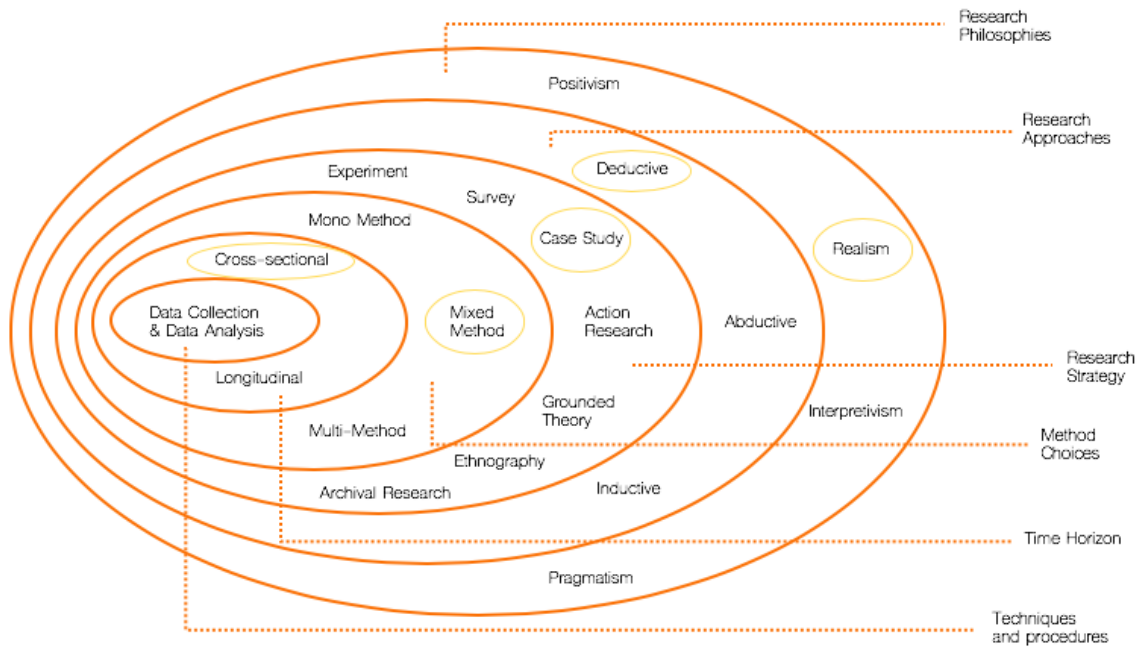


Figure 2.1: The research onion (Saunders & Tosey, 2013).

2.2 Research philosophy

The first layer represents the research philosophy and refers to the researchers perception of the world and its surroundings, and how she or he perceive acceptable knowledge. The research philosophy discusses four different philosophies: positivism, realism, interpretivism and pragmatism.

Positivism is based on the idea that scientific knowledge is the true knowledge of the world. It is characterized by large samples of quantitative data and the statistical testing of an hypothesis developed from existing theory (Saunders & Tosey, 2013). Replicating the research is believed to be beneficial in the mind of a positivist (Wahyuni, 2012).

Realism, just like positivism, relates to the scientific knowledge. However, realism is characterized by using several types of research methods in order to deliver a reliable outcome. Often both quantitative and qualitative data is analyzed. The philosophy can be broken down and distinguished between direct- and critical realism. A researcher referring to direct realism argues that our experiences directly represents the reality, whereas the critical realist believes that what is experienced is subsequently processed by the individual mind (Saunders & Tosey, 2013).

Interpretivism is based on the idea that the reality of the world is built up by people's perception of it and the social actors in the world. An interpretivists research is characterized by the collection of data involving small samples of qualitative data collected from in-depth investigations, where the focus of the research is based on interactions with people (Saunders & Tosey, 2013; Wahyuni, 2012).

Pragmatism research is categorized by using both quantitative and qualitative data, since it enables an enhanced understanding of the reality. A pragmatist emphasizes the importance of the practical consequences the research findings have (Saunders & Tosey, 2013; Wahyuni, 2012).

A compilation of the different characteristics of the four mentioned research philosophies can be visualized in Table 2.1 below.

Table 2.1: Research philosophy (Saunders & Tosey, 2013)

Research philosophy	Positivism	Critical realism	Interpretivism	Pragmatism
Characteristic	Quantitative	Quantitative/qualitative	Qualitative	Quantitative & qualitative

Chosen research philosophy

In this master thesis, several philosophies could be used due to the wide spread of research. Since the master thesis covers a data collection resulting in a total cost analysis, positivism or critical realism could be used. In the study interviews were held in order to secure and determine that the collected data represented the reality of the situation. Thus, a critical realism was used in order to secure that the collected data was accurate.

2.3 Research approach

The second layer refers to the approach of the research. There are three possible approaches in the scientific research: deductive, inductive and abductive.

Deductive research is based on a top down logic. In a deductive literature review, existing theory and general rules are applied to a specified subject. A hypothesis and proposition is presented and tested, after which a conclusion is reached through exclusion of possibilities one at the time, until only one is left. The deductive research is the predominant method used in research and is specially well suited for testing existing theories, but less for exploring new fields.

Inductive research could be seen as the opposite of deductive research, hence based on a bottom-up logic. In inductive research a specific case will be observed and analyzed. Observations then inspire the foundation of the answer on a general level. There are no requirements of a previously determined specification of the theory applied.

Abductive research is yet another approach to engage in a problem formulation. The abductive research starts with an observation where the most likely explanation to the phenomena is sought for. This explanation is then tested through a hypothesis. Abductive research is well suited for gaining new knowledge, but the procedure will only yield a plausible conclusion and not verifying it. Abductive research will render less significant results than inductive or deductive case studies.

Chosen research approach

The method used in this thesis was deductive reasoning. This is motivated by the fact that this method is the predominant, and evidently most prominent, method used in the field of logistics and aligns with the objective of this master thesis (Kovács & Spens, 2005).

2.4 Research strategy

The third layer of the research design refers to the research strategy. Examples of different strategies to base the research on are: experiment, survey, case study, action research, grounded theory, ethnography and archival research. The strategy applied in this thesis have been case study.

Case study research shall not be confused with qualitative research but rather a way of investigating an empirical topic following a set of pre-specified procedures. Furthermore, case studies are not limited to either qualitative or quantitative studies but can be a mixture of both. There are several different approaches to performing a case study that differ in design. As illustrated in Figure 2.2 below, the study could be based on either single or multiple cases, as well as being holistic or embedded (Yin, 1994).

	Single-case designs	Multiple-case designs
Holistic (single unit of analysis)	TYPE 1	TYPE 3
Embedded (multiple units of analysis)	TYPE 2	TYPE 4

Figure 2.2: Case design matrix (Yin, 1994)

2.4.1 Single case studies

In a single case study one single experiment is performed. Situations where this is motivated is when a solitary case is the most important to investigate or if there is only one case feasible to analyze. However, a single case study might involve more than one unit of analysis if sub-cases to the main case are investigated as well. The case study is then labelled as an embedded single case study, illustrated as Type 2 in Figure 2.2. The benefits of an embedded study is that it goes further into depth of the questions in order to answer them. The drawback could be that the global case is overlooked in favour of the details on sub-levels. This can lead to the sub-units replacing the initial phenomena as the target of the study while the phenomena of interest is degraded to a contextual framework.

The contrary to an embedded study is a holistic study, illustrated as Type 1 in Figure 2.2. In this approach there is no clearly defined sub-category and the single case examine only according to its global nature. The holistic approach could also be motivated when the underlying theory the study is of holistic nature. The drawbacks of applying a holistic approach is that important operational details of a phenomena might be overlooked due to the abstract nature of the research design (Yin, 1994).

2.4.2 Multiple case studies

The opposite of a single case study is a multiple case study. The multiple case study procedure should follow a replication logic between the different chosen cases. Important is to distinguish this from a sampling logic. Every case initiated in the thesis should be thoroughly motivated and contribute to the overall scope of inquiry. Every chosen case should also be selected so that it predicatively will yield either the same result (a literal replication) or contrasting results due to predictable reasons (a theoretical replication). Each case in the case study represent an individual sphere where evidence are sought for regarding the fact and conclusions for other cases. A rich and well defined framework for the replication procedures is crucial in order to conduct reliable results. The framework should state hypothesis of whenever a phenomena is likely to be observed, as well as when it is not likely to be observed. If some of the empirical cases does not turn out as expected, modification to the theory need to be done. As for with single case studies, the individual cases in the multiple case study could also be either embedded or holistic, illustrated as Type 3 and 4 in Figure 2.2. The same benefits and disadvantages applies.

The drawback of using a multiple case study instead of a single, is that it require extensively more data. Important to notice is that if there are any of the cases considerably overshadowing the other, a single case study is probably more preferable (Yin, 1994).

Chosen research strategy

Due to presented facts, a single embedded case study was decided to be used in order to answer the objective of this master thesis. The embedded cases are represented by the twelve largest cost items.

2.5 Method choices

The fourth layer of the research onion refers to the possible method choices in the thesis. There are different methods to choose from while doing a research, both quantitative and qualitative, such as mono method, multi-method and mixed method.

The *mono method* is based on the idea that only one quantitative versus qualitative research is conducted in order to lay as a base for the research. It can for example cover a collection of data through interviews or questionnaires whereas a *multi-method* covers more than one quantitative research as well as more than one qualitative method. An additional research, other than the two mentioned, could be an additional structured observation.

Chosen research method

For this thesis, a *mixed method* was chosen as research method. The method combines the collected qualitative and quantitative data (Saunders & Tosey, 2013). Firstly, a literature study was conducted, followed by a single embedded case study with qualitative data collection through semi-structured interviews and quantitative data gathered from the accounting system *Hogia*.

2.6 Time horizon

In the final layer, the time horizon of the research onion is chosen. A typical *cross-sectional* research uses either a survey or a case study, whereas a research that is *longitudinal* uses experiments, action research, grounded theory etc. over a long period of time (Saunders & Tosey, 2013).

Chosen research time horizon

As this master thesis covers three years of financial data that was collected during a snapshot of time, the study can be considered cross-sectional.

2.7 Technique and procedures

In the core of the research onion, the techniques and procedures during the research can be found. Here in the final layer, the researcher must make sure that all choices in the previous layers align with the final choice of data collection and analysis that is needed in order answer the research questions and fulfill the purpose of the thesis. The chosen procedure must stand steady against criticism and deliver a valid and reliable result (Saunders & Tosey, 2013).

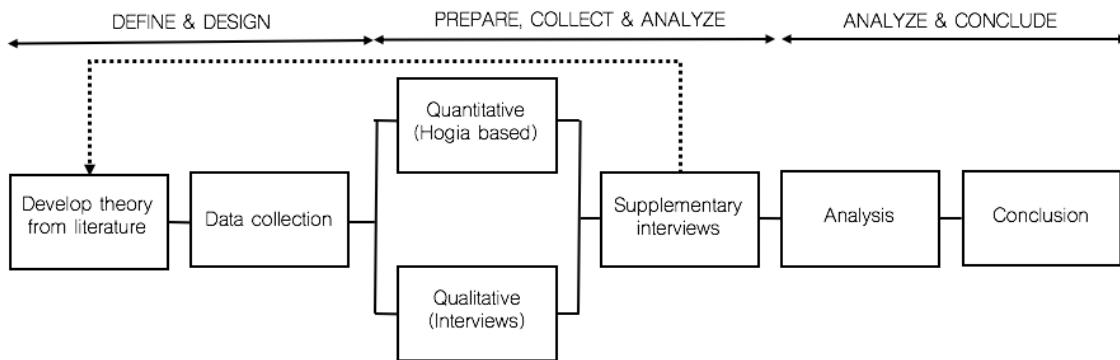


Figure 2.3: Illustration of the chosen case method, with inspiration from Yin (1994)

An illustration of the single embedded case study procedure is visualized in Figure 2.3 above. This provide a foundation for the study.

2.7.1 Literature review

A literature review is the foundation of this kind of thesis and it is thereby crucial to be performed in an exhaustive and rigorous way. The purpose of the literature review is according to Rowley and Slack (2004) to:

1. Identify and support the research question
2. Identify relevant literature and to contextualize the research question
3. Propose a suiting research design

The identified sources was evaluated based on validity and credibility in general, as well as relevance for the specific subject in question. Articles was evaluated based on the number of citations and the credibility of the publisher. Printed books was evaluated based on the credibility of the publisher. All literature was evaluated in regards to the year of publication and whether updated information have been presented since. This is a method recommended by Rowley and Slack (2004).

Initially, previous course literature used in relevant courses studied at LTH were used. Then, additional literature based on recommendations by PhD Bildsten was researched. This literature was complimented by a great variety of relevant articles gathered from online databases such as LubSearch, Google Scholar and Research Gate. The most important findings in the overall literature could be found in Kraljic (1983), van Weele (2014) and Monczka et al. (2009).

2.7.2 Quantitative data collection

The first step of the data gathering was to define the delimitation's and to extract the needed data. The last step was to interpret the data and then present the results in suitable tables and figures.

This master thesis is based on substantial amount of data gathered from Hogia. The time frame of three years was chosen since it presents a substantial amount of data to base an analysis on. The chosen time frame was selected in order to include the full length of projects ongoing for a longer period of time than one year, but still limit the amount of financial data.

The data of aggregated purchases done by each Site Manager during the mentioned period of time have been consolidated and divided in product categories in accordance to the account coding chosen by BA. The data have been structured in accordance with the twelve different embedded cases, represented by the twelve largest cost items.

In the result chapter, the separate data from the Site Managers spend were consolidated into total, aggregated purchase cost. The twelve largest cost items were extracted and then plotted in a Kraljic matrix based on theory as well as the information given by the Site Managers themselves.

2.7.3 Qualitative data collection

Interviews provides a highly efficient way of gathering rich empirical data (Eisenhardt, 1989). Eisenhardt (1989) even claims that interviews might be the only way to gather information about how a company's strategic vision is put into action. Interviews can be carried out in many different ways rendering different kind of information, and even different answers to the same question. A structured interview with narrow questions will most likely make the interviewee provide precise answers within the field discussed, but become more passive outside the topic. An active interview with interactive questions steered by the interviewer will most likely generate an active collaboration between the interviewer and the interviewee, together creating a narrative.

In this thesis *semi-structured* interviews were conducted in order not to influence the interviewees to much, and hence achieving relevant and comparable data from all the interview subjects. This technique has traditionally been seen as the most reliable one in order to obtain sufficient reliability and validity, thus motivating the choice (Latham & Millman, 2001). However, the semi-structured interview questions were complemented by a few more open questions in order for the participants to speak more freely and in that way contribute to insights previously overlooked or intentionally left out (Johnson & Weller, 2001).

The goal with the qualitative data collection was to identify how the purchasing process at BA is carried out today, as well as get an idea of how the Site Managers evaluate the different purchases.

Nine identical interviews were initially carried out with the nine different Site Managers. These can be found in Table 2.2, marked as Site Manager A to I. However, one Site Manager have only been in his position for four months and was thus not questioned regarding the individual purchases. The Site Manager is marked with a * in Table 2.2. The interview questions with the Site Managers can be found in the Appendix.

The first set of interviews with the Site Managers was complemented by a second round of interviews with selected employees in key positions in order to further validate and assure accuracy of the information. The conducted interviews can be seen in Table 2.2 below. Generally, as well as in this thesis, the process of analyzing the gathered data is iterative and carried out simultaneously along the process (Ellram & Siferd, 1993).

Table 2.2: The conducted interviews throughout the master thesis
 *Has only been active for four months

<i>Category</i>	<i>Interviews held</i>
Site managers	Site manager A
	Site manager B
	Site manager C
	Site manager D*
	Site manager E
	Site manager F
	Site manager G
	Site manager H
	Site manager I
Managers	Business manager 1
	Business manager 2
	Project manager technique
Top management	CFO
Operations support	Head of Operations support
	System administrator

2.7.4 Consolidation of quantitative & qualitative data collection

Triangulation, according to O'Donoghue and Punch (2003), is a "method of cross-checking data from multiple sources to search for regularities in the research data", i.e. a method of verification of research data that will increase credibility and overcome intrinsic biases. Triangulation is done by combining different means of observation and sources of information (Bogdan & Biklen, 2006). This step is crucial in order to ensure validity and establish a trustworthy result (Yin, 1994).

In this thesis triangulation of information was done through combining the information gathered from the interviews with the data collection from Hogia and from existing literature. The information gathered was combined in order to create a comprehensive picture of the purchases and purchasing processes at BA. The purchasing behaviour of the different products were compared to the theoretical best purchasing practice of the products with the specific attributes. If deviations between method of working and theoretical best practice were to be found, a thorough analysis of improvement potential was conducted.

2.8 Quality of research design

When performing a case study it is of greatest essence to contiguously ensure the accuracy of chosen research design. This not only in the beginning of the study, but rather throughout the different phases of the whole process. This quality of the research design can be tested through four different techniques: construct validity, internal validity, external validity and reliability. These also highly relevant and applicable for different stages in the case study and further described as follows (Yin, 1994):

Construct Validity tests how well the study addresses the challenge of collecting data in a objective way and develop a sufficiently operational set of measures. In this case study validity was constructed by always using multiple sources of evidence, triangulating the information between qualitative, quantitative sources with the theoretical framework. Further increased validity was achieved by having the draft of the thesis reviewed by key informants (Yin, 1994).

Internal Validity deals with the potential threat of interference by events that cannot be directly observed. This is mainly a concern for explanatory case studies, where establishment of connections between origin and effect is the primary goal Yin (1994). The internal validity was tested and ensured through applying a well motivated pattern matching logic throughout the interviews as well as conduct interviews with employees at different positions throughout the company.

External Validity deals with the question whether the conclusions drawn from this specific case study are generalizable beyond the scope investigated. This external validity was a major barrier and counter statement to perform a single case study. Generally, external validity will be tested through replication logic, i.e. the recreation of the experiment or hypothesis testing on additional samples (Yin, 1994). In this thesis the replication logic have not been applied since the specific research question do not acquire the answer to be generally applicable but rather investigate the possibilities within one single unit of investigation (that is, BA).

Reliability aims to make the case study procedure repetitive, and if so yielding the same results. The aim with increased reliability is to minimize the affect of biases and errors (Yin, 1994). Biases are desirable to avoid since it can discredit the entire research (Miles, Huberman, & Saldana, 2014). In order to ensure the reliability of this specific study, fundamental documentation and rigorous case study protocol were upheld throughout the entire study. The questions asked in the interviews were identical, making the answers comparable, and the interviews were documented both through audio as well as written record.

2.9 Summary

The methodology chapter began with an illustration of the research onion and the chosen methods, approaches and strategies for this thesis. To summarize this, Table 2.3 present the chosen methodologies.

Table 2.3: Summary of chosen methodology

<i>Type of methodology</i>	<i>Chosen methodology</i>
Research philosophy	Realism
Research approach	Deductive
Research strategy	Embedded single case study
Method choice	Mixed method
Time Horizon	Cross-sectional (3 years)

3 | Literature review

In this chapter, relevant theory in the field of purchasing will be presented in the following order: development, process, strategy and relationship, spend analysis and centralization. A majority of the theories discussed apply to purchasing in general and not solely purchasing within infrastructure construction.

3.1 The development of purchasing management

The increased acknowledgment of purchasing as a strategically important decision area, has led many companies to restructure their purchasing function. The trend in growing companies has been a shift towards a more centralized function with greater involvement in the company's strategic planning. This can be illustrated with van Weele's (2014) purchasing development model, see Figure 3.1. The development of purchasing typically leads to business functions with higher effectiveness enabling larger cumulative savings (Karjalainen, 2011).

The purchasing development model identifies a step-wise development of purchasing and supply chain management within an organization regarding supplier management, strategy, supplier relationships, organizational status, system development and top management commitment etc. The model consists of six steps: transactional orientation, commercial orientation, coordinated purchasing, internal integration, external integration and value-chain integration. As illustrated in Figure 3.1, different industries are commonly represented in different stages of the development curve. As can be seen, the effectiveness and the cumulative savings develop accordingly over time (van Weele, Rozemeijer, & Rietveld, 1998; van Weele, 2014).

In the first step of the development model, i.e. *transactional orientation*, the purchasing and supply department is solely acting on orders, as well as making sure that all processes are working as planned. The organization culture is reactive, and is thus mainly responding to received complaints. Furthermore, there is little knowledge about the total purchasing spend of the company and the organization is characterized by being a decentralized company with a functional focus.

The second stage of the model is the *commercial orientation*, where the bids from different competitors are compared against each other to find the most competitive bid, and thus save money. The organization have developed a more proactive role than in the previous stage of the development model. The organization is in this step characterized with decentralized business units with a management focusing on reducing costs. With a high focus on reducing costs, companies in this step have a culture of hard negotiations with several suppliers.

In the third step, i.e. *purchasing co-orientation*, some form of formulation regarding strategy is introduced. The strategy discusses benefits from internal coordination and collaboration between the business units, i.e. the focus is on creating savings through synergy. Price and cost are still important in this step, however, the purchasing function is now also identified as having an important influence on

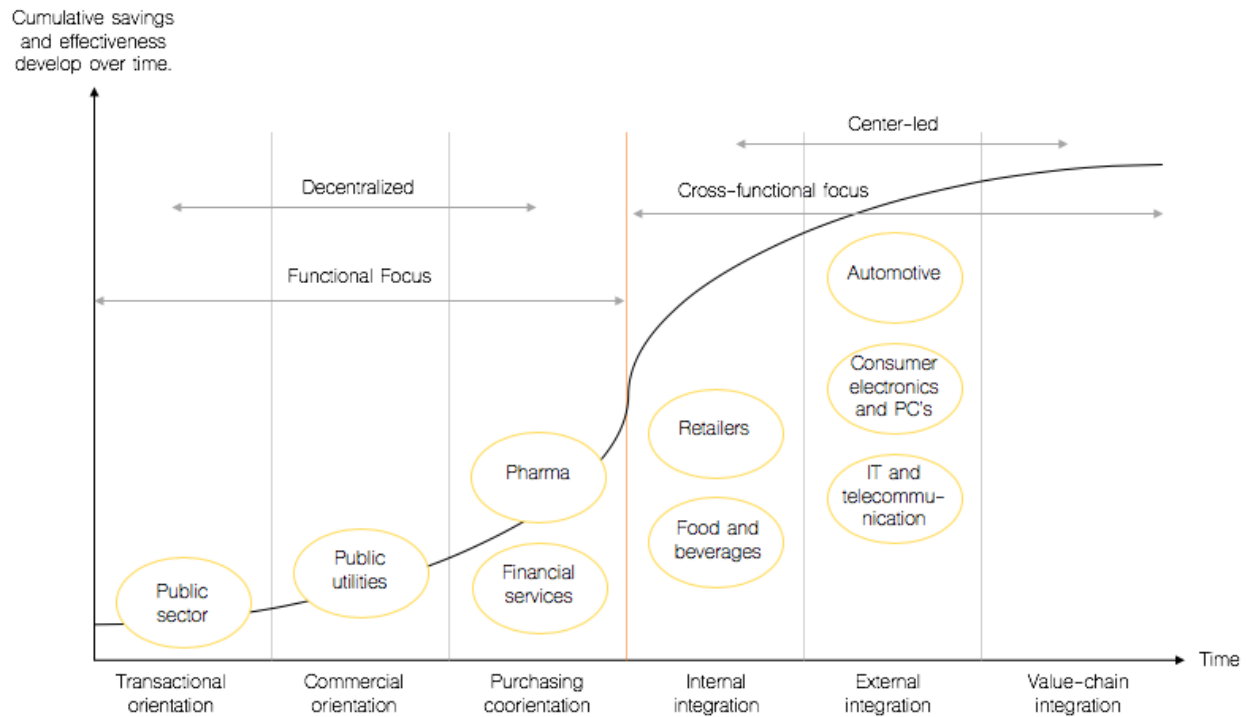


Figure 3.1: Purchasing Development Model (van Weele, 2014)

the quality of purchased products. The focus is on enhancing the communication between the decentralized business units and the central purchasing unit.

The fourth step is called *internal integration*. In this step the focus have evolved to a cross-functional focus with the overall goal to reduce the costs through the entire life cycle, i.e. total cost of ownership is recognized as important. The fourth stage is characterized by a center-led organization structure, where managers are aware of the value of procurement and purchasing and through cross-functional buying teams. In this step, purchasing is identified as being too important only to leave to buyers. Thus, purchasing decisions are integrated into the business itself and the purchasing department is a support for the business managers. The focus is however still internal but more process-oriented. The performance of the purchasing unit is measured through internal customer satisfaction surveys and benchmarkings. The communication and information infrastructure is still internal.

The fifth step of the model is the *external integration*, which is categorized by being a center-led organization with a cross-functional focus. This step is also characterized by an outsourcing strategy. Suppliers are more involved in the organization by being merged into the internal processes, such as new product development and pre-production planning. Other characteristics of this step is the incorporation of residential engineering teams and information systems that no longer are solely internal but rather merged with the suppliers’.

The sixth and final step in the development model is called *value chain integration*. In this step, suppliers and customers are constantly working side by side in order to provide value to the end customer. The activities within the company is customer-driven and focus is placed on supplier development as well as developing a global supplier network. Thus, the suppliers are consistently challenged. The overall goal is to have the most efficient and effective value-chain as possible in order to satisfy the end customer. In the final stage, the purchasing strategy is fully merged with the business strategy (van Weele et al., 1998).

3.2 Purchasing Process

According to Sjölund, CEO at EFFSO Construction (2019), important characteristics of the infrastructure construction industry affecting the purchasing behaviour is the project-based nature of the works performed. The procurement process in infrastructure construction companies in comparison to other construction companies is otherwise equivalent. The purchasing process differs greatly between projects. Characteristics such as time limitations, customer needs, risks and contract boundaries all affect the procedures and require specific adaption of the process (Sethuraman, Perera, & Sumanarathna, 2016).

Purchasing involves several steps and different authors define these steps differently. With inspiration from Bildsten (2016), the steps of the purchasing process defined by Robinson, Faris, Wind, and Institute (1967) and Webster and Wind (1972), could be consolidated with the help of van Weele’s (2014) definition of the purchasing process from 2014.

Robinson et al. (1967) identified the buy phases of the purchasing process as follows:

1. Anticipation or recognition of a need
2. Determination of the characteristics and the quantity of the needed item
3. Description of the characteristics and quantity of the item
4. Search for qualification of potential sources
5. Acquisition and analysis of proposals
6. Evaluation of proposals and selection of supplier(s)
7. Selection of an order routine
8. Performance feedback and evaluation

Webster and Wind (1972) on the other hand, divided the purchasing process into the following five steps:

1. Identification of need
2. Establishing the specification and scheduling the purchase
3. Identifying purchasing alternatives
4. Evaluating alternative purchasing actions
5. Selecting the suppliers

van Weele (2014) reduced the amounts of steps from eight to the following six:

1. Determining specification
2. Selecting supplier
3. Contracting
4. Ordering
5. Expediting and evaluation
6. Follow-up and evaluation

When consolidating the three models of the purchasing process above into one, an alternative process could be presented in Figure 3.2 below.

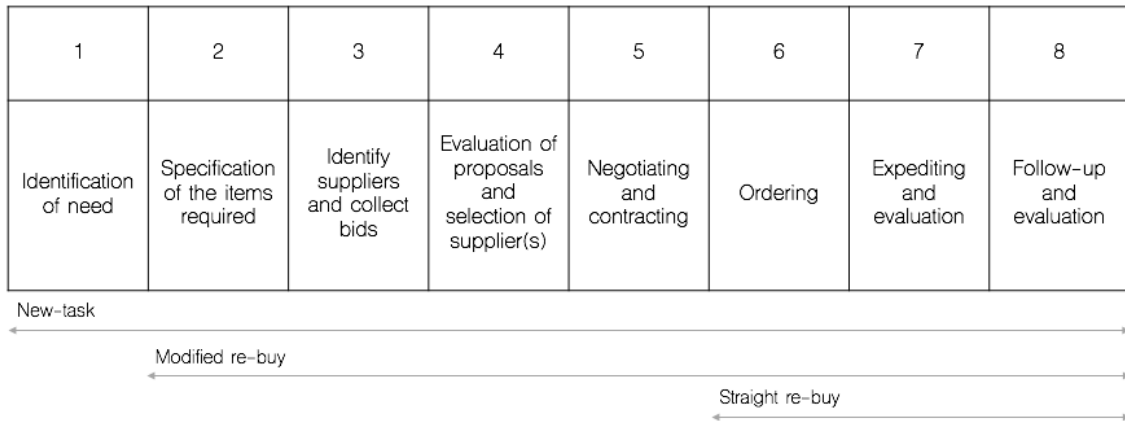


Figure 3.2: Purchasing process with inspiration from Robinson et al. (1967), Webster & Wind (1972) and van Weele (2014)

3.2.1 Purchasing situations

As emphasized by van Weele (2014) most purchases do not pass through all the steps in the purchasing process. Usually, this only occurs for the first-time purchase, otherwise most purchases are re-buys. Robinson et al. (1967) discusses three types of purchasing situations: new-task situations, modified re-buys and straight re-buys. These situations are known as the BUYGRID classifications, and can be visualized in the lower part of Figure 3.2.

The new-task situations is when the organization takes the decision to purchase a completely new product from a previously unknown supplier. Performing such purchase, the entire purchasing process will have to be revisited. Furthermore, the purchase is characterized by some uncertainty and risk (van Weele, 2014; Robinson et al., 1967).

Modified re-buy is conducted when the organization either purchase a new product or service from an already known supplier, or when the supplier is new for an already known product. A modified re-buy is commonly used when there is a problem or a dissatisfaction about the current supplier. Modified re-buys are also applied when better or more suitable products have been introduced on the market. The purchasing process for a modified re-buy is not as extensive as for a new-task situation, since some steps of the process are already performed (van Weele, 2014)(Robinson et al., 1967).

Straight re-buys are performed whenever purchases of a known product from a known supplier are conducted. There is a low risk and uncertainty related to the purchase since the terms and conditions connected to the contract previously is known and established. Straight re-buy are commonly performed, and the ordering is often conducted through e-procurement, due to the efficiency of such procedure (van Weele, 2014; Robinson et al., 1967).

3.2.2 Purchasing situations in infrastructure construction

Bildsten and Manley (2015) discussed the fact that the uniqueness of a project can lead to new-task purchasing situation. Then the different steps of the purchasing process need to be gone through again. However, Bildsten and Manley (2015) emphasizes that most products in the building construction industry are repetitively used, especially in regards to the shell of the building. Thus, new product and new suppliers represent a small percentage of the purchases. However, products are often new for the project (in the sense of reconfigured or modified) but the supplier is known, which leads to a modified re-buy. This can be strengthened by Sjölund (2019) who states that most purchases in the infrastructure construction is rather equivalent to the building construction purchase, except for the size of the purchases and the amount of suppliers affiliated with the project.

3.3 Strategic purchasing & supplier relationship

The term *strategic purchasing* can be defined as formal long-range planning, part of the overall strategic goals and planning of the company as well as visibility for purchasing professionals (Paulraj, Chen, & Flynn, 2016).

As the importance of the purchasing function have increased, so have the significance of maintaining mutually beneficial and strategic supplier relationships to providers of key goods and services (Wagner & Johnson, 2003; Sethuraman et al., 2016). An efficient relationship with the suppliers can result in greater financial results and a long-term competitive position against competitors (van Weele, 2014). Resources such as manpower, time and financial investments of companies could all be optimally utilized by categorizing, and then accordingly collaborate in different ways with, different suppliers (Wagner & Johnson, 2003). One of the most influential tools in maintaining these supplier relationship in correct ways is the Kraljic Matrix, illustrated in Figure 3.3.

3.3.1 Kraljic matrix

According to Kraljic (1983) all products purchased by a company could be classified as either leverage, strategic, non-critical or bottleneck items. These classifications are based on the financial impact of the product as well as the risk associated with the acquisition, as illustrated in Figure 3.3. Different classified items will also motivate a different procurement behaviour and approach to purchasing (Kraljic, 1983).

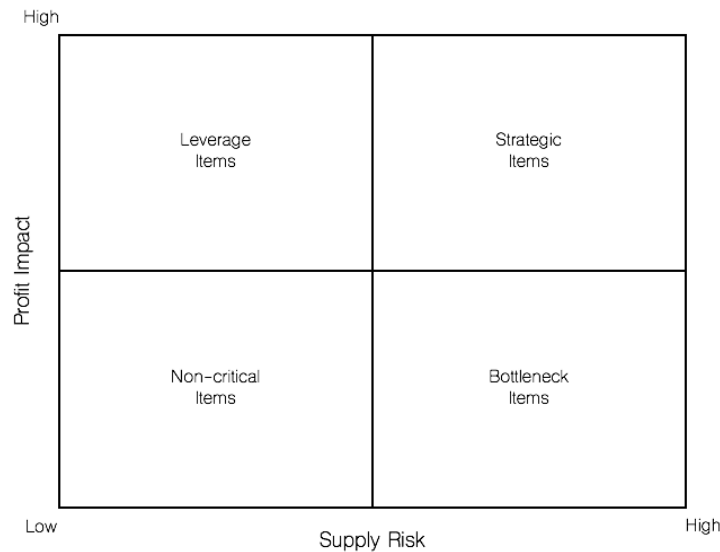


Figure 3.3: Kraljic matrix (Kraljic, 1983)

Leverage items are items that render a high impact on the company's profit, but is associated with a relatively low risk. These kinds of products could, in infrastructure construction companies, for example be raw material and other primary products. The impact on the profit from these products could most likely be deduced from the fact that they are ordered in large quantities and at repeated occasions. The supplier risk associated with these products is low since the products basically are interchangeable as well as there commonly are many suppliers providing the goods. Due to these circumstances, price and logistics related services become crucial factors (van Weele, 2014). According to Karjalainen (2011), this category is one of the well suited for a corporate approach with centralized framework agreement. However not as long-term as for strategic items. This is an important note since the price level will be continuously updated and negotiated in order to follow the market fluctuation and secure the best prices (van Weele, 2014).

Strategic items are the most critical items since they render large impact on the profit, as well as are associated with a high supply risk. It is thereby crucial to maintain a good and stable relationship with these suppliers in order to keep the day to day business running in a stable manner. Infrastructure construction companies rely on these supplier to provide goods and services such as complex software systems, unique raw material or likewise. Changing suppliers of strategic items will require extra effort compared to other categories since it requires an extensive amount of time to rigorously scan the market for new suppliers. Additionally, mutually trustworthy supplier relationships will have to be established. Long term relationships with the providers of strategic items will guarantee a more strategic position for the company on the market. Furthermore, since there is a high risk as well as high financial impact connected to the purchase, it is of greatest essence that the contracts are correctly drafted (van Weele, 2014).

According van Weele (2014), leverage and strategic products commonly make up 80 percent of a company's total turnover. Minor changes in price levels of mentioned products will have a substantial impact on the total expenditures of the company. Hence, a coordinated purchasing approach or centralized purchasing function is strongly motivated by these arguments.

Non-critical items are items rendering a low financial impact as well as are associated with a low supply risk. Commonly, the low risk is due to the fact that there are many suppliers of the goods and the value is relatively low. A dilemma associated with these kind of items is that the act of purchasing cost more money than the product worth. van Weele (2014) is arguing that these kind of items rarely are represented in construction companies, while others think that on-site construction material from production sites are a typical product classified as non-critical item (Ouchterlony, 2007; van Weele, 2014; Kraljic, 1983). According to Karjalainen (2011), this category is one of the most suitable for a centralized framework agreement.

Bottleneck items are classified as items that do not critically affect the profit of a company, but could be hard to acquire. In spite the low financial impact of the items themselves, failure to getting hold of the products in time could cause the production to a costly halt, negatively affecting the financial result of the company. Due to this threat, the dependency on the supplier is high and the company will be exposed to a high risk of price spikes. Thus, a company should avoid having products in this category. The dependency could be reduced by continuously scanning the market for alternative resources (van Weele, 2014; Gelderman & van Weele, 2003).

The Kraljic model have met some critique regarding applicability and difficulties of implementing purchasing behaviour based on the positioning done in the matrix (Ramsay, 1994). Important to keep in mind is thereby that the Kraljic matrix is a theoretical tool aiming to serve as an enabler for relative positioning, and encouraging discussion about purchasing procedures of products, compared to each other.

3.3.2 Supplier Strategies

Based on the classification of the product segment according to the Kraljic matrix, different kinds of supplier strategies are most preferable to manage the relationships. The recommended strategy is based on the importance of the product in combination with the power of the supplier, i.e. the supplier risk. The higher power of the supplier, the higher risk associated with the purchase due to lost negotiation power and higher dependency. van Weele (2014) mentions four primary methods of supplier strategies. These are further illustrated in Figure 3.4 and described below:

- Performance based partnership
- Competitive bidding
- Securing continuously of supply
- Category Management

Performance based partnership aims to create mutual participation and collaboration between the buyer and the seller. Costs as well as operational improvement targets are often negotiated before the deal takes place. In order to establish a beneficial performance based partnership, it is essential to perform a thorough vetting process prior to choosing supplier. The best supplier should preferably be "best in class", i.e. have favorable references, stable finances, future potential, sufficient production capacity, elaborated logistic services as well as qualitative products. The price level should be up for negotiation and possible to influence (van Weele, 2014).

Competitive bidding is performed when long-term contracts are combined with spot purchasing. The aim is to continuously make sure to buy the products at the lowest possible price through comparing different suppliers and continuously scanning the market. This since small reductions in costs will yield large savings over time. Yet, making sure to secure the quality of the supply is still of great importance (van Weele, 2014).

Securing continuously of supply is suited for bottleneck items where the primary focus is to avoid the production to come to a halt caused by absence of the products. If necessary, acquisition of the products and hence, the securing of supply, should thereby be prior to price (van Weele, 2014).

Category Management aims to reduce the administrative complexity and logistics-related costs. The focus should be to establish simple and efficient procedures for ordering non-critical products. Example of an efficient simplification of the ordering process is done through usage of electronic catalogues where the employees are ordering goods and materials from pre-selected suppliers. In order for this procedure to be used efficiently, the products will have to be standardized off-the-shelf and the number of suppliers should not be to large (van Weele, 2014).

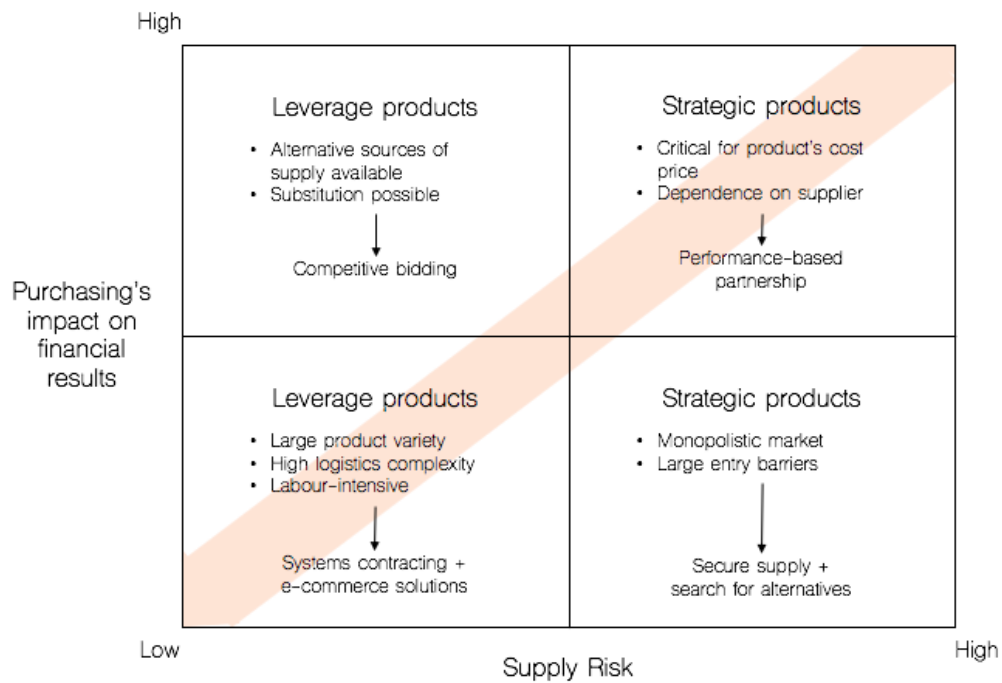


Figure 3.4: Supplier strategies (van Weele, 2014)

3.3.3 Sourcing strategies

Another way of managing purchases based on the classification, according to the Kraljic matrix, is through different kinds of sourcing strategies. This strategy is shifting focus from the supplier relationship towards the kind of sourcing strategy in general. van Weele (2014) mentions four primary methods of sourcing. These are further illustrated in Figure 3.5 and described below.

- Single Sourcing
- Multiple Sourcing
- Delegated Sourcing
- Parallel Sourcing

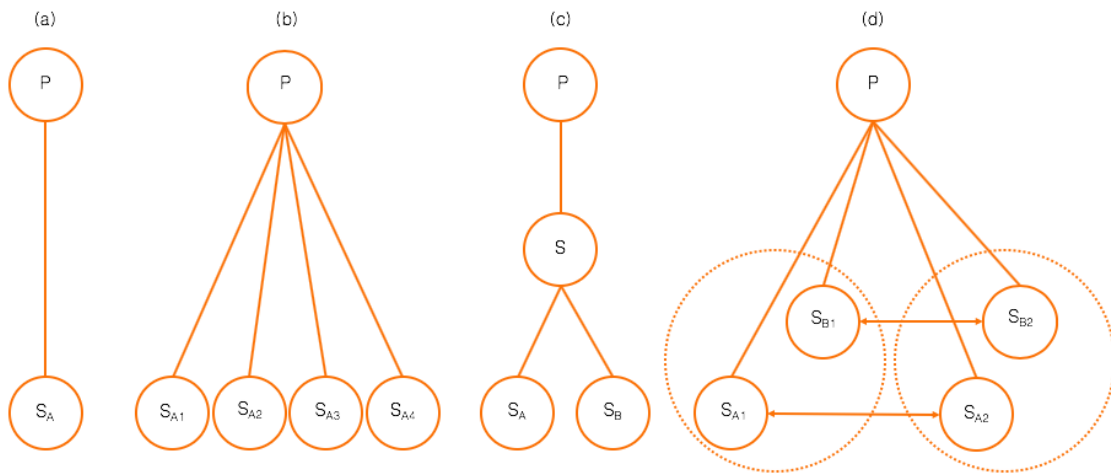


Figure 3.5: (a) Single sourcing; (b) Multiple sourcing; (c) Delegated sourcing; (d) Parallel sourcing (with inspiration from Bildsten (2016))

Single sourcing is whenever a company only uses one supplier for a certain kind of product. The advantages with this is that it enables a close communication between the company and the supplier. This kind of relationship might be necessary if project-specific products need to be developed. The disadvantage is the high dependence and low possibility to influence the price on the products purchased by a sole supplier. Single sourcing is well suited for strategic and common for bottleneck items since they might require additional attention and collaboration (Kim, Choi, & Skilton, 1993; Faes & Matthyssen, 2009).

Multiple sourcing is whenever a product is acquired from different suppliers from time to time, primarily based on the most favourable price or purchasing conditions. A type of multiple sourcing is *dual sourcing*, which is the practice of using two suppliers for a certain component. The relationships with the suppliers in multiple sourcing are often not close, and there are no major costs or barriers associated with switching supplier of these products. Multiple sourcing is common for non-critical item where price is the most deterministic factor (Zeng, 2000; Ellram & Siferd, 1993). In addition, van Weele (2014) argues that multiple sourcing also is suitable for leverage items.

Delegated sourcing is a concept applied whenever many products are purchased through one single supplier who are responsible for the sub-assembly. Hence, delegated sourcing could be seen as a intermediary. The company will hence reduce the need of communicating and interacting with multiple suppliers as well as the number of single orders placed. This will reduce the time spent on administrative tasks as well as transaction costs of purchases. Delegated sourcing is well suited for leverage and strategic items according to Ireland (2004) and van Weele (2014).

Parallel sourcing could be described as a combination of single and multiple sourcing where the purchaser aim to exploit the benefits of having a single sourcing relationship with the supplier of a product, but still have more than one supplier to choose from. This will decrease the dependence on this one actor and hence being an optimal position for the purchaser. Parallel sourcing is suitable for non-critical and bottleneck items (Richardson, 1993). This is motivated by the fact that even though the characteristics of the products can differ, potential gains achieved by consolidating the volumes of the purchases to one supplier is still possible.

Summary of strategic purchasing and supplier relationship

A compilation of the theories presented in section 3.3.1 Kraljic matrix, 3.3.2 Supplier strategy and section 3.3.3 Sourcing strategies is presented below in Table 3.1.

Table 3.1: Summary

Kraljic classification	Leverage	Strategy	Non-critical	Bottleneck
Characteristics				
<i>Sourcing strategy</i>	Delegated/multiple	Single/delegated	Multiple/parallel	Single/parallel
<i>Supplier strategy</i>	Competitive bidding	Performance-based partnership	Category management	Secure supply + search for alternatives

3.4 Spend Analysis

Spend analyses procedures are useful tools in order to find previously neglected areas of savings, formerly untapped. One kind of spend analysis is application of the spend cube, seen in Figure 3.6 below. The spend cube illustrates the allocated purchases from three different angles: purchasing per supplier, per purchasing spend category and per internal budget holder. This quantitative technique is used in order to observe patterns and identify potential areas of improvement in a company's purchasing behaviour (van Weele, 2014; Sievo, 2019). Due to the different characteristics of purchased material within a company, there is no general approach on how to perform a spend analysis (Bozarth & Handfield, 2016).

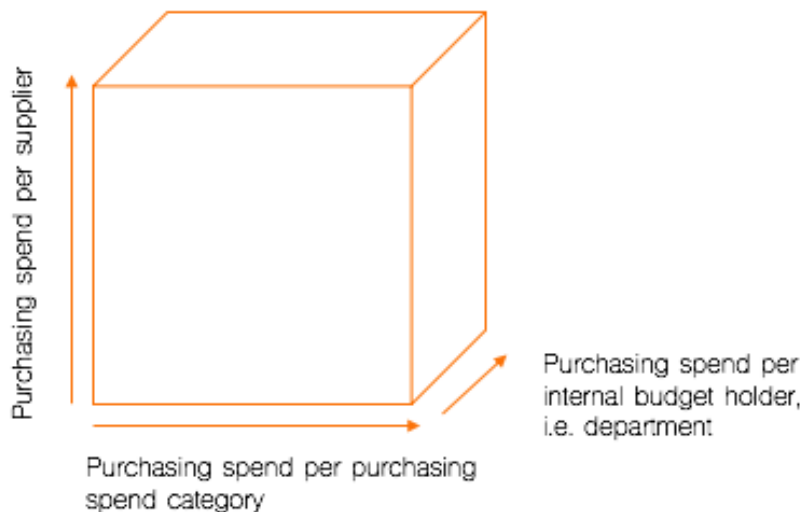


Figure 3.6: Spend cube (van Weele, 2014)

Another concept of great importance is the *Pareto principle*, also called the 80-20 rule. This principle acknowledges the aphorism that 80 percent of outcomes result from 20 percent of all causes for a given event. This concept is frequently used in business and economics, where the rule is about identifying an organization's most value adding assets and use them efficiently in order to create maximum value (Investopedia, 2019a). The rule is also applicable for spend analyses. In a spend analysis the conclusion that 80 percent of the spend can be derived from 20 percent of the purchases. Hence, according to this rule a company should identify the 20 percent of the most expensive items and focus on reducing the purchase cost of these. By doing so, the organization will be able to reduce its expenditures (Oxford Collage of Procurement and Supply, 2019).

A factor greatly motivating a spend analysis in accordance with the Pareto principle is the profit leverage effect. It states that one dollar of cost savings will effect the result positively with one dollar, while one dollar in increased revenue will only effect the result with one dollar times the pretax profit margin. Bottom line is that there are greater immediate financial benefits of cutting down on costs than to increase revenue (Oxford Collage of Procurement and Supply, 2019; Bozarth & Handfield, 2016). This is also emphasized by Deloitte (2019) who states that today, cost reduction is among the top business strategies for procurement leaders.

3.5 Purchasing centralization/decentralization

As suggested and shown in van Weele’s purchasing development model, integration of internal supply chain functions, such as purchasing, will over time lead to higher effectiveness and cumulative savings (van Weele, 2014; Karjalainen, 2011). Monczka et al. (2009) discussed the fact that few organizations are found at the extremes of the spectra, where firms have a strictly centralized or strictly decentralized authority structure. Instead they are located somewhere in the middle. In order to discuss the different benefits and disadvantages with shifting towards a centralized purchasing unit, one must discuss the characteristics of the different structures.

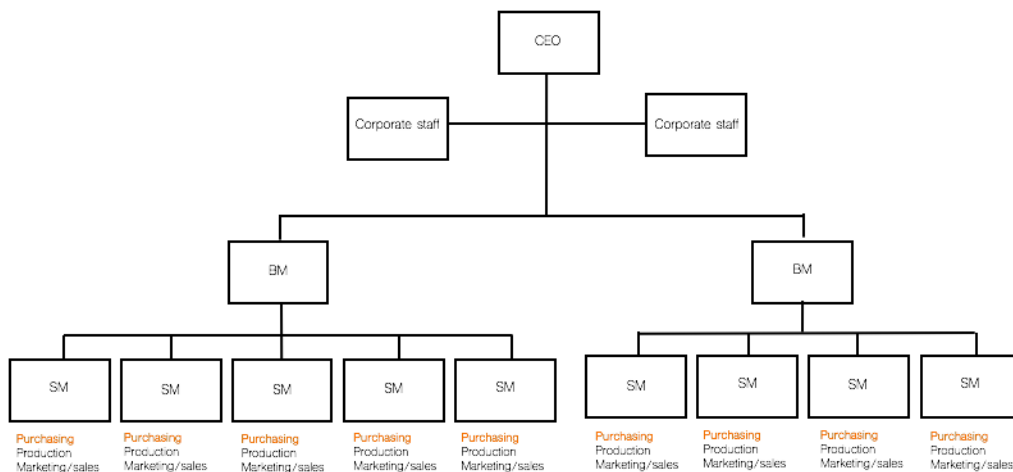


Figure 3.7: Decentralized business structure (van Weele, 2014)

Decentralized purchasing functions are characterized by the fact that every business unit manager holds the responsibility over his or hers own financial results. This can be illustrated by Figure 3.7 (van Weele, 2014). The differences between Figure 3.7 and Figure 3.8 are illustrated with the orange markings. Centralized purchasing function, illustrated in Figure 3.8 below, take on a more holistic and company-wide strategic approach where the whole purchasing process, from product specifications to supplier selection, are administrated centrally from within the organization. When a purchase situation arises, the organization choose the supplier out of a selection of preferred suppliers. Thus, a characteristics of a centralized purchasing unit is that the contracts are multi-year agreements with pre-selected suppliers. The purchases of an operational character are conducted by the operating divisions (Karjalainen, 2011; van Weele, 2014).

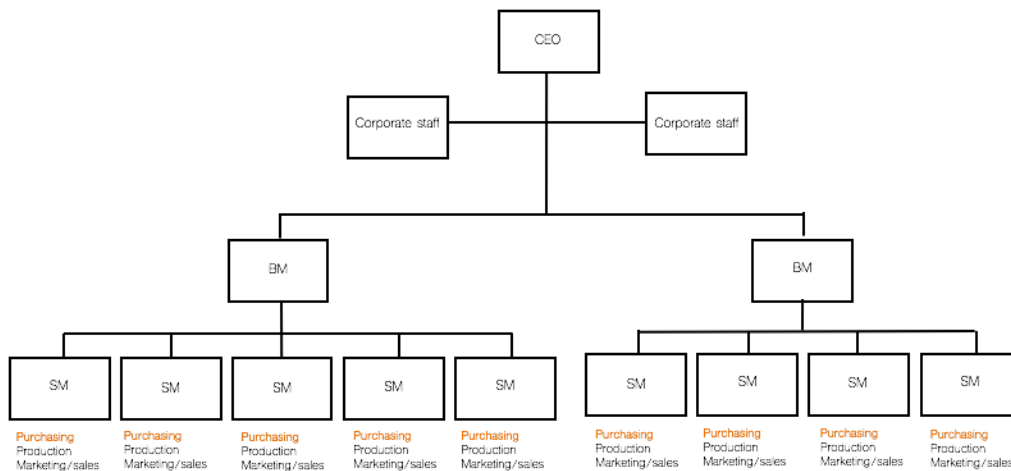


Figure 3.8: Centralized business structure (van Weele, 2014)

In this thesis, the term centralized purchasing function is defined according to Monczka et al. (2009) as: “support, integration, and coordination of different tasks that are common across a business rather than strict control over all the activities within the purchasing process”.

The term *hybrid purchasing function*, is a combination of a centralized and decentralized business structure. It uses a centralized approach for items that are purchased across multiple business units, whereas unique products are purchased in accordance to a decentralized approach. A hybrid approach can take on different structures and is commonly used in larger organizations (Monczka et al., 2009).

Monczka et al. (2009) states that there are several aspects that affects whether a centralized or decentralized purchasing function is beneficial. The extent to which a company is centralized depends on several aspects, such as the type of organization, the similarity of the purchases, degree of price fluctuations, the organizations overall business strategy, the size of the total expenditures, the overall philosophy of the top management etc. This can be visualized in Table 3.2 below (van Weele, 2014; Monczka et al., 2009).

Table 3.2: Aspects that affects whether a centralized or decentralized purchasing function is beneficial

Favors a...		
Aspects	Centralized purchasing function	Decentralized purchasing function
<i>Degree of similarity between the purchases</i>	When the purchases being made within the company are quite similar, then the purchases can be consolidated	Very different purchases across the business units
<i>The organizations overall business strategy</i>	Strategy: build a competitive advantage by being more efficient than the competition	Strategy: be responsive to individual customers in different markets
<i>Total purchasing expenditures</i>	With larger expenditure comes more pressure to use a centralized approach due to the larger cost savings connected to larger purchases	
<i>The overall philosophy of the upper management</i>	If the management favors more control of the operations from a central location	If the management is dedicated to keeping a decentralized business structure, then often it will stay that way

Historically, the geographical spread of a company was also an aspect to take into consideration. However, as technology has evolved, the difficulty with taking fast decisions has been reduced since information can travel much faster and thus also decisions regarding the operation (Monczka et al., 2009).

3.5.1 Benefits with a centralized purchasing structure

Regarding the different purchasing structures, they both provide different advantages as well as disadvantages. One structure's advantage is usually the others' disadvantage. Karjalainen (2011) divided the benefits related to purchasing centralization in three main categories: economies of scale, economies of information and learning and economies of processes. There are several benefits with either structure but the ones presented below are the ones most commonly mentioned.

Advantages with a centralized purchasing structure (a combination of Monczka et al. (2009), Karjalainen (2011) and van Weele (2014)):

- Economy of scale when consolidating purchase volumes
- Reduce the amount of double work when consolidating purchases
- Enhanced ability to coordinate purchasing plans and strategy
- Enhanced ability to coordinate and manage purchasing systems within the company
- Developing expertise
- Managing change within the company

The primary benefit of centralization is the potential of accessing economy of scale when several divisions or business units consolidate their purchases (Monczka et al., 2009; Karjalainen, 2011). By enable economy of scale, the fixed costs of purchases will be split on a larger number of items (hence reduce the overhead costs) as well as potentially enable volume discounts offered by the supplier (Investopedia, 2019b). Typically, the central purchasing function perform a spend analysis in order to identify the commonly ordered items. The terms for purchasing these items can be negotiated with the most suitable supplier, putting a framework agreement in place. When that is done, the ordering can still occur at a local level with a centrally chosen supplier (Monczka et al., 2009; Karjalainen, 2011).

As the purchasing volumes are more consolidated, the amount of duplicated work can also be reduced, which enables further cost savings (Monczka et al., 2009). This can be explained as economy of process (Karjalainen, 2011).

An additional advantage with a centralized purchasing unit is development of expertise that occurs as an effect of coordination of purchasing efforts between business units or functions. Monczka et al. (2009) refers to expertise development within areas such as negotiations, quality management, total cost analysis, team building, data analysis and information systems, legal issues and supplier relationship management.

In all industries there is a need to constantly change and develop in order to stay competitive. Managing these constant changes is easier in a centralized company since the larger initiatives often need the top managements support. A company with a centralization approach is thus much more likely to quickly respond to these larger organizational changes (Monczka et al., 2009).

3.5.2 Benefits with a decentralized purchasing structure

As mentioned, there are several benefits with either structure but the ones listed below are the ones most commonly mentioned when discussing a decentralized purchasing structure.

Advantages most commonly associated with a decentralized purchasing structure (Monczka et al., 2009; van Weele, 2014):

- Speed and responsiveness
- Understanding local needs
- Direct communication with suppliers
- Less bureaucratic purchasing procedures
- Product development support
- Ownership

The primary advantage with a decentralized purchasing function is the speed and flexibility to quickly respond to local changes or other changed conditions. This is often the primary reason why organizations do not believe in centralization. The local knowledge is connected to the speed and responsiveness as a decentralized employee have a better understanding of the processes, products, practices etc. As competitions grows stronger globally, the importance of local knowledge increases in order to stay competitive (Monczka et al., 2009).

When the purchasing is decentralized, the employees can have a direct communication with the suppliers instead of communicating through a centralized purchasing unit. A decentralized approach also reduce the bureaucratic procurement procedures, which in its own enable further speed and responsiveness (van Weele, 2014). Furthermore, when new product development occurs at a business unit level, the decentralized purchasing function can be involved in an earlier stage.

When the business unit manager is in charge of his or hers own business units and profitability, one often feel commitment and responsibility, i.e. ownership, over that specific unit. A decentralized purchasing function thus motivates the business unit manager to further succeed with its ownership (Monczka et al., 2009).

3.5.3 Framework agreement

Centralization can take on several forms, where one example is framework agreements. A framework agreement is a central agreement set up between one or more businesses with the goal to "establish the terms governing contracts to be awarded during a given period, in particular with regard to price and, where appropriate, the quantities envisaged" (van Weele, 2014). Framework agreements are intended to simplify the purchasing process, reduce the number of suppliers and increase the purchasing leverage with the used suppliers (Karjalainen, Kemppainen, & Raaij, 2009). Not only do a framework agreement refer to a negotiated price, it also provides a description of different characteristics related to the purchase, as the quality of the goods/services, special delivery guarantees, payment and delivery conditions etc. Framework agreements enables efficient communication with the suppliers, specifically the ones repetitively used for a purchase. It is usually used in such way that the decentralized units call off against the framework agreement and placing their order directly to the supplier distributing the goods, referring to the centrally pre-negotiated framework agreement (van Weele, 2014).

One of the most common challenges with the use of framework agreements is the phenomenon *Maverick buying*, i.e. employees who purchase goods and services outside of the established contracts or procedures. This behaviour often occur due to the lack of knowledge and insight of the cost savings that can be attained with the use of centralized framework agreements. (Karjalainen, 2011) argues that the cost savings often are obvious at corporate level, however not as clear for the decentralized units. Karjalainen (2011) argues that the cost savings that can be retained by reducing Maverick buying can be estimated around 20 to 30 percent.

Karjalainen et al. (2009) discuss the following aspects to why Maverick buying can hurt an organization:

1. The purchase price when purchasing off-contract is usually higher than the price agreed upon in the framework agreement as these are contracts based on purchasing leverage.
2. Even if one can find a more favorable price off-contract, the total cost (including all transaction costs for ordering, invoicing, and payment) usually is higher for the off-contract purchases.
3. Purchasing outside of the framework agreement lead to higher costs for the total organization as more suppliers lead to more relationships to manage, hence more time and money spent on these procedures.
4. Framework agreement often has promised volumes with preferred suppliers.

When purchasing outside of these contracts, the promised volumes might not be reached. This could imply that the pre-negotiated and agreed price discounts are not given.

5. Purchasing outside of the framework agreements could imply an unnecessary risk for the organization as terms and conditions for the purchases might not be reviewed properly.

3.6 Summary

In Figure 6.1 below, a summary of the chosen theoretical framework and how it is interlinked is presented.

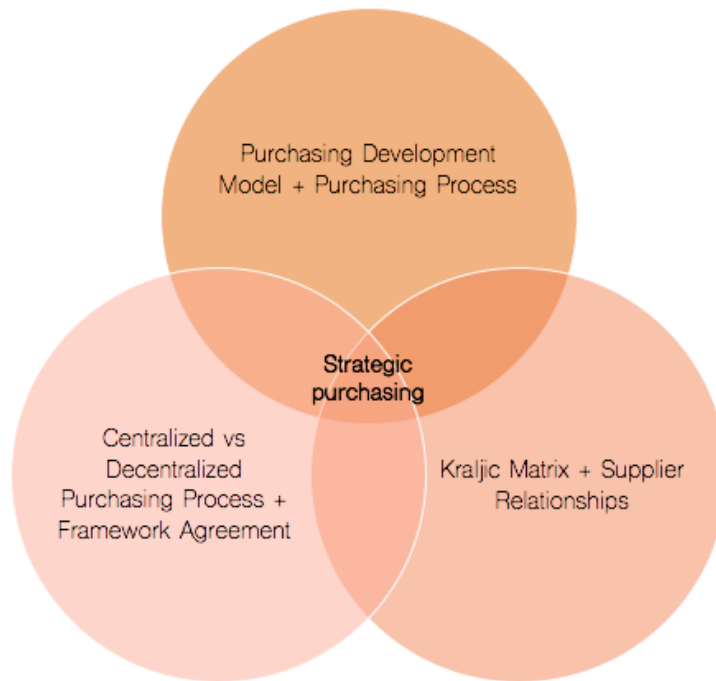


Figure 3.9: Summary over Literature review

4 | Empirical study

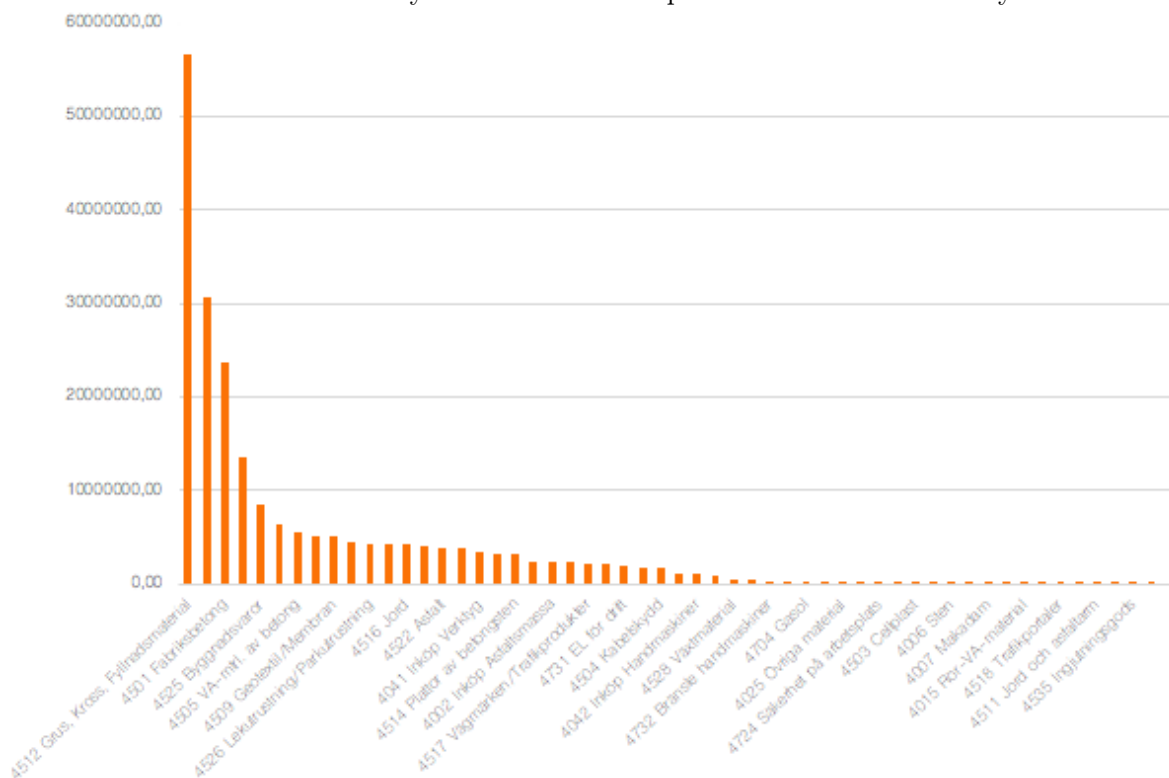
In this chapter the results from both the qualitative and the quantitative studies will be presented. In the quantitative empirical study the twelve purchases of largest financial value over the last three years, will be presented. The qualitative empiric will be presented as a referee of the answers from the interviews as well as a compilation of the key take always in each section. In order to attain the privacy of the interviewees, the names have been excluded.

4.1 Quantitative study

4.1.1 Pareto analysis

Table 4.1 below visualizes a Pareto analysis where all expenses made by BA the last three years are accounted for. As can be visualized, the top twelve expenses represents a large part of the total expenses.

Table 4.1: Pareto analysis of BA's total expenses over the last three years



The exact numbers are calculated and visualized in Table 4.2 below, where the total number and amount of the cost items are extracted from Hogia. When all limitations are extracted, the remaining 54 cost items are analyzed.

As can be seen, approximately 20 percent of the total number of cost items represents 80 percent of the company's total expenditures. This is consistent with the rule that a company should identify these 20 percent of the most expensive items and focus on reducing these costs (Oxford College of Procurement and Supply,

Table 4.2: Percentages extracted from the Pareto analysis

Number of costs items	54
Top 12 of 54 cost items	22 %
Top 12 expenses/Total expenses	80 %

2019). Thus, the Pareto analysis clearly motivates the choice of focus of the study regarding the following twelve cost items.

4.1.2 Explanation of the different cost items

In Table 4.3 the twelve purchases rendering the largest financial value over the last three years, are presented. As can be seen, both the Swedish and English translation of the goods are accounted for in the table. Further on, all cost items will be referred to according to its English translation.

Table 4.3: Account structure extracted from Hogia

<i>Cost item (Swedish)</i>	<i>Cost item (English)</i>	<i>Description of each</i>
4512 Grus, Kross, Fyllnadsmaterial	Gravel and filling material	Used when invoicing truck by hour
4507 VA-mtrl.av plast/metall	Wells and pipes - plastic/metal	Ex. wells and pipes made of plastic/metal
4501 Fabriksbetong	Ready mixed concrete	Ready mixed concrete
4529 + 4017* Armeringsjärn	Reinforcement bars and mesh	Reinforcement bars and reinforcement mesh
4525 Byggnadsvaror	Building materials	** Costs that do not fall under any kind of other accounts
4515 Plattor av natursten	Natural stone tiles	Natural stone includes ex. granite, limestone, sandstone and slate
4505 VA-mtrl. av betong	Wells and pipes - concrete	Ex. wells and pipes of concrete
4509 Geotextil/Membran	Geotextile/membrane	Ground layer dividing textiles
4720 Förbrukningsmaterial	Consumables	Material with a life span of less than one year, quickly consumed in production
4526 Lekutrustning/Skyltning	Playground equipment/signage	Ex. playgrounds, swings, benches that are placed over ground
4530 Övriga inbyggnadsmaterial	Other built-in materials	Costs that do not fall under any of the other accounts regarding embedded materials
4516 Jord	Soil	Soil/ground

*The account: 4017 is part of the old account framework, and thus added together with the new equivalent account: 4529

** Old account framework

In the beginning of 2018, the accounting structure was updated. When the implementation of the new accounting system was under construction, a few cost items were deleted and others updated. One of the deleted accounts was "Building materials", which previously was used as an account for unspecified material. "Other built-in materials" is also an account where purchases that do not fit under any other category are allocated. This account is part of the new improved framework for accounting.

4.1.3 Top twelve largest expenses

Table 4.4 below visualizes the top twelve largest expenses the last three years at BA, divided into the largest cost item first and then the rest in descending order. The table also have information regarding the number of suppliers used per cost item as well as the number of Site Managers that have had these types of cost items in their top ten individual largest expenditures the last three years.

Table 4.4: Top expenses at BA divided per cost item

Cost item	Total purchase within the category (in million SEK)	Number of suppliers	Number of site managers having the item in their top ten expenditures
Gravel and filling material	56.62	62	8
Wells and pipes – plastic/metal	30.53	54	7
Ready mixed concrete	23.69	48	8
Reinforcement bars and mesh	18.52	23	3
Building materials	8.48	118	6
Natural stone tiles	6.23	12	2
Wells and pipes – concrete	5.47	25	2
Geotextile/Membrane	4.96	17	3
Consumables	4.45	124	3
Playground equipment/signage	4.27	45	1
Other built-in materials	4.25	82	6
Soil	4.23	27	4

4.1.4 Level of coordination of supplier usage between the Site Managers

Table 4.5 below visualizes the level of coordination of usage of specific suppliers between the Site Managers, i.e. suppliers that are shared by the Site Managers. The numbers are based on the total amount of cost items used after the delimitation is set. For an example, it can be seen that Site Manager B and Site Manager E has 40 out of 158 suppliers in common. This means that 25 percent of their purchases are purchased through the same suppliers.

Table 4.5: Percentage of suppliers used between Site Managers

	B	E	I	H	G	F	A	C
B		40 of 158 (25%)	9 of 87 (10%)	44 of 115 (38%)	25 of 125 (20%)	40 of 141 (28%)	33 of 95 (35%)	48 of 148 (32%)
E			7 of 119 (6%)	42 of 147 (29%)	26 of 154 (17%)	42 of 169 (25%)	27 of 131 (21%)	44 of 182 (24%)
I				10 of 77 (13%)	8 of 70 (11%)	8 of 101 (8%)	8 of 48 (17%)	10 of 114 (9%)
H					29 of 112 (26%)	45 of 127 (35%)	26 of 93 (28%)	44 of 143 (31%)
G						29 of 134 (22%)	17 of 93 (18%)	37 of 141 (26%)
F							26 of 115 (23%)	47 of 162 (29%)
A								29 of 127 (23%)
C								

Table 4.6 below further visualizes the coordination between the purchases conducted by the Site Managers. For an example, as can be seen in the table, only five suppliers are used by all eight Site Managers, whereas 177 suppliers only are used by one Site Manager.

Table 4.6: Coordination between the Site Managers

<i>Numbers of Site Managers</i>	<i>Number of suppliers that are used by X number of Site Managers</i>	<i>%</i>
8	5	2 %
7	9	3 %
6	15	5 %
5	9	3 %
4	10	3 %
3	16	5 %
2	50	17 %
1	177	61 %

4.2 Qualitative study

The interviews all started with a quick run-down of the Site Managers history within the business area and at BA. The nine Site Managers are all answering to one Business Manager and is in charge of projects with different characteristics as well as financial impact.

4.2.1 Purchasing process at BA

The purchasing process at BA starts with the CQD collecting information regarding the approximate pricing of input material. Simultaneously they estimate the overall cost of a project and present it to the client. Whenever the client chooses to accept the proposal and proceed with the project, the exact price of input material will be collected. All Site Managers agree that this is done differently depending on the product. BM (2019a) argues that the purchasing process differs between the Site Managers themselves. However, in general it is done through a tendering process where about three different suppliers of the same materials are asked to present an offer. The suppliers involved in the initial estimation of the total cost, i.e. before the client chose to accept the bid from BA, will get the opportunity to present an offer once again. However, depending on the situation and characteristics of the purchase, different number of suppliers could be asked to present an offer (G, 2019; H, 2019). Most Site Managers agree that when it comes to the smaller purchases, the tendering process is disregarded in favour for using any supplier that have previously been used and delivered as promised.

In multiple cases, framework agreements on certain products or entire purchases from entire suppliers are set beforehand. C (2019) states that there are framework agreements with all the crucial suppliers, a perception confirmed by E (2019) who mentions that usually there are two framework agreements per product to fall back on. The other Site Managers do not mention the number on framework agreement per product specifically. F (2019) underlines the importance of comparing the prices against other suppliers regardless of the pre-negotiated framework agreements.

Different Site Managers communicate with suppliers in various ways. Some of the Site Managers conduct a few purchases via websites, while the majority of the Site Managers call the suppliers up on the phone. Most Site Managers states that the larger purchases are conducted over phone, while smaller orders are placed online. A (2019) states that in his projects, about 80 percent of the total purchases are conducted online, whereas 15 percent is ordered through phone and the remaining five percent are "emergency" purchases where the work leader drive out

and purchase the needed goods directly. However, A (2019) emphasizes that the actual purchasing process is strongly dependent on what type of project that is operated. Material that will be visible to the public, or material that in other ways are greatly customized to each project, is often specified by brand by the client beforehand (E, 2019). This could include for example play grounds or trees. G (2019) mentions that sometimes it is more beneficial for BA to purchase materials through an intermediary than directly from the supplier. Large companies often have discounts from the supplier due to their size. In these cases, purchasing from these companies is more beneficial than purchasing directly from the supplier.

While the initial larger purchases of material is done by the Site Managers, complementary purchases throughout the project are most commonly done by the work leader on site. In those cases the supplier is however pre-determined by the Site Manager and purchases occur frequently simultaneously as the need for the product arises. (A, 2019; B, 2019; I, 2019). C (2019) also emphasizes the fact that there always are done complementary purchases of additional material throughout the project. Furthermore, the amount of responsibility the work leaders have seem to differ depending on the Site Manager.

Within the organization, the responsibilities of purchases are assigned to different hierarchical levels depending to the financial volume of the purchase. As mentioned, smaller purchases during the time of the project are done by the work leader. Larger purchases are done by the the Site Manager who then take individual decisions whether to go through with a purchase or not. When exceeding this limit, the Business Manager need to give the Site Manager his approval (H, 2019). B (2019) validates that there indeed is an internal limit of allowed purchasing within the organization, but emphasizes that it is not strictly followed. B (2019) for example mentions that he works with a higher limit than other Site Managers. The approval from the Business Manager can take from approximately one hour to two weeks (I, 2019). H (2019) mentions that there is no punishment if the purchasing limit per position would be exceeded, hence Site Managers are not always following these limitations strictly. When the sum of purchases increases further, the purchase have to be approved by the CEO. The time for getting an approval from the CEO can vary from three days to two weeks. I (2019) describes that this system is heavily based on relationship both between the Site Manager and the work leader, as well as the Site Manager and the Business Manager. He has never been refused to do a purchase and neither does he rarely decline the work leader's purchasing proposal.

Challenges - purchasing process

As of right now, most purchases are conducted through phone, whereas a smaller percentage is done via website. PM (2019) expresses a severe discontent about the purchasing procedures carried out by the Site Managers and blame a lot of the behaviour on general mentality. PM (2019) specifically address two major problems with conducting purchases via the phone. First of all, purchases made through the supplier's websites are given a two percentage discount compared to purchases done by phone. This is an easy possibility to do financial savings, is missed out on. Secondly, when conducting a purchase via the phone the Site Managers are rarely planning their purchases ahead of the call but rather ask the seller what they need in order to carry out a project. The seller might then be given the possibility to sell a larger volume or more expensive material than what is needed. If the Site Manager instead were to place the order online, he would not only save material but also force him to plan the project schedule ahead of the delivery, speeding up the work when the material arriving on site. In general, PM (2019) expresses skepticism of the lack of planning in projects.

There seem to be an uncertainty regarding the financial limits of allowed purchases for each hierarchical level since the Site Managers all mention different sums. The limitations of authorization are set as a security measurement according to H (2019). However, he argues that in theory it could be perceived as a stop block of operations. BM (2019a) also discuss the fact that there is no control tool that follow up whether the purchasing limit has been overstepped or not. Several Site Managers also highlights the fact that the more steps to go through, the longer the process takes. Buy-ins need to be done continuously throughout the project both due to limitations of storage space at the sites, as well as additional need of unforeseen material.

The Business Managers both identify potential gains of Site Managers acting more aligned in the purchasing process. They state that the Site Managers in general have bad knowledge of which framework agreements that are active as well as the benefits or weaknesses related to each specific agreement. Both Business Managers emphasize that this misalignment of information can be avoided through increased communication.

Key takeaways - purchasing process

- The purchasing process generally starts with the Site Managers deciding which supplier to use and placing an initial order for covering the start-up phase of the project. Then purchases are usually made from this supplier throughout the entire project.

- Site Managers are generally acting based on own past experience and knowledge of the business, making the purchasing procedures differ between the Site Managers.
- Site Managers are placing most of the purchasing orders through phone rather than via websites, causing two major problems: missing out on easy accessed cost savings and buying unnecessary large quantities of material.

4.2.2 Purchasing strategy at BA

The purchasing strategy at BA is currently neither set in stone nor formally communicated from a higher management position. The CFO (2019) states that a strategy of how to conduct purchases do exist, however, it has only been loosely communicated through word of mouth and never written down officially. This is validated by the HoOS (2019) and by several Site Managers who state that they act on their own accord based on previous experiences rather than following a set strategy.

The procedure of asking for quotes from roughly three suppliers, and then compare them regarding critical features for every new large purchase in the pre start-up phase of a new project, seem to be pretty common for all Site Managers. According to F (2019) this is also standard across the infrastructure construction branch. However, the idea of who have set this strategy seem to differ between the Site Managers, who rather agree that the procedure is "something that everyone does".

Different Site Managers perceive the possibility to deviate from this procedure rather differently. For example, B (2019) believes he is pretty restricted to use the existing framework agreements due to the lack of time comparing different suppliers. Others believe new vetting processes are easy implemented for every new purchase.

The existence of pre-negotiated framework agreements will significantly affect the time of the vetting process. They could also intentionally or unintentionally affect the chosen supplier of certain products (H, 2019). Regarding smaller purchases, offers from different suppliers might not be compared to each other since the working time spent on gathering new proposals could be more expensive than the actual purchase (H, 2019). The perceptions whether a company wide set strategy would be beneficial or not to implement differ greatly between the Site Managers. However, an increased number of framework agreements with additional suppliers are favoured buy a majority of the Site Managers who believe that it would ease and improve the tendering process (H, 2019; B, 2019; A, 2019).

Challenges - purchasing strategy

The strategic procedure is sometimes unfeasible to follow due to the fact that some product can only be bought from a limited number of suppliers. However, BM (2019a) states that most of the financially largest materials can be purchased from several different suppliers and that it is rather a question of whether the pre-set framework agreements are used or not. Regarding the framework agreements, some Site Managers argue that they tie them to purchase products from a specific supplier. From time to time, these framework agreements thereby creates frustration among the Site Managers. They argue that more competitive prices or features could be found elsewhere. Another area of frustration is that the Site Managers believe that they not always are informed about existing framework agreements, and thereby carry out unnecessary vetting processes.

Difficulties to implement a general strategy throughout the company might occur since the projects greatly differ in their characteristics. For example, one Site Manager is in charge of many smaller projects located in the city centre of Stockholm, where buffering of materials is unfeasible. This is making the Site Manager do purchases almost daily, while others are in charge of larger solitary projects outside the city centre where all purchases could be done almost initially and then placed at the side of the project site (B, 2019; I, 2019).

Worth noting is that it is sometimes difficult to separate the price of the material from the price of the transport. Even though this is a factor of great importance, it is not addressed in the thesis due to the set delimitation.

Key takeaways - supplier strategy

- Neither is there a general purchasing strategy in place, nor have guidelines of strategic purchasing behaviour been communicated from top management
- A more clearly communicated strategy is requested by a majority of the Site Managers.

4.2.3 Supplier relationships

All nine interviewees emphasizes that the final choice of supplier is up to the individual Site Manager. Several Site Managers states that the price usually has the biggest influence on the choice of supplier. However, they all emphasizes the importance of timeliness of the delivery of the purchase since delays in deliveries result in costly delays in production. This parameter is especially important when the project sites are located in the city centre of Stockholm, where the possibility

to store material is limited. Hence, this factor could sometimes be of greater importance than the price per product (I, 2019; B, 2019). Some goods have a delivery time of several weeks whereas others can be ordered one day in advance. E (2019) thereby stresses the importance of planning for the products that potentially can be ordered in advance.

Additional parameters with a strong influence on the choice of supplier are for example the distance to nearest collection point, previous experiences of the supplier in other projects and the quality of the products delivered. This is emphasized by a majority of the Site Managers, who also highlights the personal relationship with the supplier as a decision factor of equal importance. For some Site Managers, the relationship with a specific seller at a certain supplier is of greater importance than the price of the item since it simplifies the purchase.

C (2019) and I (2019) believe there are significant benefits of keeping a close contact and collaboration with the suppliers. This since it will ease and speed up the contact with them, as well as facilitate internal and external feedback on whether the supplier deliver as promised, in the right quantities, at sufficient quality. A closer and personal contact might also motivate the supplier to prioritize BA as a customer and keep a good and reactive communication. However, not all Site Managers agree, G (2019) and H (2019) for example emphasizes that they almost exclusively pay attention to the price of the products. In some projects the client specify the exact desired manufacturer of certain products in the assignment description. Then, of course, the Site Managers are limited of choosing and negotiating beneficial deals (E, 2019).

Sometimes, when there is more than one supplier to choose from, it could be beneficial to request quotations from several actors and then ask the others to match the lowest price. However, several Site Managers do not believe that this is a great strategy since then the suppliers might get reluctant to share pricing information and create irreparable conflicts damaging mentioned supplier relationships (I, 2019; B, 2019).

Another aspect to address is the fact that different Site Managers have different cost agreements with the same suppliers, even outside the framework agreement developed with the central organization (HoOS, 2019).

Changing suppliers

There are discrepancies regarding whether it is easy or not to change supplier. C (2019) and H (2019) do not experience any difficulties contracting different suppliers from time to time. They only base the decision on the price proposal per project. I (2019) on the contrary does experience discontent from the suppliers when they have been replaced between projects. The reluctance to change to an entirely new supplier is shared by B (2019). From his point of view this is since there are significant start-up costs and uncertainty connected to contracting a never before used supplier (B, 2019). F (2019) and H (2019) agrees that previously used suppliers are favoured to contract again, however have not experienced any complications switching the supplier, not even mid project (F, 2019).

Challenges - supplier relationship

Different Site Managers might get different proposals due to the level of personalized contact with the seller, which makes the financial planning difficult. Furthermore, the Site Managers express that they sometimes exclude potential suppliers due to difficulties of getting hold of a specific responsible sellers at their offices. However, PM (2019) argues that this behaviour exposes the real problem with today's purchasing process. Namely that the Site Managers put too much emphasis on the personal relationships with different sellers at different supplier companies. The Site Managers commonly act as solitary agents, disregarding the common benefits achieved by viewing the company as a united organization.

Key takeaways - supplier relationships

- Personalized contacts with key sellers at the suppliers are of significant importance, making the relationship to the supplier quite fragile.
- The Site Managers commonly act as solitary agents, disregarding the common benefits achieved by viewing the company as a united organization.
- Critique are sprung to the concept of centralizing purchases, due to the fact that the Site Managers will lose their close contact with the supplier.

The consideration of the most important factor when choosing supplier seem to shift as a project evolve. Before a project starts, the price seem to be the deterministic factor, while when a project is up and running, the lead time, timeliness and ability to deliver seem to be of greater importance. This is emphasized by H (2019) who says that the time spent on comparing different suppliers are pretty extensive in the beginning of a project, but less in the actual implementation phase.

4.2.4 Spend at BA

The budget of a project is initially set by the CQD. The price presented in the proposal should reflect the upcoming costs of a project as accurate as possible, but still be sufficiently low in order to win the project from competitors. Regarding this budget, the perception of its strictness is differing between the Site Managers. Furthermore, BM (2019b) mentions that he has communicated to the Site Managers that the goal is to negotiate better prices than the calculation made from the CQD. However, a majority of the Site Managers argue that this is difficult to achieve due to the tight budgets in the projects. They state that the CQD often make good calculations but do not add a buffer for unpredictable costs, which they believe is the reason the budget falls short sometimes.

A common wish among the Site Managers is to have a closer collaboration between themselves, the Business Managers and the CQD. I (2019) suggests that the Site Managers should be able to influence the budgets more in an earlier stage and be able to have opinions concerning quotations.

Challenges - spend at BA

PM (2019) expresses a frustration when purchases are made outside of existing framework agreements. The larger volume of purchases consolidated to one supplier, the larger negotiation power and better discounts can be achieved. In order to access these discounts, it is important for BA to be perceived as a loyal and trustworthy customer. For an example a successful framework agreement can provide a discount up to 55 percent, whereas a less successful agreement only can provide up to a few percentages (PM, 2019). Furthermore, PM (2019) argues that it becomes a problem when the Site Managers all try to achieve better prices than presented by the CQD or set in the framework agreements. The Site Managers often forget or ignore that the administrative cost of constantly negotiating better prices, result in a higher total cost for the company.

An important financial aspect to take into consideration, emphasized by both BM (2019b) and HoOS (2019), is that whenever the calculation department is presenting a proposal for a potential customer, the estimation of expenditures is a delicate question. The calculation department will naturally have to include the cost of material into the proposal. However, it will be difficult to assess the costs without entering a thorough negotiation or tendering process with the suppliers. Thereby, it will always be some uncertainty regarding this initial pricing. If they set the price to high, BA might lose the contract opportunity to competitor with a lower price. If they on the other hand estimate the expenditures to be lower than in reality, the project might get a hard time making a profit.

Key takeaways - Spend at BA

- Misalignment of incentives occur when the Site Managers constantly are trying to achieve better deals than agreed upon in the set framework agreements.
- Presenting a proposal to potential customers includes a difficult estimation of the costs, affecting the possibility to win a project as well as making the projects profitable.
- A common wish among the Site Managers is to have a closer collaboration between themselves, the Business Managers and the CQD.

4.2.5 Centralization

The final step of the interviews were to ask the Site Managers a few questions regarding their top ten largest individual purchases within the scope. One reoccurring question was whether the Site Managers believed that the certain product was suitable for being purchased through a central purchasing unit or not. Throughout the interviews it was observed that the Site Managers perception of centralization differed substantially.

The argument in benefit of centralization were accessible economies of scale and less workload on the Site Managers. The general arguments against centralization were loss of insights and anchoring in the projects. H (2019) address the fact that there is no need for a centralized purchasing unit since the Construction Engineer, who have a semi-central function and ambulate between the Site Managers, already cover this need.

However, both the skeptical Site Managers and the ones in favour of centralization agreed on the importance and benefits of setting useful framework agreements with commonly used suppliers.

The top twelve purchases within the company

In this section the consolidated answers from the Site Managers supported by the information given by the Business Managers, is presented. The focus area is the top twelve largest cost items based on the Pareto principle. In accordance with the theory, these twelve cost items equals just above 20 percentage of the number of cost items and represents 80 percentage of BA's expenditures.

Gravel and filling material

This cost item is represented in all the Site Managers top ten individual purchases, as can be seen in Table 4.4. The Site Managers commonly agree that the nature of this product is standardized and does not differ much between the projects. However, the complexity of the purchase is that the large physical volume requires it to be delivered at the right time to the right place. However, the lead time are not mentioned to be significantly high.

There are different opinions whether this cost item is suitable for centralization or not. As can be seen in Table 4.4 in section 4.1.3, this cost item can be found as one of the top ten cost items for all Site Managers. Half of the Site Managers believe this item could be suited for being purchased centrally, as they could get a more favourable price per volume unit if the volumes where consolidated. However, the other half do not believe it would be feasible, motivated with the argument that they do not see any potential cost savings or administrative benefits.

I (2019) highlights that the timing of the purchase and the fluctuation of price can affect whether this is seen to be a suitable cost item to centralize or not. B (2019) underlines that he believes in the benefits of framework agreements, but that the actual call of should be assigned the Site Manager.

Wells and pipes - plastic/metal

This cost post is represented in seven out of eight Site Managers top ten individual purchases, as can be seen in Table 4.4. Most Site Managers believe in the cost benefits related to centralization of this purchase. Arguments for this item to be purchased centrally are economy of scale and freed up time to conduct other tasks. As the majority of the Site Managers purchase this item, B (2019) and G (2019) both argue that it can be ordered effectively through a framework agreement. Thus, the Site Managers can call off against this when a need arises. Counter-arguments of centralization of these purchases are that the items are unique for every project and thereby purchases need to be anchored with the project teams beforehand. However, the uniqueness related to this item is solely due to the dif-

ferent dimensions or shapes (such as angles or corners) needed out in the projects. Most ordered wells and pipes are standardized in its shape and dimensions and can thus be used between projects.

Ready mixed concrete

This cost item is represented in all the Site Managers top ten individual purchases, as can be seen in Table 4.4. The item is according to the concerned Site Managers standardized and could be shared between projects. Similar to previous cost items, the Site Managers have different perceptions whether it would be beneficial for this cost item to be purchased centrally or not. Most Site Managers state that an effective centralization of this product would be difficult to attain, in form of a central purchasing unit. They emphasize the importance of anchoring in the projects and argue that there is no time or financial gain of purchasing this product centrally as the price of concrete does not fluctuate. However, the few Site Managers in favour of centralization argue that there indeed is economy of scale to gain by purchasing it centrally. I (2019) mentions that he believe it would be beneficial to have several framework agreements to fall back on, on this item.

Reinforcement bars and mesh

As can be seen in Table 4.4, this cost item is represented in three out of eight Site Managers top ten individual purchases. A majority of the Site Managers state that since this item is standardized between projects, planning of purchases is possible and could favourably be administrated by a central unit. G (2019) is however hesitant on whether this cost item would be beneficial to purchase centrally since he fails to identify the benefits.

Building materials

As can be seen in Table 4.4, this cost item is represented in six out of eight Site Managers top ten individual purchases. All Site Managers refer to this item as a category where costs without any natural belonging are allocated. This post is also part of the old accounting structure. Since it is such a scattered post, most Site Managers do not believe that these purchases could be conducted from a central purchasing unit. However, some of Site Managers state that these purchases could be purchased through central framework agreements. (A, 2019) highlights that benefits with such agreement would be freed up time for the Site Managers to conduct other tasks out in the projects.

Natural stone tiles

As can be seen in Table 4.4, this cost item is represented in two of eight Site Managers top ten individual purchases. F (2019) emphasizes the importance of economy of scale and argues that with the larger volumes of this product, one can negotiate more beneficial prices. E (2019) is hesitant whether this product is suitable for centralization. As this product does not require specific knowledge of details, the cost item could indeed be suitable for centralization.

Wells and pipes - concrete

As can be seen in Table 4.4, this cost item is represented in two out of eight Site Managers top ten individual purchases. The product is often customized and thus specific for each project (E, 2019). H (2019) do not believe in purchasing this product centrally. However, E (2019) emphasizes that this could indeed be purchased centrally as it would enable the Site Manager to focus on other purchases that need to be made decentralized.

Geotextile/membrane

As can be seen in Table 4.4, this cost item is represented in three out of eight Site Managers top ten individual purchases. This cost item is often purchased from two different suppliers through framework agreements and no risk in regards to supply is mentioned in the interviews. All Site Managers agree that the purchase is very standardized and E (2019) even states that about 80 percent of the purchases are standardized in terms of type. Furthermore, the volume needed in the project is also known to some degree beforehand. The Site Managers collectively argue that due to the standardization of the purchase, the cost item could be purchased centrally.

Consumables

As can be seen in Table 4.4, this cost item is represented in three out of eight Site Managers top ten individual purchases. The purchases are either administrated by the site manger himself or by the work leader (E, 2019; I, 2019). I (2019) believes the items assigned to this post is unnecessary many and that the items would be more accurately placed on other cost posts. The products allocated to this post are standardized and not specified for the specific project. However, I (2019) do not believe in the benefits of performing this purchase centrally since it most commonly is items hard to predict the need for.

Playground equipment/signage

As can be seen in Table 4.4, this cost item is only represented in one out of eight Site Managers top ten individual purchases. F (2019) describe these items as heavily customized to each project and always specified by the contractor or architect in the technical description. Most often the Site Managers only have one supplier to choose from, and no tendering process is thereby conducted. If different suppliers are compared, it will not be the Site Manager who decides which one to use, but the decision is passed on to the contractor or architect. He states that this item could be ordered centrally due to the heavily specified technical description, however do not see any large economical gains by this. If any, the possible benefit would rather be saved time.

Other built-in materials

As can be seen in Table 4.4, the cost post is represented in six out of eight active Site Managers top ten individual purchases. I (2019) argues that the products allocated to this cost item usually are standardized as they do not need to be customized for each project. The Site Managers collectively agree that usually it is only the quantity differentiating the purchases. I (2019) believes in centralization of this product in order to create economy of scale. C (2019) agree with that statement and adds that these products often are clearly specified by the client beforehand, both regarding the technical description as well as quantity. Thus, he argues that this cost item could be purchased centrally. The counterargument of centralization, mentioned by a few Site Managers, is the need of anchoring in the projects.

Soil

As can be seen in Table 4.4, this cost post is represented in four out of eight Site Managers top ten individual purchases. Several Site Managers argue that this item is one of the most complicated to order. This due to the fact that the architect of a project often have specific requests on the characteristics and suppliers of this item, making it an expensive purchase. B (2019) adds that the complexity increases since the quality of the product greatly differs between suppliers, and even differing between different occasions from the same supplier. The supplier of this item is thereby often changed (B, 2019). F (2019) believes that potential savings could be realized by purchasing this item centrally since the item is so expensive. The Site Manager further states that this item is often explicitly specified in the technical description provided by the contractor, making it possible for a central purchasing unit to order.

Challenges - centralization

I (2019) highlights that right now, the Site Managers can be assigned a bonus if their project is successful. If the organization would centralize more purchases, the project probably would not be allocated the potential bonus. Thereby, he believes the incentive to carry out a successful project is larger with individual purchases.

BM (2019b) argues that a challenge with centralization is that a potential purchasing unit must contain people that the rest of the organization strongly trust and can rely on.

Several Site Managers believe that a central purchasing unit will include additional administration where the Site Manager must contact the unit when a purchase needs to be carried out. This could potentially halt the flexibility and speed of the projects.

Key takeaways - centralization

- It is revealed quite quickly that the different Site Managers have a different standpoint on centralization of purchases, which influence their answers and create a heavy bias.
- A majority of the Site Managers believe non or very few items would benefit from being purchased by a central purchasing unit instead of continuously having the responsibility themselves in the projects.
- Even if several Site Managers are skeptical about having a central purchasing unit, most Site Managers are in favour of increasing the number of items purchased from framework agreements. This in order to ease the tendering process as well as decrease the spend. However, most emphasizes that the actual call of should continue being made by the Site Managers themselves.
- A minority if the Site Managers strongly believe in the multiple benefits, such as economies of scale as well as decreased administrative tasks, related to purchasing in a central purchasing unit.

5 | Analysis

This chapter includes the analysis of the theory and the empirical findings of the thesis embedded case studies. This analysis will result in an answer to the research questions presented in the beginning of the thesis.

5.1 Purchasing development

As described by van Weele (2014), the purchasing development model identifies a step-wise evolution of purchasing and supply chain management within an organization. The gathered data analyzed in the light of this theory is positioning BA as a company with commercial orientation, shown in Figure 5.1 and is motivated as follows.

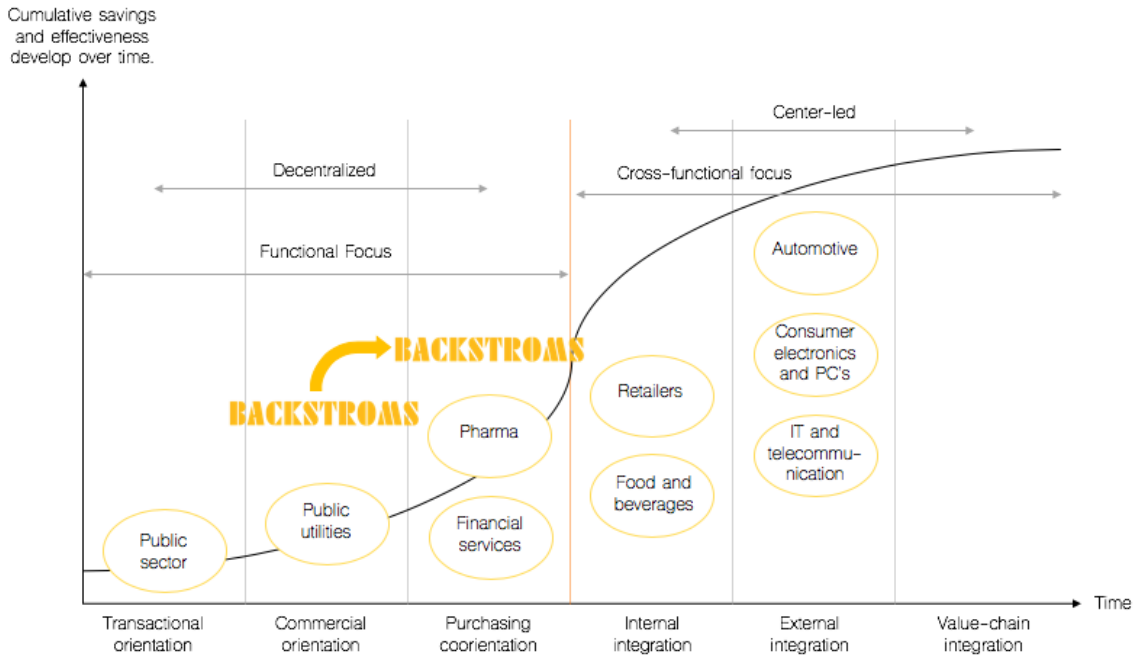


Figure 5.1: BA's position in the development model

BA's current purchasing procedures fulfill all the requirements in the first step of the purchasing development model, i.e. of a transactional oriented organization, as can be seen in 5.1. They are reactive in their purchasing strategy but the different Site Managers have little knowledge about the total purchasing spend or united purchasing strategy of the company. This fits well in with the description of this phase.

Through the conducted empirical study it is also clear that BA today mainly focus on reducing the costs. One of the Business Managers even states that a primary goal for the Site Managers is to negotiate better prices than the calculation made from the CQD. This in combination with the act of comparing bids from

different suppliers make the company fulfill the requirements as being classified as a commercially oriented organization. Some of the Site Managers seem to enjoy the possibility of negotiating the prices and invest some time in this activity, hence fulfill the business culture of hard negotiations. However, the empirical study also witness that the procedure of comparing bids are not always carried out to its fullest. Instead several Site Managers are relying on relationships with suppliers previously used. This even though the chosen suppliers do not always provide the required items to the lowest prices. Regardless of this, BAs' position in the purchasing development model is identified as commercially oriented.

In order to accelerate to the next phase within the development model, i.e coordinated purchasing, a strategy will have to be firmly established. The strategy recommended will be to optimize the purchasing procedures of all items separately by choosing the most beneficial supplier relationships based on the classification of the item, as presented by Kraljic (1983). When adapting this strategy, the focus will shift from trying to reduce costs towards creating savings through synergies, as presented by Karjalainen (2011) and van Weele (2014). The shift is visualized in Figure 5.1 above.

In order to realize these desired benefits created by the shift in the purchasing development model, BA will have to start to act as a united unit instead of as separate functions. As for example, if the purchases of the same items between all the Site Managers are consolidated, the volume will increase significantly. This will enable economies of scale as well as increase the negotiation power towards the supplier. According to the held interviews, it is also clear that enhanced communication between the decentralized business units within the organization is requested by the Site Managers.

In coordinated purchasing the focus is still price and availability, which resembles the focus of today's organization. However, the next step in the evolution process will be to reach internal integration. This is where the real benefits and potentials are found, as described by van Weele et al. (1998) and van Weele (2014). Here the functional focus is shifted towards a cross-functional focus, as can be illustrated in Figure 5.1. This will yield a significant increase in cumulative savings, as shown by the graph.

5.2 Purchasing process

Centralization of purchases can take on many forms, for example an incorporation of framework agreements (van Weele, 2014). The framework agreements are negotiated centrally and the purchases performed after contracting are decentralized to the local units. In BA's case, the decentralized units are represented by the Site Managers or the Work Leaders.

The Site Managers state that they usually use the same suppliers as in previous projects, however with modified quantities. According to the interviews it can be concluded that the Site Managers themselves believe that the majority of their purchases are classified as straight re-buys. However, the data is showing that a large number of suppliers are used for each product. Since every purchase from a new supplier is considered as either a modified re-buy or a new purchase, this indicates that the Site Managers perception are differing from reality. This reality is more in accordance to the theory, stating that an infrastructure construction company mostly is making modified re-buys when conducting purchases. However, if the modified re-buys could be altered to straight re-buys, it would require less administrative work and money could be saved.

The purchasing process is divided into eight steps, from the identification of need to the follow-up and evaluation step. When interweaving the theory concerning framework agreement with the figure representing the purchasing process (i.e. Figure 3.2) the following figure (i.e Figure 5.2) can be presented.

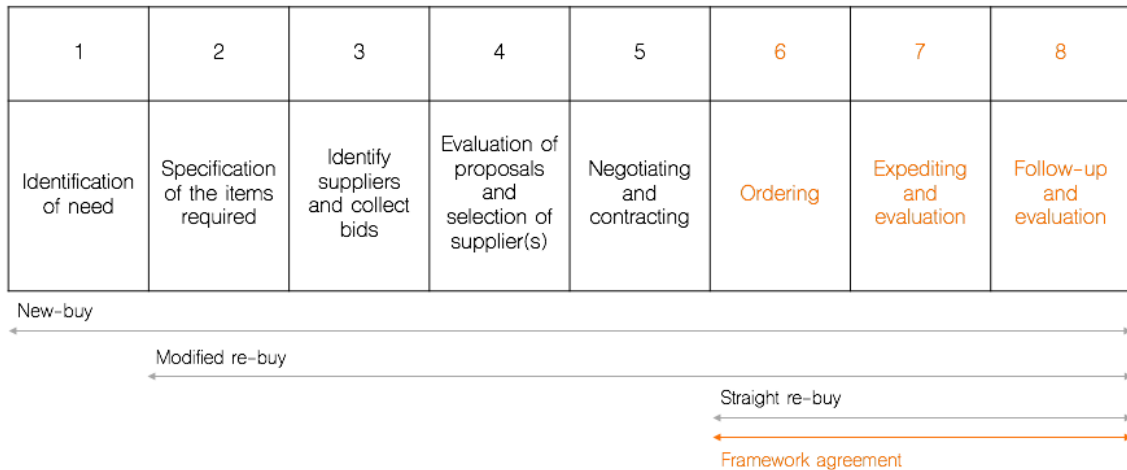


Figure 5.2: Consolidation between the purchasing process and framework agreements

When ordering goods off-contract, the Site Managers need to go through all the eight steps in the purchasing process described in Figure 5.2. This lead to costly and time consuming administrative work. As can be seen in mentioned figure, straight re-buys only include the last three steps of the purchasing process. Avoiding the five first steps of the process will save a large amount of time spent on administrative tasks. Straight re-buys could be set into practice through the usage of framework agreements. PM (2019) states that this is one of the greatest potentials with framework agreements, reducing unnecessary steps in the purchasing process. Framework agreements are however only beneficial when used in a correct way. The consolidated purchased volume over a period of time will have to be as large as promised to the supplier when the contract was set. If not, the promised discounts or paybacks might not be able to cash out and the negotiation position for future collaboration will be weakened. Due to this, it is of greatest essence that the frameworks are used consistently, even if spot prices of goods are found cheaper elsewhere. The cheaper spot price will in most cases not turn out to be cheaper in the end, including administrative work as well as lost volume to the contracted supplier.

Maverick buying often occur due to lack of knowledge and insight of the cost savings that can be attained with the use of centralized framework agreements. This seem to be the case with BA as well. Even though the framework agreements are not exploited to their full potential, the advantages associated with using them are known within the top management of the organization (PM, 2019). The empirical study shows that the Business Managers inquires better communication of framework agreements as the communication currently is too scattered. The benefits and disadvantages with each agreement needs to be communicated, together with a description of how to use them. However, as stated in the empirical study, PM (2019) expresses a frustration that some Site Managers do not believe in the multiple benefits connected to the use of framework agreements. Instead, multiple Site Managers prefer to negotiate better prices than the ones in the framework agreements as they believe that they can push the price even more. According to PM (2019), this behaviour can be difficult to change as it is so deeply routed.

As of right now, Site Managers are acting on their own accord aiming to get the lowest price on each project or on each individual purchase. By doing so they are neglecting the potential overall cost savings by consolidating purchases as well as potential overall discounts and returns. This methodology could be triggered due to the fact that there are individual bonuses in the line for the Site Managers that are making the purchases for the projects cheaper than calculated. Hence, individual project based gains are prioritized while the company's best interests are set aside.

In summary, discrepancy between the potential administrative savings gained by conducting straight re-buys and the Site Managers perception of its importance can be observed. At BA the straight re-buys can be enunciated through framework agreements, as seen in Figure 5.2.

5.3 Purchasing Strategy

The purchasing process at BA is subject to extensive improvement. The greatest challenge seem to be the current lack of coordination and communication internally between the different units and top management. Additionally, lack of planning in advance seem to be a consistent area of frustration. This analysis is based on the information extracted from the interviews presented in the empirical study. Furthermore, the Site Managers and the Business Managers continuously leave conflicting narratives about the company's strategy. Thus, witnesses about no clearly communicated strategy within the company. Long term planning is, according to Paulraj et al. (2016), what defines strategic purchasing. Hence, it could be argued that the company currently lack engagement in strategic purchasing in general. When excluding the purchasing function from the company's strategic agenda, many potential benefits and cost saving are lost. As mentioned by several sources savings affect the profits of a company more then increased revenue (Oxford Collage of Procurement and Supply, 2019; Bozarth & Handfield, 2016; Deloitte, 2019).

Since there is no communicated strategy from top management or the executives, the purchasing strategy applied in practice differs between the Site Managers. Their individual purchasing procedure is based on experiences and word of mouth instructions. The lack of communicated strategy cause confusion on how to act as well as obstruct an overall holistic strategy to be implemented.

As discussed, in order to harvest the benefits of a strategic purchasing the company does not only have to set a strategy but also be sure to communicate it to the employees and make sure they understand why it is important to follow it. If this aspect is neglected, that is what have lead to the situation today.

5.4 Supplier relationship

Since the company lacks a well defined strategic purchasing procedure, they also lack guidelines on how to uphold strategic supplier relationships. As of right now, BA uses multiple suppliers on all cost items. There seem to be little or no coordi-

nation between the Site Managers on which suppliers that are the most favourable. This perception is further validated by the quantitative data presented in Table 4.5, showing the level of coordination of supplier usage between the Site Managers. As can be seen in the table, non of the Site Managers purchases are coordinated to more than 38 percentages. What also can be extracted from Table 4.6 is that only five suppliers are used by all eight Site Managers while 177 suppliers are used by only one Site Manager. Due to the different characteristics of the Site Managers projects and the fact that the Site Managers are divided into two categories, Energy and Infrastructure, a hundred percent of coordination of suppliers is not possible to achieve. However, as can be seen in Table 4.4, most of the Site Managers have several top ten purchases in common and should thus achieve a higher coordination than today. The low level of coordination also indicate that the active framework agreements are not used to desired extent. Higher coordination is desirable since it would consolidate the purchased volumes at one supplier and thereby enable economies of scale, as well as reduce the administrative costs related to manage several supplier relationship.

As stated by Karjalainen et al. (2009), managing relationships require time and money. The less number of suppliers that need to be managed, the less administrative costs related to the activity will arise. Thus, it is crucial to establish relationships that are beneficial for the entire organization and not only for the individual Site Manager. PM (2019) and the Site Managers all agree that building relationships is of great essence. However, as of right now, this is done incorrectly since 177 suppliers are only used by one Site Manager and only five is used by all the Site Managers. Framework agreements are intended to reduce the number of suppliers and thus increase the purchasing leverage with the ones used. However, these relationships can be difficult to develop and retain when the organization is not perceived as a loyal customer. The scattered use of suppliers illustrated in Table 4.5 testifies about an inconsistent usage of suppliers that probably are not serving in the best of interests for BA according to this logic.

5.5 Spend analysis

The purchasing structure of BA is currently decentralized and the Site Managers are acting as individual units. In order to gain an overall vision of the company's spend the three dimensions of purchasing (internal budget holder, supplier and category) will have to be taken into consideration. When doing so, the overall spend could be reduced and greater benefits could be generated. At BA, the Site Manager's individual spend represent spend per internal budget holder, whereas the supplier category is represented by the spend per supplier. Finally, the spend

per category is represented by how the different cost items are labeled in the accounting system.

As described by van Weele (2014) and Sievo (2019), the spend cube offers a great tool in order to detect areas of potential savings formerly untapped. An example of currently unrealized savings is that the company would earn a two percentage discount on purchases made through a website rather than by phone. Even so, the Site Managers are purchasing the majority of their material by calling the supplier directly.

In theory it is stated that around 80 percent of the spend can be derived from 20 percent of the purchases according to the Pareto principle. As seen in Figure 4.2, this theory is well applicable for BA. Furthermore, according to this rule, a company should focus on reducing the costs of the items making up these top 20 percentages. This clearly motivates the focus of the top twelve largest expenditures in the company. If BA were able to reduce the costs of these twelve purchases, the potential gain could look as presented in Table 5.1 below.

Table 5.1: Cost savings per year with potential cost reductions

Cost reduction (%)	Savings per year (million SEK)
1 %	0.57
5 %	2.86
10 %	5,72

As can be seen in Table 5.1, a saving of one percent could yield an increased revenue of 0.57 million SEK. In 2018, BA had a profit of 0.53 million SEK and thereby a saving of only one percent would double the profit per year. This further motivates the importance of addressing and investigating the spend of the cost items addressed in this thesis. Even so, developing a suitable purchasing strategy for each cost item as well as communicating a company wide strategy to follow.

5.6 Centralization

In this thesis we initially worked with the hypothesis that some materials would benefit from being purchased through a centralized purchasing unit. However, throughout the interviews it were concluded that neither the Site Managers, Business Managers nor the Project Manager, believed in such function. During the interviewees it also became clear that the word "centralization" was strongly associated with a central purchasing unit. This is however not always the case.

Centralization can as described in theory, take on different forms. Examples of such forms are a centralized purchasing unit or centralized framework agreements. Advantages with a centralized purchasing function in general is economy of scale, reduced amount of double work, enhanced ability to coordinate purchasing plans and strategy as well as enhanced ability to coordinate and manage purchasing systems. On the other hand, advantages most commonly associated with a decentralized purchasing structure is speed and responsiveness, understanding of the local needs, direct communication with suppliers as well as a less bureaucratic purchasing procedure (van Weele, 2014; Monczka et al., 2009; Karjalainen, 2011). This was in line with the common perception of the benefits and the disadvantages of centralization among the Site Managers as well. Throughout the interviews the word "anchoring" was commonly highlighted as having significant importance. This in regard to the specific insight that is needed out in the projects of what to purchase or not. Furthermore the Site Managers highly emphasizes the importance of speed and responsiveness, which closely correlates to a decentralized purchasing unit.

BA is currently classified as a medium sized infrastructure construction company. The financial investment required in order to establish a centralized purchasing unit in relation to the company's current revenue is thereby unjustified. This is further validated through the information given by the Site Managers in the interviews. The reason the Site Managers are skeptical towards incorporating a central purchasing unit might however be a result of fear of change and should therefore not alone be used as a foundation of the decision. Taking these factors into consideration, it is concluded that BA would not benefit from incorporating a totally centralized purchasing department at this moment.

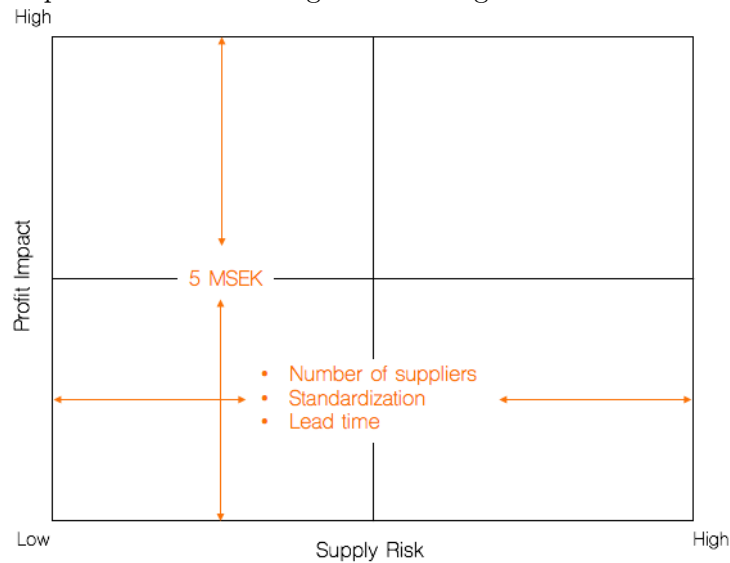
During the interviews both the interviewees skeptical and positive towards centralization agreed on the importance and benefits of setting useful framework agreements with commonly used suppliers in place. As framework agreements are centrally developed, these are to be seen as a partly centralized purchasing structure. As described, different types of structures are differently applicable to different companies (van Weele, 2014). Hence, customized strategies need to be formed to each company in order for the organization to stay competitive. Implementing and realizing the benefits of framework agreements is clearly applicable at BA. The strategy recommended will hence be to optimize the purchasing procedures of all items separately by choosing the most beneficial supplier relationship based on the classification of the cost item.

5.7 Kraljic matrix

5.7.1 Classifications of goods within the Kraljic matrix

In the following section, each of the twelve biggest purchases of the company will be classified as one of the types of the items described in the Kraljic matrix. The classifications are based on the financial impact of the product as well as the risk associated with the acquisition. The financial impact can be defined differently depending on the situation or the scope of a study. If observing the purchasing volume at BA, illustrated in Table 4.1 in the empirical study, the biggest differences in purchasing volume can be observed among the four to six biggest purchases. Thereafter, the graph levels out and the aggregated spend becomes more similar.

Table 5.2: Explanation of the categorization of goods within the Kraljic matrix



Due to the shape of the Pareto analysis-graph in the empirical study, the financial impact is argued to be high if it exceeds five million SEK (over a period of three years) and low if not. This is illustrated in Figure 5.2. In this thesis the cost items exceeding the five million SEK will be six out of the twelve of the largest cost items described. Another factor taken into consideration regarding the financial impact of the cost items will be the number of Site Managers who commonly purchase the material. This is addressed since the larger number of Site Managers who purchases an item, the larger collective administrative costs are associated with it. Administrative costs are an area where improvements are possible to achieve by centralization and coordination.

The second dimension of classification is the supply risk associated with the purchase, as seen in Table 5.2. The risk will be evaluated according to several parameters, the major one being the number of suppliers providing the goods. The larger number of feasible suppliers, the less risk. Another risk associated with the purchase, is the complexity as well as the specifics of the product. If the product is complex and specifically designed to each project, the risk will be higher. If the product is standardized and easily exchangeable between suppliers, the supply risk is assessed to be lower. Furthermore, the lead time of delivery will be taken into consideration. The longer lead time the larger the risk, since a long lead time possibly will halter the production for a longer time. The three risks that lay as the foundation for the classification of goods, is consolidated into the list below.

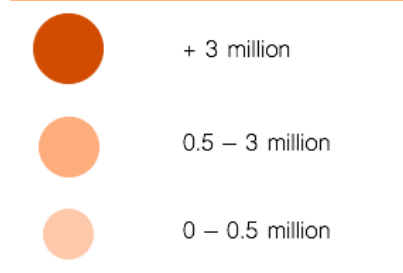
- Number of suppliers
- Standardization
- Lead time

In the following section, each item will be classified and the theoretical classification will then be compared with how the Site Managers themselves have classified the relevant items.

5.7.2 Classification in regards to the size of the individual purchase

The differences in aggregated purchasing volume will be shown as different sized spheres in the Kraljic matrix of each cost item. Even though the differences have an affect on the financial importance of the Site Managers purchases, each Site Manager’s answer to the interview questions will be taken into consideration and evaluated equally. Table 5.3 below, illustrates these different financial sizes of purchases made between the Site Managers.

Table 5.3: Illustration of the Site Managers financial sizes of purchases

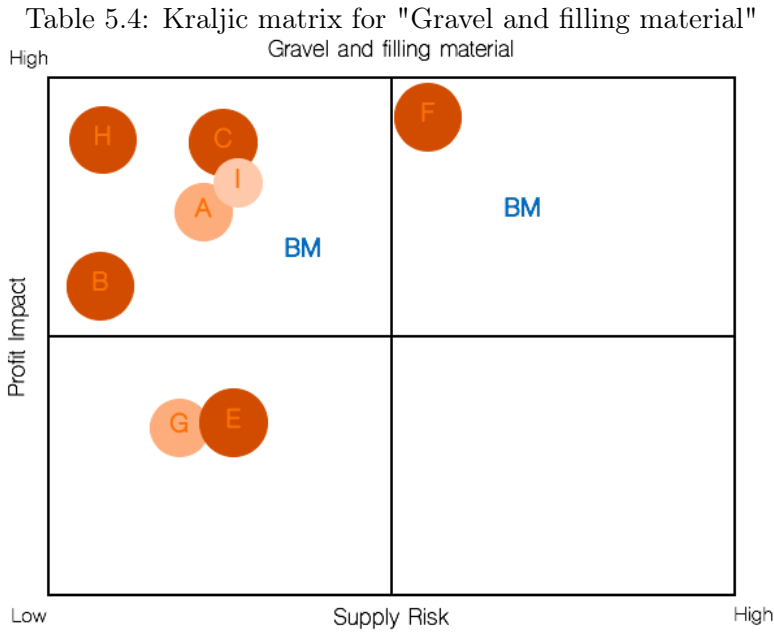


5.7.3 Top twelve purchases classified in the Kraljic matrix

Gravel and filling material

This cost item is substantially larger than the others and alone represent a large part of the total purchase volume in the relevant scope. The aggregated cost of purchases in this category significantly exceeds the defined limit of five million SEK. The financial impact of the purchases of this item is thereby large, which motivates it to be classified as either a leverage or a strategic product. The supply risk of this material is assessed to be rather low, due to the fact that there are many available suppliers. This can be seen in Table 4.4, where 62 suppliers have been used the last three years. Furthermore, the product is standardized to a great extent and thereby easily exchangeable between the different suppliers. The lead time is not a critical aspect either. The overall supply risk is thereby assessed as low, and the final classification of the item will be a leverage product.

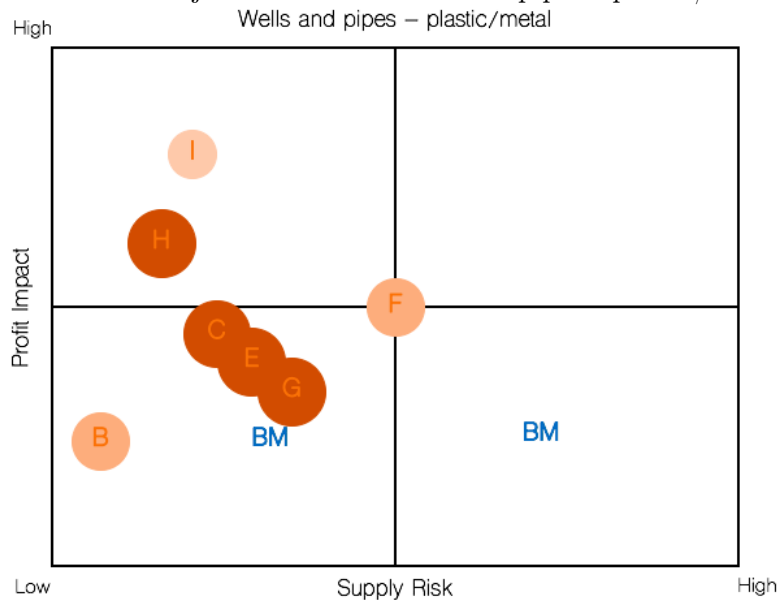
As conducted from the empirical study and shown in Table 5.4 most of the Site Managers have classified this product as a leverage item. This is in accordance to the theoretical classification.



Wells and pipes - plastic/metal

The aggregated purchase volume of this item is almost half of the preceding one, "Gravel and filling material". However, the spend still constitutes a significant part of the total purchase volume as well as exceeds the set limit of five million SEK. As it will have a considerable impact of the total spend, it will be motivated to be classified as either a leverage or strategic product. The supply risk associated with the item is low. This since the products are provided by many suppliers, which can be motivated by Table 4.4 where it can be seen that 54 suppliers have been used the last three years. The lead time is not considered to be a critical factor either. However, some of the Site Managers state that this product could not be shared between projects due to the fact that the product is needed in different dimensions or shapes depending on the project. In spite of some project-related uniqueness, which increases the supplier related risk, the product itself is not unique. Thus, the item is motivated as a leverage product.

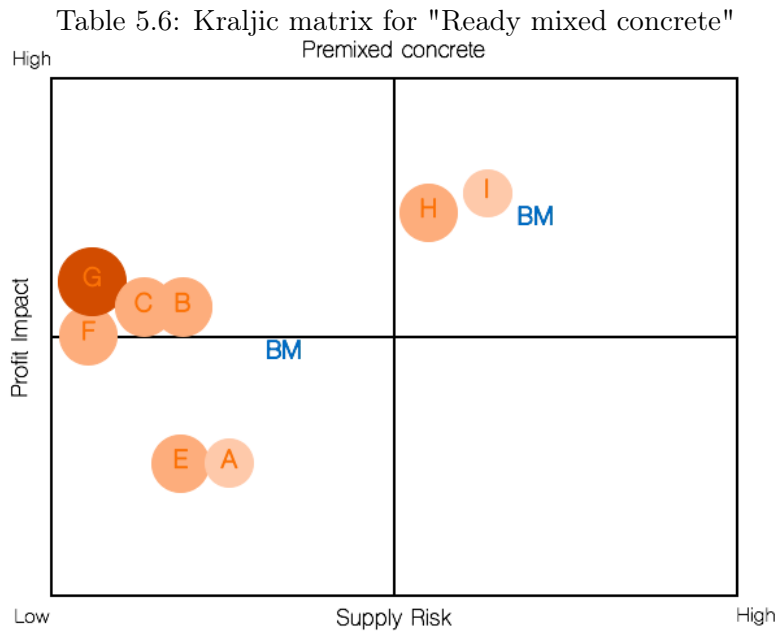
Table 5.5: Kraljic matrix for "Wells and pipes - plastic/metal"



As concluded from the empirical study and shown in Figure 5.5, most Site Managers have classified this product as a non-critical item. This could be due to the fact that the Site Managers think of the item as cheap per volume unit, disregarding the fact that the item is purchased so often that the consolidated spend volume becomes very large. Here a discrepancy between theoretical importance and the perception of importance by the Site Managers can be observed.

Ready mixed concrete

This cost item have rendered a purchase volume of approximately 23 million SEK over the past three years. It will thereby be classified as an item with significant impact on the financial result. As will it be motivated to be classified as either a leverage or strategic product. An additional parameter to take into consideration is that the item is purchased by all the Site Managers. Improving the purchasing procedure of this item could thereby potentially save administrative time for all Site Managers and thus collectively yield a noticeable impact on the financial result. The supply risk associated with the cost item is low, as the product is provided by many suppliers. This can be seen in Table 4.4, where 48 suppliers have been used the last three years. The cost item is also standardized and can be shared between projects, as well as do not have a significantly long lead time. Thus, the cost item can be classified as a leverage item.

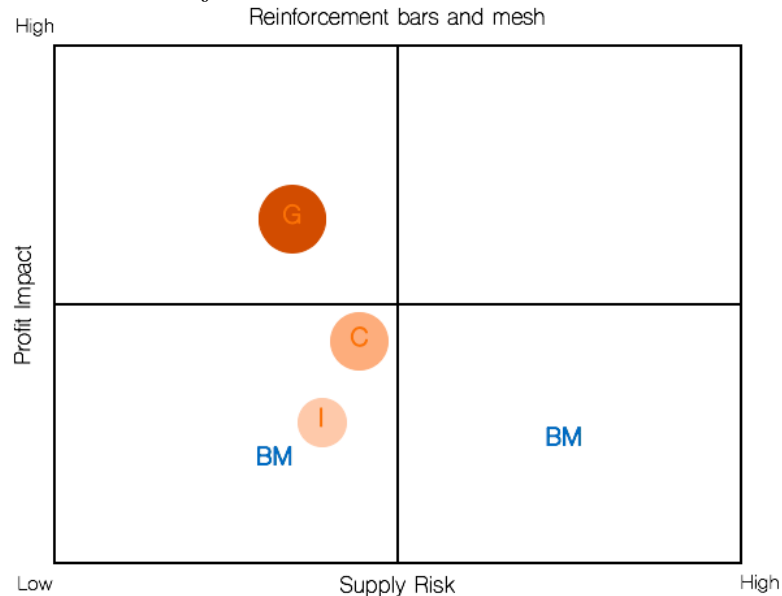


As conducted from the empirical study and shown in Figure 5.6, the perception of the complexity of this item differs by the different Site Managers. A majority of the Site Managers perceive both the financial impact and the supply risk of this item as low, motivating them to classify this product as a non-critical item. However, even though the individual spend per Site Manager on this item is low, the consolidated purchasing volume is large and thus the impact becomes more significant. Discrepancy between theoretical importance and the perception of importance by the Site Managers, can once more be observed.

Reinforcement bars and mesh

As can be found in the quantitative data collection, the financial volume of this item is about 18.5 million SEK. Since the post exceeds five million SEK with a good margin, it will render a classification as either a strategic or leverage item. The supply risk associated with the cost item is low. As can be seen in Table 4.4, 23 suppliers have been used the last three years which confirms that several suppliers can be used for this item. Thus, no significant risk is associated with the number of suppliers. The product is standardized and the lead time is not of significant importance which further motivates the classification of this item as a leverage item.

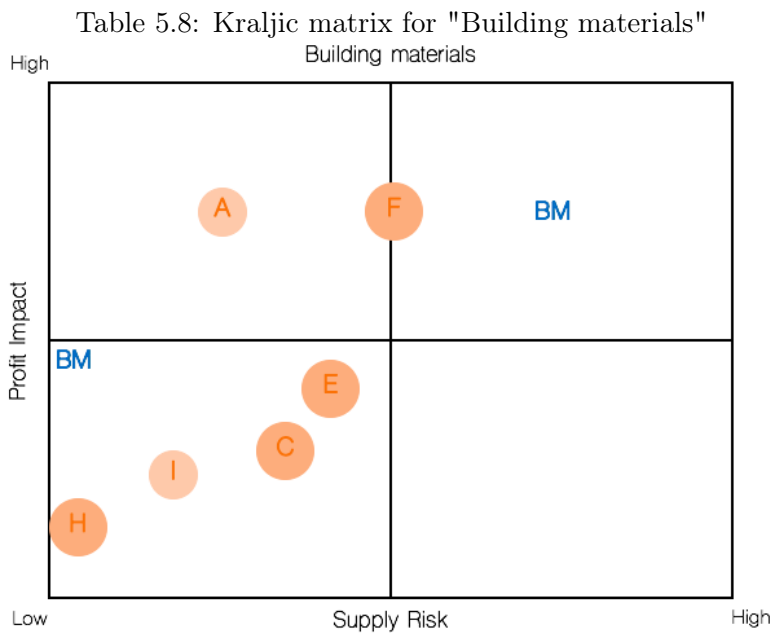
Table 5.7: Kraljic matrix for "Reinforcement bars and mesh"



As conducted from the empirical study and shown in Figure 5.7, the Site Managers perceive the risk associated with the purchase of this item as low, which aligns with the theoretical classification. However, the Site Managers do not perceive the financial impact of this item as high. Reviewing the consolidated cost post, it can be shown that roughly 85 percent of the purchased volume is purchased by one of the Site Managers, who is the only one classifying it as financially important to the result. Furthermore, since this item is mainly used in projects handling certain kinds of concrete work, which will not be conducted in the future, one might disregard this Site Manager's purchases and the item will then no longer be motivated as strategically important but rather non-critical. This classification aligns better with the other Site Manager's perceptions.

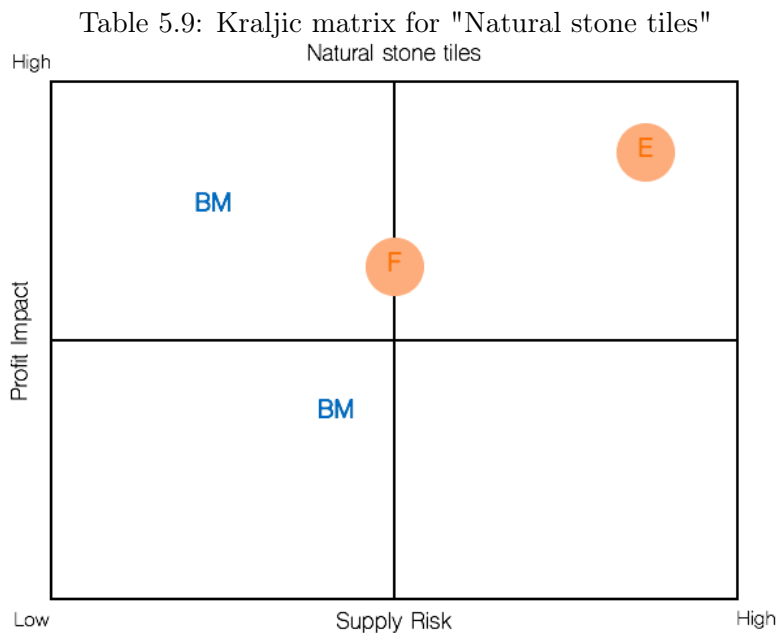
Building materials

This cost item is somewhat special compared to the others since it constitutes of a lot of different materials allocated to this post due to dissimilarities rather than homogeneity. Nevertheless, the post generates a financial volume of roughly eight million SEK, exceeding the set limit of five million. Thereby motivates it to be classified as either a leverage or strategic item. The supply risk associated with the cost item is difficult to asses due to the spread and distinctness of the material assigned here. In Table 4.4 it can be seen that 118 suppliers have been used the last three years, which is reasonable since several different kinds of goods can be allocated to this account. Furthermore, the Site Managers all witnesses that the material placed in this post is of small strategic importance. It rather contains bulk items and additional unclassified material purchased from the nearest located supplier. Hence, the cost item can be classified as a leverage item. This aligns well with the perception communicated by the Site Managers, as visualized in Figure 5.8.



Natural stone tiles

As can be found in the quantitative data collection, the financial volume of these products exceed five million SEK and thereby render a classification as either a strategic or leverage item. The supply risk associated with the cost item is not assessed to be high. When examining Table 4.4 it can be seen that twelve supplier have been used the last three years. The risk associated to the number of suppliers can thereby be assessed as low. Furthermore, the level of standardization of this product is according to the Site Managers high. The lead time not have been mentioned as an aspect by any of the Site Managers. This motivates the cost item as a leverage item.

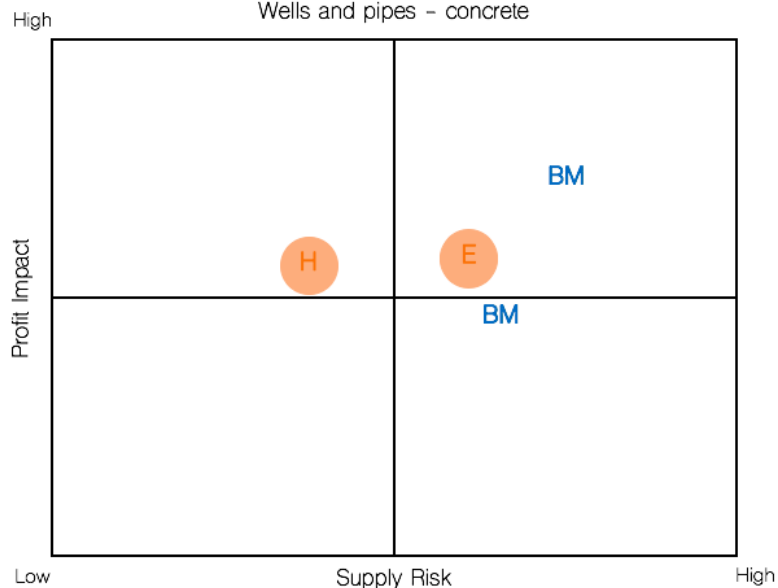


As can be seen in Figure 5.9 the classification as a leverage item contradict the Site Managers perception of the item who majorly classify this as a strategic item. The concerned Site Managers state that this specific item is provided by a limited number of suppliers, hence ranking it higher regarding the supplier-related risk, as can be seen in the Figure 5.9. This perception is in line with the quantitative empirical study that shows that the number of suppliers used the last three years is considerable lower than for other cost items. However, the evaluation should not be based on relative comparison to other items but rather on an objective assessment. Discrepancy between theoretical importance and the Site Managers perception of importance can thereby be observed, leaving room for improvement.

Wells and pipes - concrete

As can be found in the quantitative data collection in Table 4.4, the financial volume of this product exceeds five million SEK and can thereby be classified as having a high financial impact, either classifying it as leverage or strategic. Furthermore, the supply risk associated with the purchase is low. As can be found in the empirical study, mainly two suppliers of this item are being used. However in Table 4.4 it can be seen that 25 suppliers have been used the last three years. No specific risk in regards to lead time is discussed, however the product is unique per project. However, as described in "Wells and pipes - plastic/metal" the uniqueness of the purchases connected to wells and pipes in general, is due to the special dimensions and shapes ordered. However, the items with unique dimensions constitutes a smaller percentage of all purchases, otherwise the shapes are standardized between projects. With all parameters taken into consideration, the item is classified as a leverage item.

Table 5.10: Kraljic matrix for "Wells and pipes - concrete"

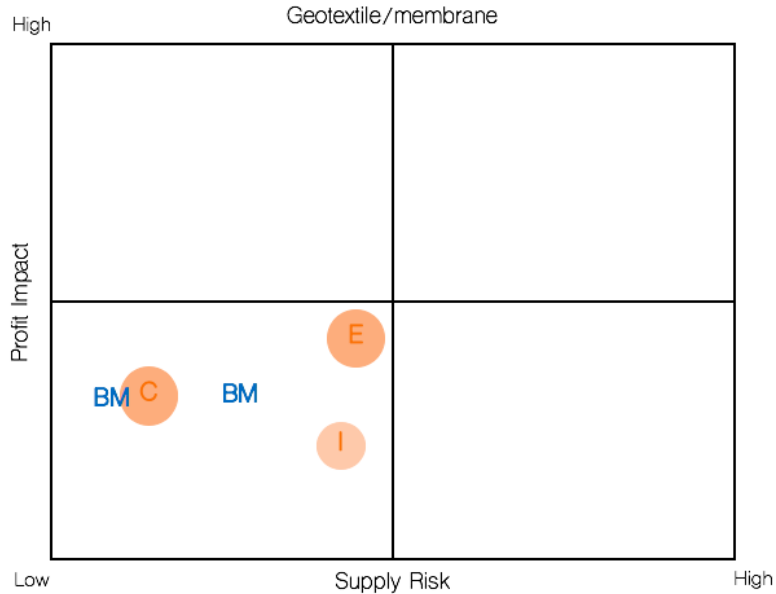


As concluded from the empirical study and shown in Table 5.10 above, the Site Managers and the Business Managers perception of the supply risk, as well as the financial impact associated with the purchase of this product is scattered. Discrepancy between theoretical importance and the perception of importance by the Site Managers can be observed.

Geotextile/membrane

As seen in the quantitative data collection, the financial volume of the cost item does not exceed the five million SEK limit and can thereby be classified as having a lower financial impact compared to the previous posts, classifying it either as non-critical or bottleneck. Furthermore, the supply risk associated with the cost item is low. The Site Managers collectively agree that the purchase of the cost item is standardized and the same type of product can be used between projects. No risk in regards to few suppliers is mentioned in the interviews, which is consistent with Table 4.4 that states that 17 suppliers have been used the last three years. This will motivate the classification of this item as a non-critical item.

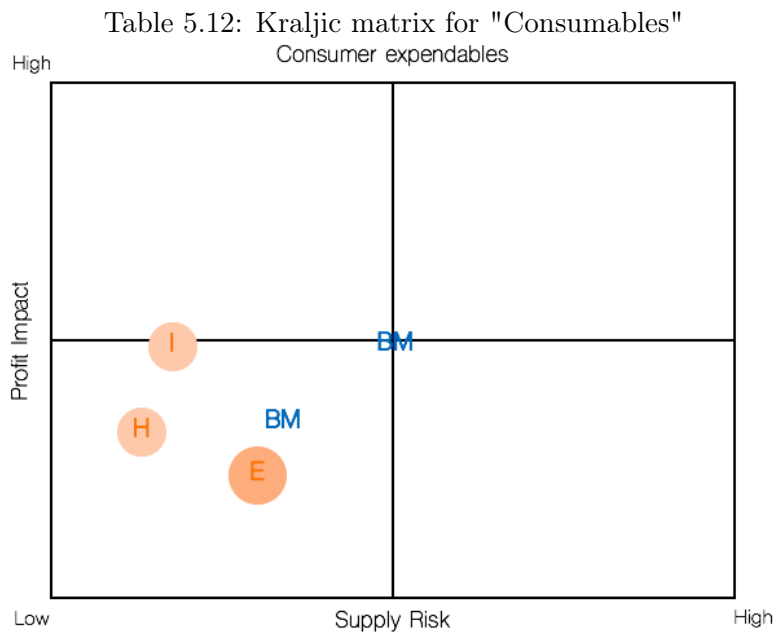
Table 5.11: Kraljic matrix for "Geotextile/membrane"



As concluded from the interviews, and shown in Table 5.11 above, all Site Managers purchasing this product perceive the supply risk associated with the purchase as low. Hence, placing the item in the left side of the Kraljic matrix. Furthermore, the Site Managers have a collective perception of the cost item having a low financial impact, which would classify the cost item as being a non-critical item. This aligns well with the theoretical classification.

Consumables

As can be found in the quantitative data collection in Table 4.4, the financial volume of this product do not exceed the five million SEK limit and is thereby classified as having a lower financial impact, hence motivating it as either a non-critical or bottleneck item. Neither of the Site Managers mention any supply risk associated with the cost item in terms of number of suppliers and lead time. In Table 4.4 it can be seen that 124 suppliers have been used the last three years, which could be justified by the fact that several goods can be allocated to this account. In the empirical study it is concluded that the allocated costs are standardized, further motivating the low supply risk associated with the purchase. The low profit impact in combination with the low supply risk related to the this item classifies it as a non-critical item.

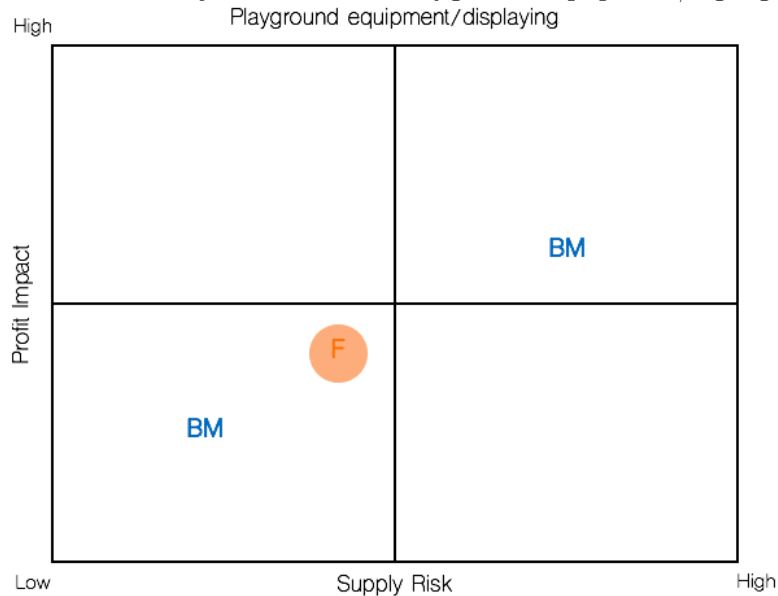


As can be concluded from the empirical study and shown in Table 5.12, all Site Managers purchasing this cost item perceive the supply risk and profit impact associated with this cost item as low. Hence, categorizing the cost item as a non-critical item. In summary, this is consistent with the theoretical classification motivated by the pre-set limits in Table 5.2.

Playground equipment/signage

As can be found in the quantitative data collection in Table 4.4, the financial volume of this product do not exceed the five million SEK and can thereby be classified as having a low financial impact in the Kraljic matrix. Hence, motivating it as either a non-critical or bottleneck item. Furthermore, the supply risk related to the cost item is higher. This due to the heavily customization of this item per project, often specified by the contractor or the architect in the technical description. This implies few suppliers to choose from, and no tendering process possible. However, in Table 4.4 it can be seen that 45 suppliers have been used the last three years. The number of suppliers can however be motivated by the fact that the technical description often requires a certain supplier. Regarding lead time, one can argue that the more complex and specified the product, the longer lead time to produce the specific goods. Thus, the cost item can be classified as having a higher supply risk. This will motivate the classification of this item as a bottleneck item.

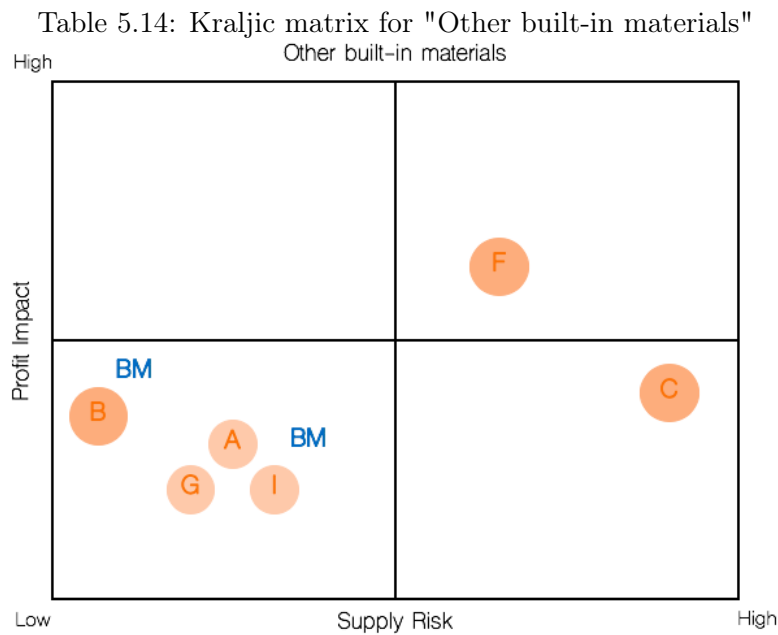
Table 5.13: Kraljic matrix for "Playground equipment/signage"



As can be concluded from the empirical study and shown in Table 5.12, the Site Manager purchasing this cost item perceive the supply risk and profit impact associated with this cost item as low. Hence, categorizing the cost item as a non-critical item. In conclusion, the Site Managers perception of the classification does not align with the theoretical classification.

Other built-in materials

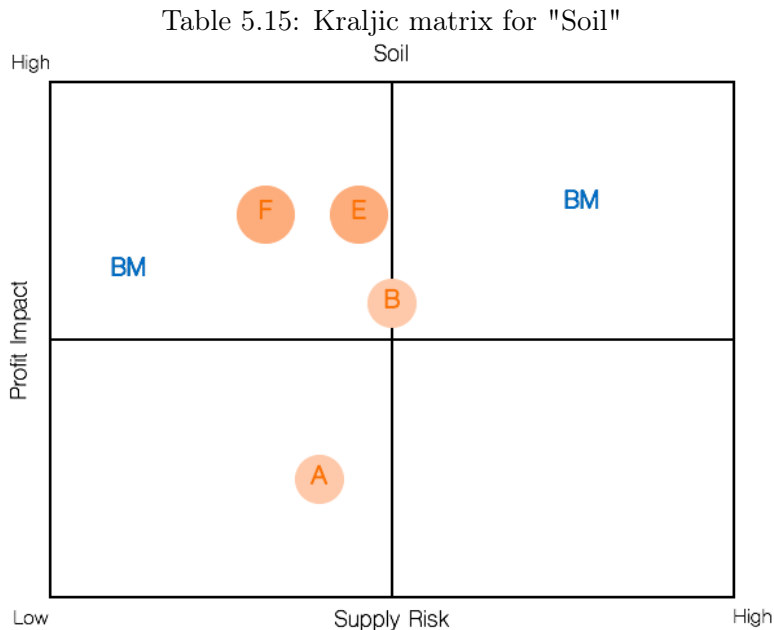
"Other built-in materials", as well as "Building materials" and "Consumables", are special in comparison to the others since multiple purchases can be allocated to these cost items. As can be found in the quantitative data collection in Table 4.4, the financial volume of this product do not exceed the five million SEK and can thereby be classified as having a lower financial impact in the Kraljic matrix. Hence motivating it as either a non-critical or bottleneck item. Furthermore, the supply risk associated with the purchase is low as neither a risk related to the number of suppliers or lead time is discussed. In Table 4.4, it is also visible that 82 suppliers have been used the last three years, which could be justified by the fact that several goods can be allocated to this account. The cost items are also described as standardized, however differing in quantity. Thus, motivate the theoretical classification of this item as being non-critical.



As concluded from the empirical study and shown in Table 5.14 above, the majority of the Site Managers perceive the supply risk associated with the purchase of this product as low. It could also be concluded that the number of suppliers are many, which partly is due to the variety of the cost item discussed above. Concluded from the empirical study, also shown in Table 5.14, is that the majority of the Site Managers and the Business Managers perceive the profit impact of this product as low. This will motivate the classification of this item as a non-critical item which aligns with the theoretical classification.

Soil

As studied in Table 4.4, the financial volume of this product do not exceed five million SEK. Thereby, it can be classified as having a lower financial impact in the Kraljic matrix. Hence motivating it as either a non-critical or bottleneck item. However, the risk associated with the cost item is higher. In Table 4.4, it can be seen that 27 suppliers have been used the last three years. Much like cost item "Playground equipment/signage", each project is heavily customized as the architect of a project often have specific requests on the characteristics and the suppliers. This implies fewer suppliers to choose from, and no tendering process possible. However, no risk associated with lead time is mentioned. This will motivate the classification of this item as a bottleneck item.



All Site Managers have a collective view that the supply risk associated with the purchase is low. In the empirical study, the Site Managers described the cost item as an expensive purchase. However, as this cost item only has aggregated purchases for around 4.2 million SEK the last three years, the cost item is not categorized as having a high financial impact in the Kraljic matrix. The Site Managers classification of "Soil" does thereby not align with the theoretical classification.

5.7.4 Recommendation of sourcing strategy

As a conclusion, a compilation of the classification of the different cost items could be done according to the following list.

Leverage items

Six items are classified as leverage items: "Gravel and filling material", "Wells and pipes - plastic/metal", "Ready mixed concrete", "Building materials", "Wells and pipes - concrete" and "Natural stone tiles".

This is the category where most of the investigated items are located, which is in line with the theory presented by van Weele (2014). Small changes in expenditures of these products will thereby render a large impact on the total cost of the company. The high financial impact from these kind of items is due to the fact that they are ordered in large quantities at repeated occasions. Due to these circumstances, price and logistics related services becomes crucial factors when choosing suppliers. Leverage items are thus most well suited to be purchased through multiple sourcing where finding the lowest prices are the primary goal. However, a cheaper spot price of a product should be set in comparison to the potential economy of scale achieved through consolidated volumes at few suppliers. Since this is still desirable, a multiple sourcing with not too many suppliers will be recommended, suggestively dual sourcing. Hence, framework agreements with two trustworthy suppliers should thereby be established in order to ease the administrative process connected to each purchase. However, the contracts should not be set for a too long period of time in order to be able to change suppliers if beneficial, as well as to negotiate price levels that follow the market fluctuations and secure the best prices. Time should be invested in continuously scanning the market for better supplier options and price levels.

Strategic items

None of the analyzed items are classified as purely strategic items.

In spite of the lack of items classified within this category, a suitable sourcing strategy will still be presented. As mentioned by van Weele (2014), strategic items are the most critical ones since they render a large impact on the profit as well as is associated with a high supply risk. It is thereby crucial to maintain a good and stable relationship with the suppliers of these goods. This is further motivated by the fact that single or delegated sourcing is the most beneficial sourcing method in order to consolidate large volumes at one selected supplier. Hence, both exploit potential benefits and discounts generated through economy of scale, as well as

secure the supply. Framework agreements should be set in place and highly paid attention to. The performance of the suppliers should be continuously evaluated and potential collaborations should be explored, i.e. a performance-based partnership is recommended. Switching suppliers of strategic items will require extra effort compared to other categories.

Non-critical items

Four cost items are classified as non-critical items: "Reinforcement bars and mesh", "Geotextile/membrane" "Consumables" and "Other built-in materials".

As mentioned by van Weele (2014), a dilemma associated with these kind of items is that the administration cost related to the acquisition of these products often is more expensive than the actual product. Since the lowest possible total cost should be the deterministic factor, focus should be on keeping the administrative costs low rather than the price of the products. The Site Managers state that the prices of the products in this category do not differ substantially between different suppliers, but on the contrary the costs are more related to the the logistics of delivery. Hence, validating mentioned strategy. In order to reduce administrative costs related to the purchases, the interactions with the suppliers should be kept at lowest possible level, preferably by consolidating the purchasing volumes to a single or a pair of suppliers. Today, BA lacks consolidation of purchasing volumes and thereby loss of discounts related to economy of scale, which further motivates a decreased number of suppliers.

Non-critical items are thereby suggested to be purchased through single or parallel sourcing. Parallel sourcing is more motivated than single sourcing since the location of the supplier has a substantial influence. It is thereby desirable to have more than one supplier to choose from. In order to administrate the purchases in an efficient way, two suppliers should be carefully chosen through a thorough vetting process where the critical factors will be price and availability. As mentioned by Karjalainen (2011), it is favorable to establish framework agreements on these kinds of products.

Bottleneck items

Two items are classified as bottleneck items: "Playground equipment/signage" and "Soil".

As mentioned by Gelderman and van Weele (2003), a company should strive to reduce the number of items in this category. This since they will have a minor

positive impact on the result, however could put a splinter in the wheel for the entire production and thus cause expensive delays. The risk of high dependency on one supplier could be reduced by continuously scanning the market for alternative resources. As mentioned by van Weele (2014), bottleneck items are suited to be purchased through single or parallel sourcing where a tight communication with the supplier is upheld. A well defined framework agreement with a trustworthy supplier should thus be established. However, even though BA should strive to mainly use one single supplier of these kind of items, it is of high importance to have a backup supplier in case the initial supplier should be unable to deliver. Due to these factors, parallel sourcing is recommended. The framework agreement with the backup supplier does not need to be as heavily negotiated as the primary one. This since it will most preferably not be used at all, and, as mentioned by van Weele (2014), price is secondary to secure the supply.

5.8 Sensitivity analysis

Due to the delimitations set in the thesis, the authors would like to address some critical factors identified in order to promote transparency, as well as avoid hidden biases in the final recommendation. These critical items are listed below and further described in this section.

- Data cleansing
- Time horizon
- Biases

5.8.1 Data cleansing

During the course of this thesis, the authors have taken some decisions about data cleansing that has affected the financial foundation on which the case study is built upon. Thus, influences the final recommendation. The data cleansing is not described in the initial delimitation chapter.

The most critical aspect profoundly affecting the entire scope of the thesis is the accounts chosen to be included in the quantitative analysis. Together the authors and the CQD went through all existing accounts and discussed which ones to include and which ones not to. When uncertainty about accounts appeared, it was decided to exclude the account in a "benefit of the doubt" manner. Example of accounts excluded according to this logic was engine fuel and electricity.

A large, singular account not included in the study was the "Inbound account". This post represents invoices in-between arriving to BA and assignment to specific category within the framework. The reason this post is not included is that the authors are unable to identify the nature of these purchases since they are not accountable for yet. Hence, it is not possible to identify whether the cost item is a service, a machine or goods that are included in the scope or not. Looking at the whole picture and the types of expenditures done at BA, the largest part of the "Inbound account" will most likely constitute services. Hence, not included in our scope. This motivates the exclusion of the cost item. Furthermore, another account excluded was the one representing concrete, which is a material that will not be used in future projects.

The danger of excluding accounts is that it might give a misleading picture of the financial impact and weight of certain purchases. It could have navigated the authors to go into detail with accounts that should not have been included due to linkage to the removed account. However, all the data cleansing of accounts included in our initial scope have been carefully conducted in accordance and with the assistance of the CQD and our supervisor at BA. The authors thereby believe the exclusion of mentioned accounts is well motivated.

5.8.2 Time Horizon

As motivated in the methodology, the time horizon of three years was chosen in order to include sufficient amount of data (including both long- and short term projects) without being too extensive. Even though the time horizon is believed to be wisely chosen, it cannot be foreseen that it will affect the quantitative foundation. However, the time horizon was decided based on the theoretical framework presented earlier on in the thesis, with additional input from both the supervisors at BA, as well as LTH. The authors thereby evaluate the set time horizon as motivated and well suited to fulfill its propose.

5.8.3 Biases

Biases will, intentionally or unintentionally, affect the way the interviewees answers to presented questions as well affect what information the interviewees omit. Thus, influence the qualitative basis of the thesis. In order to minimize the affect of such bias, a great amount of time and effort were assigned to formulate the interview questions in a way yielding objective but comprehensive answers. After the interviews were completed, the answers were reviewed separately by the authors in order not to influence each others interpretation of the answers. The

information was as well triangulated according to Yin (1994) recommendation of how to construct validity. Following this procedure, unwanted bias is expected to be avoided.

6 | Conclusion

This chapter will present the conclusion of the master thesis, by once again displaying the purpose of the study as well as answering the research questions. Then, future research suggestions will be presented together with the authors theoretical contribution.

6.1 Concluding words

The purpose of the study is to *investigate how enhanced strategic purchasing can create organizational benefits for Bäckström Anläggning.*

In order to fulfill this purpose, the thesis was performed in the following way. After a carefully chosen methodology chapter, the authors began the Literature Review presented in Chapter 3. This chapter covers the development of purchasing management as well as the importance of purchasing process, purchasing strategy and how to categorize goods in accordance with the Kraljic matrix. Other topics discussed are centralization, decentralization and framework agreements. We argue that these theories are interconnected. The Empirical Study presented in Chapter 4 aimed to collect a wide range of quantitative and qualitative data in order to build a solid foundation before the analysis. By extracting data from Hogia and by interviewing 14 employees from different departments at BA, the authors collected enough information to conduct the analysis presented in Chapter 5, i.e. the Analysis. The analysis aims to answer the research questions by comparing the information from the empirical study with the literature review. The analysis is wrapped up with a sensitivity analysis, which covers the potential affects of the pre-set delimitations.

6.2 Research questions

RQ1: How is Bäckström Anläggning purchasing process currently performing and how is it aligned with the overall strategic agenda of the company?

Today BA has a reactive purchasing strategy and the different Site Managers have little knowledge about the total purchasing spend and the purchasing strategy of the company. BA today mainly focuses on reducing the costs and that the company has problems regarding communication between departments. It is concluded that BA lacks a company wide strategic agenda related to the purchasing process. The lack of coordination and knowledge about purchasing spend is also reflected by the Site Managers insufficient use and inadequate knowledge of framework agreements. These characteristics position BA as a commercially oriented organization within the purchasing development model.

RQ2: How can different products benefit from being purchased more strategically?

As discussed, BA has no communicated strategy and the Site Managers have a scattered perception of the current purchasing situation and of how different purchases should be made. Throughout the thesis twelve cost items are discussed as an example of how future purchases can be purchased more strategically. Depending on their classification, as either leverage, strategic, non-critical or bottleneck items, the final recommendation will differ.

The cost savings that can be gained by implementing a more suitable strategy on the purchases of the individual twelve items can impact the profit per year to a great extent. In 2018 BA had a profit of 0.53 million SEK. Thus, as visualized in Table 5.1 in the analysis a one percentage saving corresponding 0.57 million SEK, can double the yearly profit. This highly motivates a structural change within the organization.

In order to develop a more suitable purchasing strategy, products have been classified in regards to financial impact and supply risk. According to the Kraljic matrix, there is a best practise of how to purchase a product depending on its classification. The twelve cost items discussed in the thesis exemplifies how to manage different cost items, however the theory can be further developed to other cost items within the company. A summary of the concluded analysis is presented in Table 6.1 below.

Out of the twelve cost items investigated, six were classified as leverage items, none were classified as a strategic item, four were classified as non-critical and two were classified as bottleneck items. Leverage items should be purchased through delegated sourcing, strategic items should be purchased through single or delegated sourcing, non-critical items should be bought through parallel sourcing and bottleneck through parallel sourcing. A majority of these supplier relationships will be recommended to be managed through thoroughly elaborated framework agreements. When adapting this strategy the company will be able create large savings through synergies as well as reduce the administrative work.

Table 6.1: Summary of the twelve cost items and its sourcing strategies

<i>Classification in the Kraljic matrix</i>	<i>Cost item</i>	<i>Chosen sourcing strategy</i>
Leverage	Gravel and filling material Wells and pipes - plastic/metal Ready mixed concrete Building materials Wells and pipes – concrete Natural stone tiles	Multiple sourcing
Strategic		Single or delegated sourcing
Non-critical	Reinforcement bars and mesh Geotextile/membrane Consumables Other built-in materials	Parallel sourcing
Bottleneck	Playground equipment/signage Soil	Parallel sourcing

RQ3: *How can Bäckström Anläggning's purchasing process develop in its performance and be more aligned with the strategic agenda of the company?*

In order to shift forward in the purchasing development model, BA will have to establish a well motivated purchasing strategy since this is something they lack today. This strategy will, based on the aim to become an organization with a cooriented purchasing function, focus on making BA align the way the different decentralized business units are working as well as consolidate the purchases. This in order to access economies of scale and gain increased negotiating power towards used suppliers. This consolidation should be done through establishing more elaborated framework agreements with chosen suppliers. These contracts will further decrease the administrative work of contracting different suppliers, creating additional benefits. Hence, the developed strategy will help BA to shift the focus towards a long term sustainable purchasing function creating savings through synergies, rather than short term savings and quick fixes.

Secondly, and potentially most importantly, BA will have to increase communication internally. Without efficient communication the employees might not realize the concept and benefits of the updated purchasing strategy. An example of an important aspect to communicate is why it is more beneficial in the long run to buy a certain material from a framework agreement, rather than choosing a sup-

plier currently providing the lowest spot price. In conclusion, the Site Managers need to realize the full potential of being seen a loyal and trustworthy customer and thus not conduct Maverick buying.

By establishing more elaborated framework agreements with chosen suppliers and aligning the work of the decentralized units, as well as enhancing the communication in the organization, BA can further develop their business and earn additional cost savings. If the Site Managers continuously acknowledge the benefits with conducting purchases within the agreements, as well as start to purchase more goods via websites, additional savings can be gained. Thoroughly looking over the current framework agreements by developing an evaluation model of such frameworks, as well as keeping it continuously updated, is crucial for BA's success.

In order not to lose the purpose of the strategy, it is of great essence for the top management to be transparent, follow up on actions set into motion and encourage change through inclusion. The procedure of implementing a purchasing strategy is left outside the scope of this study. However, in alignment with the recommendation of increased communication and coordination within the company, the authors will recommend BA to investigate the potential need of a purchasing group, specifically responsible for this task. The primary purpose of such group would be to keep the decided framework agreements updated and at best possible terms, as well as aligning the way of working between different divisions. The group should constitute trusted representatives from different departments with a thorough understanding of the need in the production, as well as the mechanisms and benefits of strategic purchasing. Last but not least, it will be important to choose representatives with a willingness to change, that have the possibility to devote time in order to perform these strategic purchasing activities in a meritorious way.

6.2.1 Future studies

As concluding remarks the authors would like to share recommendations of how to proceed in order to accelerate the development of BA. The recommendations are based on observations during the work at BA and in accordance to existing theory in the field.

- A future study that would add relevance to BA is applying the logic presented in this thesis on all the expenditures of the company, i.e including the purchasing categories excluded in the thesis. This would be interesting since, even though we hope that this study will provide lucrative input to BA, the greatest expenditures are still represented by purchased services.

Several Site Managers also expressed the perception that this is an area of great potential improvement.

- Another area of useful research is the potential introduction of easily applicable and comprehensive KPI's. KPI's are useful tools in order to quantitatively measure and monitor the progress of a company's evolution. Thus, a suggestion of a future study is to investigate a beneficial number of KPI's and formulation of such.
- The authors encourage BA to perform a study answering the first and third research question of this thesis in two or three years from now, in order to map the evolution in the purchasing process model.

6.2.2 Theoretical contribution

This study is highly specified towards the company BA, hence difficult to apply on a general question. However, the theoretical contribution of this thesis is the method presented in the theory: Classifying a company within the purchasing development model, and thereafter provide suggestions in accordance to the the Kraljic matrix classification of items in order to develop within the development model. The methodology presented in this thesis will have the potential of being useful applied to other companies in a variety of industries.

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Appendix - Data Collection Protocol

Interview guide - Intervju guide

Grundläggande generella frågor

- Hur länge har du varit på positionen som PC på BA?

Inköps-relatedade frågor

- Har ni någon speciell strategi när ni gör inköp?
 - Om ja, vem har kommunicerat den då?
- Hur ofta beställs material?
 - Är detta synkroniserat med produktionsplanen?
 - Om inte, måste mycket justeras med leveranserna och hur hanteras detta?

Relationsbaserade frågor

- Hur skulle ni beskriva er relation till leverantörerna?
- Byter ni ofta leverantörer av olika insatsvaror? (Inom projekt/mellan projekt)
 - Om ja, hur ofta då?
 - * Hur upplever ni svårighetsgraden att byta leverantör?
 - Hur ser det ut mellan projekt? Är det ofta olika leverantörer av samma insatsvara?

- Vad ligger som underlag för val av specifik leverantör, varför valdes de som används nu?
 - Är det ni eller kalkylavdelningen som bestämmer leverantör?
 - Vilka kriterier kollar ni på? Ge gärna exempel.
- Har ni få eller flera alternativ till leverantörer? Definiera gärna “få” samt “flera”.
- Har materialen ofta långa ledtider? Definiera kort och lång ledtid.

Kalkylrelaterade frågor

- Hur ofta går ni över budgeterade inköp i ett projekt?
- Hur stor är felmarginalen/svängrummet för oförutsedda inköp?
- Om kalkylavdelningen kommer med en rekommendation av leverantör - Hur ofta väljer ni att använda den leverantören?
 - Om ni byter leverantör- vad är i så fall orsaken till detta?

Bedömningsfrågor produkter (Top 10 största inköpen)

1. Hur ser er inköpsprocess av _____ ut?
 - (a) Hur nöjd är ni med processen?
 - i. Om missnöje finns, hur kommer det sig och hur följs det upp?
 - (b) Vem/vilka är det som lägger beställningarna?
 - i. Hur standardiserad är inköpsprocessen idag? 1 = Inte alls 2 = Något 3 = Våldigt Mycket
 - (c) Hur specifika/specialanpassade måste dessa produkter vara för varje projekt/kund?
 - (d) Skulle beställning av dessa varor gynnas av att centraliseras, enligt er?

Centraliserings-relaterade frågor

- Vilka produkter tror du skulle kunna gynnas av att beställas centralt istället för ute på plats i projekt?
- Vilka produkter skulle INTE kunna beställas centralt och varför?
- Vilken produkt/service anser du är svårast att beställa?
 - Varför?

Avslutande frågor

- Är det något som ni tycker är viktigt nämna eller som du inte tycker vi berört kopplade till leverantörsstrategi och inköp?