MASTER THESIS IN BUSINESS ADMINISTRATION, SPECIALISATION IN INDUSTRIAL ECONOMICS

School of Business and Faculty of Social Sciences

Supplier evaluation criteria

A comparative case study between the fashion retail industry and the subsea industry

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Preface

This thesis is a final master dissertation in Business Administration with specialisation in Industrial Economics at Buskerud and Vestfold University College. The topic in the dissertation is about supplier evaluation and its underlaying topics, where we conducted a comparative analysis of two different industries.

We have through this process stumbled upon a number of challenges, but during the whole period we have felt progression, and the work has been both exciting and interesting. We are very happy that we chose to write as a team as this has given us the opportunity for good discussions and someone to share thoughts with. The fact that we where thorough in our planning and set milestones has made this process a good experience.

There have been periods of frustration, but with good guidance and support from our supervisor Roland Hellberg, and each other, we can look back on this work process with pleasure. Further, we want to thank all the companies that were willing to be interviewed and for their contributions to the thesis.

Kongsberg/Oslo, May 1st, 2015

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Abstract

The purpose of this study is to find out how firms set evaluation criteria for their suppliers, and how they use the evaluation system in practice, if they have one. This topic has not been well documented, and to perform the study, we needed to get a deeper understanding of subjects like Supply Chain Management, Buyer-Supplier relationships, Supplier evaluation criteria and Supplier evaluation systems. Based on a literature review on these topics, we were able to form the research questions and the research design. The research questions are:

> On what basis do buying firms set evaluation criteria for their suppliers, and how do they use the evaluation system in practice?
> Do the supplier criteria and evaluation systems vary between the high-tech and low-tech industry?

We have studied two cases that represent a high tech and a low tech industry; the subsea industry and the fashion retail industry. We performed a comparative case study between them to look for similarities and differences in their supplier evaluation criteria and evaluation systems. The research question is answered by analysing data retrieved from our data collection through interviews, archive data and some observation. Interviews were conducted with purchasing and sourcing managers in four different companies, two in each industry. The companies were selected based on their affiliation with the chosen industries and their availability to us as researchers. Companies that could represent a large share of the Norwegian market were favoured. When necessary, we performed more interviews with different people in the companies to strengthen the data collection and improve our understanding of the company.

The analysis was done using large extracts of the data presented as citations. Then the two industries were summed up and compared, and finally related back to the theory.

Findings suggest that both industries draw from their own experience when they develop the evaluation criteria for the suppliers. There is however a difference in how this has been systemised in an evaluation system in each company, where some have a formal evaluation system while others use their intuition and memory. The systems were not consistent within the industries. This study shows that there may be a weak link between supplier selection practices and supplier evaluation criteria, and that the models provided by theory may not be prominent in real world applications. The practical implications have relevance for both the buying company as well as their suppliers. Buying companies need to develop criteria relevant for own organisation and use them to evaluate and then develop their suppliers. The suppliers must understand how they must act and think so that they can develop their skills and capabilities in the desired way.

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CHAPTER 1

Introduction

This chapter will give an introduction to the selection of subjects for our master thesis, as well as an overview of the content and structure.

1.1 Actualisation

The importance of a strategic approach to Supply Chain Management (SCM) and how the whole value chain together can create higher value for all entities as well as for the customer, has become increasingly more important the past 30 years. Shifting from a strictly arm-length buyer-supply relationship to other forms of integration in the supply chain has increased the need for closer cooperation to meet market requirements. Many buyers choose to cooperate more closely with their suppliers, as well as involving and developing them.

Suppliers are eager to develop their own products, services and organisation in order to be chosen by the buying companies. It is however difficult to know what buyers require,

and when the suppliers don't know what is expected from them, it is not easy to develop their organisations, products, capabilities and skills in the desired way. This can create a gap between those who have the experience and knowledge to meet the requirements and those who don't.

Based on this shortly summarised reflection, we wanted to go into the subject of how buying companies evaluate their suppliers and which criteria are important to measure up to. There is a lot of research on the topic of criteria and evaluation systems, however there seems to be a lack of studies related to the rationale behind these criteria (de Boer et al., 2001). We don't yet know if they are based on the buying companies' own needs and reflections, or adapted from other companies without reflecting around how they relate to the needs of the supplier's own organisation.

We want to study how the evaluation criteria are developed in order to understand the underlying requirement the buyer has towards the supplier, so that the suppliers can realise why and how they need to improve in order to become a preferred supplier or strategic partner etc.

This study will therefore contribute to both theory and practice. The theoretical implications will be the study's ability to reduce the theoretical gap of how the criteria are set and why. The practical implications will primarily benefit the suppliers as they will be able to understand what is rarely communicated from buying companies, namely how they regard their suppliers and how the criteria or requirements are formulated. This will help suppliers develop in the most desired and effective way, which in turn also will benefit the buyer in terms of more effective suppliers in their supply chain.

1.2 Research question

Based on this introduction to the subject and the challenges in the industry, we present the following research question to be studied:

> On what basis do buying firms set evaluation criteria for their suppliers, and how do they use the evaluation system in practice?
> Do the supplier criteria and evaluation systems vary between the high-tech and low-tech industry?

The next section shows the structure of how we intend to answer this question.

1.3 Structure

This master thesis is structured as follows: First, a literature review revealing the most relevant theoretical contributions are presented. We have chosen supply chain management, buyer-supplier relationships, supplier criteria and supplier evaluation as our theoretical base. The rationale for these subjects is explained in the introduction of Chapter 2: Theory.

Based on the theory and the goals for this study, the selection of methodology and rationale for this is discussed in Chapter 3, as well as an reflection around our role as researchers. A procedure for preparing and analysing the empirical data from interviews are also presented.

The analysis of the collected data and the findings are presented in Chapter 4: Analysis, and the discussion of results related to existing theory and empirical findings will be carried out in Chapter 5: Discussion.

The final part is a conclusion of the most important results, the answer to the research question and implications for both theory and practice.

CHAPTER 2

Theoretical framework

This chapter is based on a literature review in the fields of Supply Chain Management (SCM), purchasing, and other interrelated subjects. The review has formed the background for our research question, and in this chapter the relevant theories are elaborated. Firstly, we present how the literature review is conducted, including search terms and type of journals, before presenting the theory found. We will start the theory chapter by presenting an introduction to supply chain management theory to serve as a background for this study. SCM is a large field mainly focused on managing the flow of goods, but with close connection to areas like operation management, procurement, logistics, information technology etc. Only information relevant to supplier evaluation and the relationship between buyer and suppliers, with a specific focus on purchasing, is presented. This brings us to the next section; Buyer-supplier relationships. In order to understand the supplier requirements set by buyers, we need to further investigate the theory around their relationship. Fourthly, a section about supplier evaluation and specifically supplier evaluation criteria will be elaborated, and lastly, we will

look at supplier evaluation methods presented in the relevant literature. The two latter sections will form our understanding of common used criteria and evaluation systems, which in turn will strengthen and target our data collection process. In this chapter we have aimed to be as clear and concise as possible, in order to present the relevant literature in a logical order, focusing on the important aspects.

2.1 Literature research

As a base for the literature research, we used our gained knowledge from SCM to form the knowledge base for the study. The reading of research articles gave an understanding of how to develop the theory further and what to include in order to build a logic reasoning of relevant information which leads the reader through the theoretical subjects and in to the data.

In the search, the most frequently used search engines have been the library's engine Oria which includes pages like e.g. Science direct and EBSCO Host, as well as using Google Scholar. Both search engines have given many relevant hits who seem to give a good representation of the existing literature.

Table 2.1 shows the various search terms used in the literature research phase of the study.

Search term 1	Search term 2
Supply Chain Management	Evaluation
SCM	Selection
Supply Chain	Requirement
Vendor	Criteria
Supplier	Code of conduct
Purchasing	Relationship
Buyer	

Table 2.1: Search terms in literature research

The different combinations of terms have given many relevant articles and text book references. Note that some of the terms have been used in both Norwegian and English. Frequently cited articles have been preferred due to assumed relevance and credibility, and

highly ranked international journals are also preferred. We will look more closely at these in the following section.

2.1.1 Ranking of journals

Within a research field there are some journals that have a higher impact level than others and are more commonly cited. The Academy of Management Review was the overall journal in our research that had the highest Impact factor of 7,817, while within SCM the best journals are known as Journal of Operations Management and Journal of Supply Chain Management according to the Thomson Reuters Journal Citation Reports. In our study, the most cited journals are the Journal of Operations Management and the International Journal of Production Economics.

			JCR Data More Information			Eigenfactor® Metrics	
Journal	**JCR Title**	**Number of articles**	**2013 Total Cites**	**Impact Factor**	**5-Year Impact Factor**	**Eigenfactor® Score**	**Article Influence® Score**
Journal of Operations Management	J OPER MANAG	**6**	**5596**	**4.478**	**7.718**	**0.00695**	**2.066**
International Journal of Production Economics	-	**4**	**-**	**-**	**-**	**-**	**-**
Academy of Management Journal	ACAD MANAGE J	**3**	**19426**	**4.974**	**8.443**	**0.02525**	**5.244**
Journal of Supply Chain Management	J SUPPLY CHAIN MANAG	**3**	**1072**	**3.717**	**4.946**	**0.00200**	**1.079**
European Journal of Operational Research	EUR J OPER RES	**3**	**26370**	**1.843**	**2.625**	**0.04965**	**0.945**
Journal of Purchasing & Supply Management	J PURCH SUPPLY MANAG	**3**	**609**	**1.609**	**-**	**0.00091**	**-**
Academy of Management Review	ACAD MANAGE REV	**2**	**17707**	**7.817**	**9.698**	**0.01436**	**5.321**
Omega, International Journal of Management Science	OMEGA-INT J MANAGE S	**2**	**3829**	**3.190**	**3.626**	**0.00720**	**1.085**
Decision Sciences	DECISION SCI	**2**	**2671**	**1.561**	**3.025**	**0.00295**	**1.114**
International Journal of Production Research	INT J PROD RES	**2**	**9031**	**1.323**	**1.718**	**0.01090**	**0.351**
European Journal of Purchasing and Supply Management	-	**2**	**-**	**-**	**-**	**-**	**-**
Scholarly Journals	-	**2**	**-**	**-**	**-**	**-**	**-**
Information Sciences	INFORM SCIENCES	**1**	**12028**	**3.893**	**3.969**	**0.02642**	**0.889**
Journal of Cleaner Production	J CLEAN PROD	**1**	**8939**	**3.590**	**4.088**	**0.01540**	**0.751**
Knowledge-Based Systems	KNOWL-BASED SYST	**1**	**2629**	**3.058**	**2.920**	**0.00666**	**0.603**
Strategic Management Journal	STRATEGIC MANAGE J	**1**	**17225**	**2.993**	**5.929**	**0.01876**	**3.094**
Journal of Business Logistics	J BUS LOGIST	**1**	**491**	**2.886**	**3.713**	**0.00169**	**0.881**
Journal of Marketing Research	J MARKETING RES	**1**	**10909**	**2.660**	**3.796**	**0.01741**	**2.847**
International Journal of Information Management	INT J INFORM MANAGE	**1**	**1169**	**2.042**	**2.243**	**0.00237**	**0.509**
International Journal of Operations & Production Management	INT J OPER PROD MAN	**1**	**3238**	**1.518**	**2.472**	**0.00239**	**0.542**
Journal of Small Business Management	J SMALL BUS MANAGE	**1**	**1336**	**1.361**	**2.298**	**0.00151**	**0.641**
Journal of Business Research	J BUS RES	**1**	**6774**	**1.306**	**2.341**	**0.00969**	**0.631**
R&D Management	R&D MANAGE	**1**	**1500**	**1.266**	**2.635**	**0.00230**	**0.812**
Education	HIGH EDUC	**1**	**1949**	**1.124**	**1.354**	**0.00404**	**0.536**
Harvard Educational Review	HARVARD EDUC REV	**1**	**1293**	**1.080**	**1.317**	**0.00191**	**0.826**
International Journal of Computer Integrated Manufacturing	INT J COMPUT INTEG M	**1**	**817**	**1.019**	**1.143**	**0.00161**	**0.246**
IEEE TRANSACTIONS ON ENGINEERING MANAGEMENT	IEEE T ENG MANAGE	**1**	**1761**	**0.938**	**1.557**	**0.00228**	**0.540**
International Journal of Management Science and Engineering Management	EMJ-ENG MANAG J	**1**	**204**	**0.333**	**0.546**	**0.00013**	**0.065**
Journal of Purchasing and Materials Management	-	**1**	**-**	**-**	**-**	**-**	**-**
Procedia - Social and Behavioral Sciences	-	**1**	**-**	**-**	**-**	**-**	**-**
Total Quality Management	-	**1**	**-**	**-**	**-**	**-**	**-**
Total Quality Management and Business Excellence	-	**1**	**-**	**-**	**-**	**-**	**-**

Table 2.2: Rating of referred journals

As a summary of our literature research, we present Table A.1 showing the total Cites, Impact Factor, 5-Year Impact Factor, Eigenfactor Score and Article Influence Score of all the

journals used in this study.

To obtain a better understanding of the table, please read the explanations of the ratings provided by Thomson Reuters Journal Citation Reports in Appendix A. A larger version of the table is also added there.

2.2 Supply Chain Management

The term Supply Chain Management (SCM) has received a lot of attention during the past 20 years, both in academia and practice (Mentzer et al., 2001; Weele, 2010), and is now one of the most important competitive strategies used by modern enterprises (Chen, 2011; Weele, 2010). The globalised economy has resulted in increased competition, and according to Mentzer et al. (2001) "...getting a defect-free product to the customer faster and more reliably than the competition is no longer seen as a competitive advantage, but simply a requirement to be in the market". This obviously puts pressure on the supply chain and its total performance.

SCM can be defined as the network of organisations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services delivered to the ultimate consumer (Christopher, 1992). In other words, SCM is the set of approaches utilised to efficiently integrate suppliers, manufacturers, warehouses, and stores, so that merchandise is produced in the right quantities, distributed to the right locations, and at the right time. This is done in order to minimise system-wide costs and/or maximise profits while satisfying the necessary requirements (Bilisik et al., 2012).

According to Mentzer et al. (2001) there are three degrees of supply chain complexity, as illustrated in Figure 2.1. The three types are

- Direct supply chain
- Extended supply chain
- Ultimate supply chain

As we can see, the complexity ranges from the company and its closest supplier and customer in the direct supply chain, to the ultimate supply chain including all involved organisations in the upstream and downstream flows of material. This might include third party

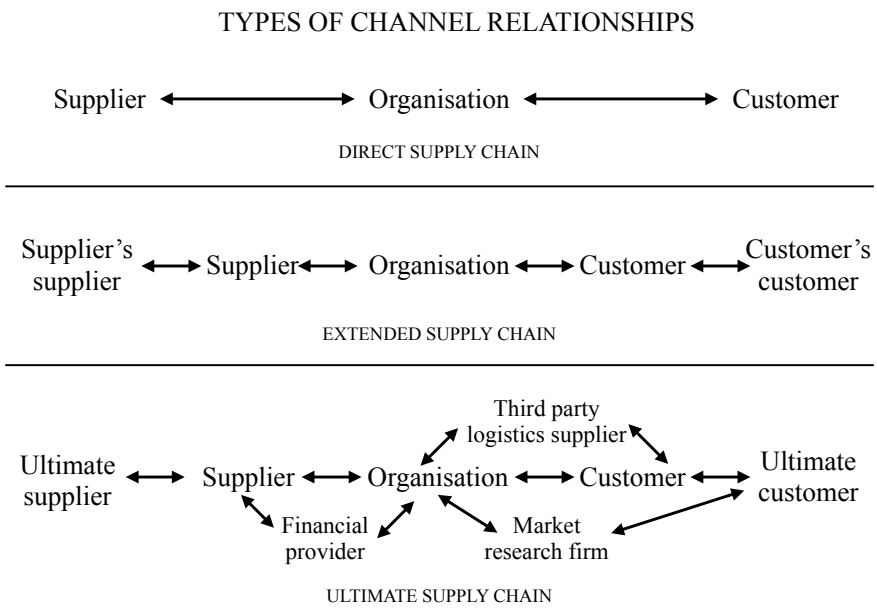


Figure 2.1: Material flow in the supply chain (Mentzer et al., 2001)

logistics providers and other support functions of the company. The illustration shows all the main tasks and functions of the complex supply chain (Mentzer et al., 2001).

To be able to perform, an appropriate selection of suppliers is evidently needed. The selection and evaluation of suppliers is therefore a critical decision problem for efficient supply chain management, not only for costs but also quality, flexibility, time, innovation and sustainability (Pearson and Ellram, 1995; Araz and Ozkarahan, 2007; Chen, 2011; Bilisik et al., 2012; Luzzini et al., 2014).

There is however an unclear line between supplier *selection* and supplier *evaluation* in the literature as well as logically. In articles the terms are used interchangeably and seem to describe the same content. In our study we will focus on the *evaluation* of existing suppliers, thus how the buying firm values or views their suppliers based on their chosen criteria, and not how buyers selects new suppliers. There will however be many similarities between the criteria found in the selection literature and the evaluation literature, as it is natural to evaluate the suppliers based on the criteria they were selected by. Additionally, the evalua-

tion criteria will add a new dimension, namely measuring the *performance* of the suppliers based on their cooperation and experience. We will go further into this in Section 2.4 when we investigate the supplier selection criteria literature.

2.2.1 Purchasing

SCM theory is broad with many contributors, and we will in this section concentrate on relevant parts of the purchasing tasks. The emphasis is on the importance of having the appropriate selection of suppliers, management of a supply base, and the supplier's role in establishing an effective value chain. By purchasing we mean both the sourcing and supply tasks, which will be explained in the following section.

With the increasing significance of SCM, the purchasing function in organisations has gradually been seen as a strategic issue, and its role has evolved from transactional to strategic (Cavinato, 1999; de Boer et al., 2001; Luzzini et al., 2014). How the purchasers act and preform can not only influence the firm's financial performance (Chen and Paulraj, 2004; Weele, 2010), but also the degree of product innovation (Landeros and Monczka, 1989), customer responsiveness, and the firm's quality performance (Anderson et al., 1995; Weele, 2010),

One of the key tasks of a purchaser is to choose the right supplier and purchase the right amount of materials, for the right price at the right time (Weele, 2010). Purchased goods and services represent a substantial part of the value of products, and for a majority of industries, represent more than 50 percent of the product cost. Making decisions about purchasing strategies and operations is therefore one of the primary determinants of profitability (de Boer et al., 2001; Muralidharan et al., 2002). This, in addition to the increased pressure for higher quality, lower prices, defect-free products and more flexibility demands closer coordination in the supply chain (Mentzer et al., 2001). To visualise the process related to the selection and evaluation of suppliers, the next section will explain the steps of sourcing and supply as relevant to our main topic.

The purchasing process

A vital part of SCM is the purchasing process. Traditionally the purchasing function only referred to buying, however it has evolved to include all processes from determining the need to evaluating the contracts and the suppliers.

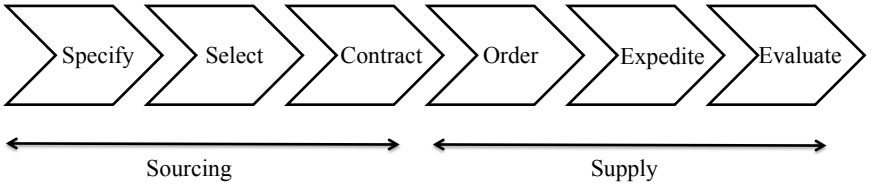


Figure 2.2: Purchasing Process (Weele, 2010)

As we can see from Figure 2.2, there are some main activities in the purchase process. The first phase is called sourcing and the second phase supply. The sourcing process starts by determining the purchasing specifications which can entail pre-qualifying possible suppliers. Secondly comes selecting a suitable supplier and ensuring good routines for this process. This might involve setting the supplier selection criteria. The third step in sourcing is doing negotiations and agreeing on a contract, an important step in many industries as it influences the buyer-supplier relationship. The supply phase involves ordering from the selected supplier, then expediting the order through monitoring and control. The last step is the evaluation which includes e.g. follow-up, supplier rating and supplier ranking (Webster, 1965; Weele, 2010). Our focus in this study is on the evaluation criteria, but other parts of purchasing is relevant to understand the whole process of how the supplier evaluation criteria are set.

Transaction Frequency and Product Type

Different combinations of transaction frequencies and product types can determine a company's purchasing strategy and their relationship with their suppliers, as illustrated in Figure 2.3.

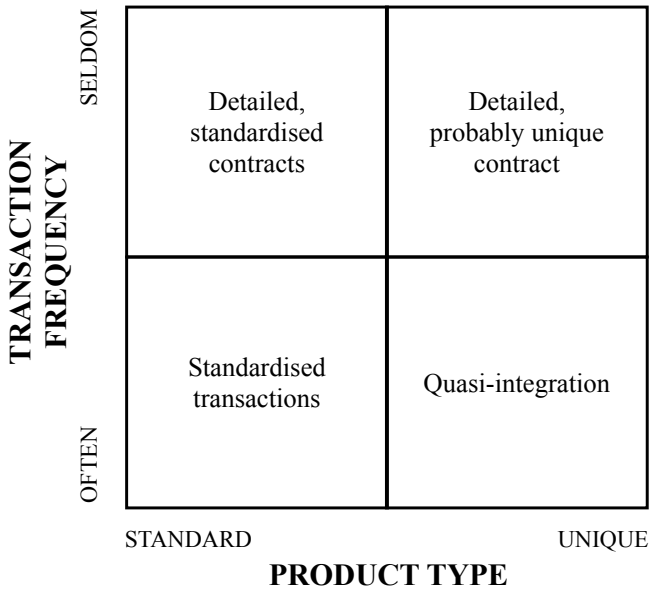


Figure 2.3: Transaction Frequency-Product Type Matrix adapted from Stuckey and White (1993)

Many transactions can contribute to raising the total costs, and the reason is that negotiating occur more often, which allows for more frequent exploitation. This is similar to the theory about vertical integration presented by Stuckey and White (1993), but in our case, quasi-integration is an more appropriate description of the unique product transactions that happen often. Partnerships such as long-term contracts, joint ventures, strategic alliances, technology licenses, asset ownership, and franchising are examples of quasi-integration strategies.

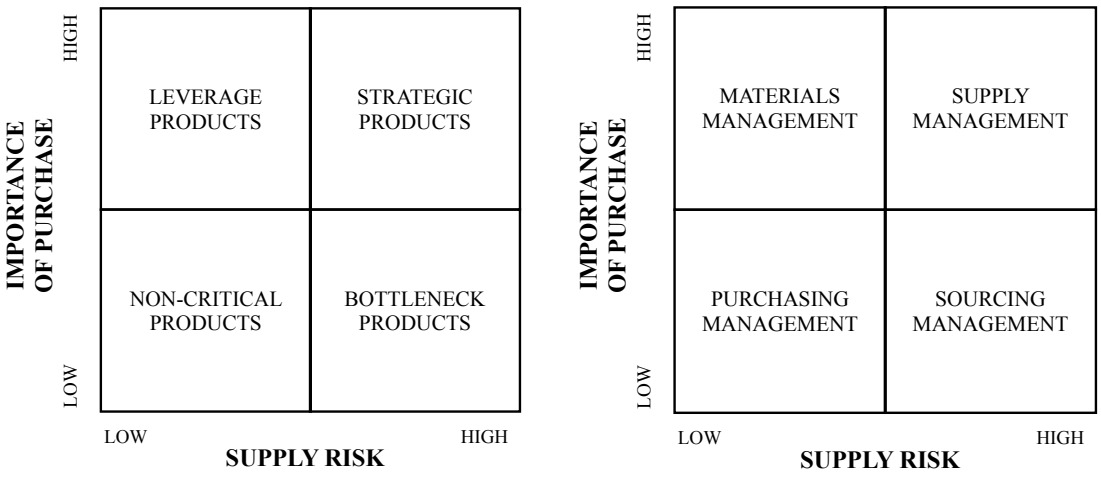
When buyers and suppliers rarely need to interact, partnership is usually not necessary, whether the product is standardised or unique. If the product is standardised, standardised transactions and contracts usually would be most effective. When the product is unique, the contracts may be quite complicated but partnership may still not necessary. An example would be major public construction projects (Stuckey and White, 1993).

Frequent transactions combined with standardised products will mostly have no need to form any partnership, and standardised transaction is enough. But when assets are specific

and unique, and transactions are frequent, partnership is likely to be necessary.

Strategic purchasing portfolio

According to Kraljic (1983), purchasing are also influenced by the supply risk and the importance of the purchase. These two factors have been described as the value or financial risk and the complexity of the supply market and the model is intended to help businesses face the growing competition in the market. We can see this in relation to the change from the transactional to the collaborative or strategic kind of supply chain relationships.



(a) Kraljic's supply matrix: Product types

(b) Kraljic's supply matrix: Management focus

Figure 2.4: Kraljic's supply matrix (Kraljic, 1983)

As illustrated in Figure 2.4a, there are are four different kinds of product groups within the two classifications. Strategic products require supply management, where the company needs to form partnerships, acquire capabilities, create new in-house capability or new business units. It is characterised by long-term contracts and time horizons up to ten years. The items purchased are scarce and/or high value materials, and a typical source is according to Kraljic (1983) established global suppliers.

The "Bottleneck products"-square is also called sourcing management, and the key performance criteria are cost management and reliable short-term sourcing. There is also an

option to acquire capability, create capability, or invest in suppliers, and a typical source is a global, predominantly new supplier with new technology.

For Leverage products "materials management" is an appropriate term, as supply is abundant and the items purchased are a mix of commodities and specified materials. A strategy is to exploit purchasing power and minimise cost, and possibly invest in suppliers to ensure timely availability. The time horizon may vary, but is according to Kraljic (1983) typically 12 to 24 months.

The acquisition of Non-critical products is described as purchasing management. The goal should be to simplify and automate the purchasing process of mainly commodities. There are multiple suppliers, and the company ought to create a "warm base" of available, preferably local, suppliers. There is a transactional focus with a short time horizon.

Effective supply chains require functioning relationships between buyers and suppliers. As the Kraljic model illustrates, the type of product and its importance to the company will affect how they approach their suppliers. Therefore, the next section will elaborate on buyer-supplier relationships.

2.3 Buyer-supplier relationships

As we have seen in section 2.2, the majority of companies are participating in a supply chain and thus need to have some kind of relationship with their suppliers. This section will, based on a literature review explain some of the most important aspects of these relationships, including the advantages and disadvantages associated with close buyer-supplier relationships.

There are many ways to approach this subject, and the literature ranges from a strategic to a logistic, IT or organisational view. In our context we choose to see buyer-supplier relationships from a strategic point of view, as the goal is to improve business performance and create value for the customer. According to Carr and Pearson (1999), the role of purchas-

ing evolved during the 80's and the 90's to become a strategic function rather than a routine, and both Tang et al. (2001) and Wu and Weng (2010) claim this was a response to intensified competition in the industry and the globalisation of commerce. This now common form of buyer-supplier relationships with strategic goals bring advantages and disadvantages to both buyer and supplier. We will now look at some of these.

2.3.1 Advantages and disadvantages

There are many consequences related to close buyer-supplier relationships, which will affect the desire to collaborate closely in the supply chain. Gules and Burgess (1996) present in their article a summary by Lyons et al (1990), as shown in Table 2.3a and 2.3b , illustrating the most common advantages and disadvantages of establishing closer relationships between buyers and suppliers. As we can see, both buyers and suppliers need to carefully consider the possible disadvantages as risks, as well as take into account the many advantages of cooperating more closely with their suppliers. As Tables 2.3a and 2.3b show, cooperation can lead to i.e. reduced costs of manufacturing and labour, predictability for both parties and improved quality. On the negative side, there is a risk of increased dependence, loss of proprietary information, less competition between the different suppliers etc.

2.3.2 Types of buyer-supplier relationships

There are many ways to look at buyer-supplier relationships, and we will in this section look at one classification that can explain the close versus the distant relationship. As we have seen from the previous section, there is a tendency in the market that relationships grow closer. According to Gules and Burgess (1996), there are two main types of buyer-supplier relationships in the literature, namely

- adversarial relationships
- collaborative relationships

Advantages and disadvantages for buyers	
Advantages	**Disadvantages**
Reduced manufacturing and labour costs	Increased dependence on supplier
Improved quality	New negotiating style
Reduced complexity and cost of assembly and buying	Less supplier competition
Supply assurance	Reduced personnel mobility
Cooperative relationships with suppliers	Increased communication and coordination costs
Fair pricing assurance (open books)	Increased support for supplier
Negotiated price reductions during contract life	New reward structures
Avoidance of bad press caused by RIFs	Increased managerial skill
	Loss of direct contract with secondary supplier

(a) Advantages and disadvantages of buyers

Advantages and disadvantages for suppliers	
Advantages	**Disadvantages**
Contract predictability	Cost information shared (loss of proprietary information)
Workforce and production more stable	Pressure to assume burden of all phases from design to warranty while improving quality and reducing costs
Increased R and D effectiveness	
Buyer allies supporting firm's status	Decreased autonomy
Buyer assistance	Increased communication and coordination costs
Influence on buyer's future decision making	Reduced personnel mobility
Insider information on buying decisions	Potential pendulum reversal
Firm becomes gatekeeper for competitors' innovations	
Information about competition	

(b) Advantages and disadvantages of suppliers

Table 2.3: Advantages and disadvantages of buyers and suppliers in close buyer-supplier relationships (Gules and Burgess, 1996)

The adversarial relationships are characterised by short-term contracts, tough negotiation, multiple sourcing and focus on price (Tang et al., 2001). They are also called *exit, antagonistic, arm's length contractual relationship* or *competitive* (Gules and Burgess, 1996). There are many available supply sources and the transaction costs is low if the buyer wants to replace its suppliers. The adversarial relationship resembles a traditional kind of buyer-supplier relationship.

In contrast to the adversarial relationships, the collaborative type emphasises according to Tang et al. (2001) the suppliers' competence in production, distribution, design, and post-

purchase service, as well as the focus on long-term contracts and relationships. Gules and Burgess (1996) say the literature points towards a more collaborative type of relationships as more common nowadays. This will cause implications for how companies select and evaluate their suppliers.

The main differences between the two approaches are summed up by Stuart (1993), here cited from Wu and Weng (2010) in Table 2.4.

Traditional approach (an extreme illustration)	**Supplier partnership**
Primary emphasis on price	Multiple criteria including management philosophy
Short-term contracts	Longer term contracts
Evaluation by bid	Intensive and extensive evaluation
Many suppliers	Fewer selected suppliers
Improvement benefits are shared based on relative power	Improvement benefits are shared equitably
Improvement at discrete time intervals	Continuous improvement is sought
Problems are supplier's responsibility to correct	Problems are jointly solved
Information is proprietary	Information is shared
Clear delineation of business responsibility	Quasi-vertical integration

Table 2.4: Traditional vs. supplier partnering elements (Wu and Weng, 2010)

2.3.3 Factors influencing the relationship

To gain and maintain beneficiary relationships there are many considerations to be taken. The factors affecting the relationship may vary dependent on the nature of it, that is whether is a adversarial or a collaborative kind of relationship. This again is affected by how the buyer evaluates the supplier and vice versa.

Additionally to the factors mentioned earlier like transaction frequency and product-type, Subramanian et al. (2010) performed a literature review on factors influencing the buyer-supplier relationships. When developing models for explaining what is hindering relationships to be well functioning, they stressed the importance of understanding the different variables. Empirically validated factors and the explanations of these are presented in Table 2.5. The explanations give an understanding of the content of the various factors we mention throughout this study.

Factors	Explanation
Quality	Supplier product might support buyers operations by being reliable, easy to use and easy to maintain.
Trust	When buyers have high levels of trust in the supplier, they are likely to pursue more co-operativenegotiations and open communication.
Commitment	Ability of supply chain partners to meet the set requirements within the specified period of time. Mutual commitment creates opportunities; relationships are mutually demanding besides being mutually rewarding
Satisfaction	Each party involved in the exchange of relationship are happy and satisfied with the performance of the other.
Safeguard	Contacts with potential suppliers can be seen as insurance or a back up but can also decrease the dependence of the customer on the supplier.
Innovation Development	By using suppliers resources, customers can speed up their development process, engage in larger, riskier and long-term oriented projects and also have more technological input.
Information Exchange	Suppliers have more insight into particular areas or have a long-standing experience in their industry that they can share with a customer.
Cost reduction	Building relationships is one way of working together to achieve price reductions. When a relationship provides a platform for low purchasing prices the cost reduction can be fulfilled.
Interdependence	Interdependence motivates buyers and suppliers to develop long-term relationships characterized by stability, co-operation, and mutual benefit. It reflects the degree of dependability on each other without which either organization encounters loss of opportunity or business or sales.
Social support	Social aspects are important because the mutual orientation among firms is principally a mutual orientation among individual actors in those firms. Working with cooperative and supportive partners will create a good working atmosphere
Increased volume to suppliers	The volume of the business given to selected supplier should be steadily increased depending upon their performance.

Table 2.5: Explanations of buyer supplier relationship factors (Subramanian et al., 2010)

Many of these aspects can be important to consider when entering a new relationship with a supplier or when deciding to cooperate closer. It is however up to each company to evaluate how important each of these factors are to them and their supplier relationships. In the following section we will look closer into the criteria buyers meet their suppliers with. The type of relationship we have just looked at and how well functioning this relationships is can possibly affect how the company set the criteria for the supplier.

2.4 Supplier evaluation criteria

Based on what we have learnt about SCM we know the importance of having the right suppliers, and that they play a critical role in an organisation because they heavily contribute to the overall performance of a supply chain system. Many previous studies on supplier selec-

tion and evaluation have defined numerous evaluation criteria for suppliers. We will in this section present the most relevant findings associated with the sixth step in the supply phase if the purchase process as illustrated in Figure 2.2, namely the evaluation.

Research on supplier evaluation can be traced back to the early 1960s. One of the pioneers to the field is Dickson (1966), and in his work he identified 23 supplier criteria used for evaluating a supplier. Out of the 23 factors considered, Dickson concluded that quality, delivery, and performance history are the three most important criteria, ranked in the second column in table 2.6. Dickson's and the earlier work in this field can be summarised in Weber et al. (1991)'s work from 1991. Based on a intensive review of 74 articles on supplier evaluation from 1966 to 1991, Weber et al. (1991) reported that quality was considered to be the most important selection criterion, followed by delivery performance and cost. The importance of all the mentioned criteria in these studies can be found in table 2.6 summarised by (Chen, 2011), as well as the second column showing in how many of the articles the referred criteria were mentioned.

In a more recent study, where Hu (2004) analysed 24 papers published after 1991, he discovered that price, quality, production capacity and delivery remain as the most important criteria in supplier evaluation in the final stage of the purchasing process illustrated in Figure 2.2 (Kuo et al., 2010). However, with the increasing importance of strategic sourcing and competition of a global environment, the approach to traditional criteria has been updated to reflect the new requirements according to the role of suppliers in the supply chain (Choy et al., 2005). Earlier studies consider criteria like price, quality and speed of delivery most important, while current studies focus on suppliers' technological capacity, financing capability, after-sales service and strategic considerations (Dey et al., 2014). Talluri and Narasimhan (2004); Dowlatshahi (2000) state that evaluating the supplier strategically, requires attention to the supplier practice in terms of managerial, quality and financial performance, as well as consideration to the supplier's capabilities including co-design capabilities, cost reduction capabilities, technical skills, etc.

Evaluation criteria	Reference quantity	Dickson importance ranking	Weber importance
Price	61	6	Very important
Deliver on time	44	2	Very important
Quality	40	1	Extremely important
Equipment and capability	23	5	Very important
Geographic location	16	20	Important
Technical capability	15	7	Very important
Management and organization	10	13	Important
Industrial reputation	8	11	Important
Financial situation	7	8	Very important
Historical performance	7	3	Very important
Maintenance service	7	15	Important
Service attitude	6	16	Important
Packing ability	3	18	Important
Production control ability	3	14	Important
Training ability	2	22	Important
Procedure legality	2	9	Very important
Employment relations	2	19	Important
Communication system	2	10	Very important
Mutual negotiation	2	23	Important
Previous image	2	17	Important
Business relations	1	12	Important
Previous sales	1	21	Important
Guarantee and compensation	0	4	Very important

Table 2.6: Important criteria (Chen, 2011)

Many researchers have tried to combine the different criteria in to a smaller range of dimensions, for example Kuo and Lin (2012) who used four dimensions; organisation structure and manufacturing capability, suppliers implementation capability, quality system, and environmental issues. Huang and Keskar (2007) allocated the criteria into seven categories, namely reliability, responsiveness, flexibility, cost/financial, assets/infrastructure, safety and environment.

The indications from previous studies show that there is lack of consistency of criteria for supplier evaluation. As Dey et al. (2014) emphasise, supplier evaluation criteria have a strategic intent and for that reason need to be related to business processes and stakeholders requirements. How to select a supplier is unique for every situation and there is no single recipe that can be used for every selection problem. Based on the type of industry the com-

pany participates in, type of product, strategy, customers and many other variables, the set of criteria will vary. Despite these differences there are some major criteria that are common in most of the research found. Cost and quality, along with on-time delivery and flexibility have been the most dominant evaluation criteria in the literature (Huang and Keskar, 2007). We will in the following sections go through some of the most important criteria found during the review to give a more thorough explanation of these important factors.

Costing competitive

Literature in the late 1960s up to early 1980s showed heavy emphasis on cost, and price was the primary factor affecting a purchaser's decision of supplier (Weber et al., 1991). Many studies have also revealed that price is one of the primary concerns of manufacturers in supplier selection (Weber et al., 1991; Huang and Keskar, 2007; Hu, 2004). Indicators for cost performance of the supplier can e.g. be sales price or quantity discounts (Chen, 2011). Even though the weighted importance has changed during the years, cost is still an important criterion in supplier evaluation. As mentioned earlier, cost of materials and equipment purchased can stand for over 50% of the product value; making cost saving and profit generating one of the primary concerns of a purchaser.

Quality performance

Quality is one of the most important, if not *the* most important criteria for supplier evaluation and supplier selection (Dickson, 1966; Weber et al., 1991; Li et al., 2006; Wu and Weng, 2010). In the customer demand for a product, quality is an indispensable factor. From a customers point of view, low product quality reflects poorly on the seller, not the suppliers. Companies therefore tend to push the quality demand up the supply chain towards the suppliers. Holjevac (2008) defined quality as follows: Quality refers to the ability of a product or service to consistently meet or exceed customer's expectations, quality means getting what you have paid for. The price of quality may be more costly, however, cost related to inferior quality can

cause more damage (Wu and Weng, 2010).

Delivery performance

Many researchers have stated that the delivery performance of suppliers is vital (Weber et al., 1991; Hu, 2004). Lead-time and on-time delivery rate is some of the important indicator of delivery (Chen, 2011). Many businesses strategies are predicated on schedules, which in turn are based on receiving shipments at agreed-upon times. When those shipments slip, the business can suffer and the setback can be particularly severe if the supplier is negligent or late in reporting the problem. In other situations, shorter delivery time can help reduce stock and enhance inventory turnover. This makes delivery performance an important criterion when evaluating suppliers.

Flexible capability

Firms are generally thought to respond to unpredictable environments through increased flexibility (Krause et al., 2006; Lau and Wong, 2001). In the late 1990s, researchers realised the importance of flexibility. Today flexibility continues to be a concern for companies as they strive to meet the changing needs of their customers (Krause et al., 2006). Flexibility refers, in principle, to handling changes efficiently, and a suppliers flexible capability is about efficient handling of changes involving the whole order, e.g. the ability to change production volumes rapidly, ability to set up for new products on short notice, and ability to change/shorten delivery time (Choi and Hartley, 1996; Chen, 2011). According to Nilsson (1995), with shorter product life cycles, faster changes in market demands, and diversified consumer preferences, a flexible and quick response to changes has become more important.

Corporate Sosial Responsibility

Another criteria that have received a lot of attention the past decades is Corporate Social Responsibility (CSR). The modern corporation has to fulfil expectations of high ethical stan-

dards and norms, and in addition prove itself as a dynamic company able to change. CSR has now become a well-recognised phenomenon in organisations, and the most common definition on CSR today is the European Commission's version, which states that CSR is

"A concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis"

Drivers for CSR are not only pressures from stakeholders, but there is also a growing recognition that CSR can have a positive economic impact on the performance of firms (Maon et al., 2009; Carroll, 1999). If a supplier doesn't focus on CSR or behave ethical, this will reflect poorly on the organisation, making it an important factor to consider (Huang and Keskar, 2007; Dey et al., 2014).

The literature on supplier evaluation criteria is rich, but the process of generating criteria as well as evaluating the relevance of existing decision criteria in supplier selection has not gained much attention in the SCM and purchasing literature. de Boer et al. (2001) could only find one contribution to this, namely; Mandal and Deskmukh (1994) who provided decision support for formulating criteria (de Boer et al., 2001).

2.5 Supplier evaluation systems

As we have seen in section 2.4, many scholars have studied the numerous criteria buyers set for evaluating their suppliers. In this section we will look at types of evaluation systems and methods used to select and evaluate suppliers. These systems are often based on the criteria mentioned in 2.4, but as we will see they differ in the use of them. As the goal of this study is to look at the arguments behind the criteria, we will not emphasise this section, however it will serve to understand the rationalism behind the selection and evaluation process of a firm's suppliers and how such systems are designed. As mentioned before, literature is not clear when it comes to the difference between selecting a supplier and evaluating it, and this section shows again that this is a difficult matter to handle. We still would like to underline

that it is natural to evaluate suppliers based on the criteria they were selected by as well as adding some measures of perceived performances.

2.5.1 Methods and models

When it comes to supplier evaluation systems and methods, several articles present studies related to this topic (e.g. de Boer et al. (2001); Ho et al. (2010); Kasirian and Yusuff (2013); Purdy and Safayeni (2000); Muralidharan et al. (2002)). Continuing from the work of de Boer et al. (2001) with summarising the use of such models in article literature, Ho et al. (2010) present a summary of evaluation systems described in international journals between 2000 and 2008. They have studied a total of 78 journal articles. In their research article they divide the methods in two main groups;

1. individual approaches, and
2. integrated approaches

Common for both groups are their Multi-criteria decision making approaches, considering several criteria in the same model. How they internally value the criteria vary from model to model. We will now shortly look at the main models within the two groups. For further explanation of the most common models, we refer to Appendix B.

Individual approaches

The individual approaches include data envelopment analysis (DEA), different kinds of mathematical programming, analytic hierarchy process (AHP), case-based reasoning, analytic network process (ANP), fuzzy set theory, simple multi-attribute rating technique and genetic algorithm (GA). Ho et al. (2010) find that the DEA is the most popular one out of the 78 methods and models that were investigated, with almost 18% representation.

Integrated approaches

The integrated approaches use multiple methods in order to utilise the strengths of each method. Several of the above mentioned methods are here widely represented, and overall the AHP is the most preferred method for evaluating suppliers. AHP seems to be suited for combining with several other approaches (Ho et al., 2010; de Boer et al., 2001), like the DEA or goal programming. The other main integrated approaches according to Ho et al. (2010) are the integrated fussy approaches like e.g. Integrated fuzzy and GA, or integrated fuzzy and SMART.

As we have seen there are many different approaches to supplier evaluation systems, and each company probably has an internal and local system adapted to their own needs. The important part is to actually have a functioning system where information regarding the performance of the suppliers is coordinated and easy accessible to the purchasers or others who might need the information.

2.6 Chapter summary

As we have seen in this chapter, a proper managed SCM has become a powerful competitive advantage for many companies. Selecting the right suppliers helps a company perform better relatively to their competitors by accessing capabilities from their supply chain. This makes the buyer-supplier relationship an important strategic asset. Gaining and sustaining the right connections and exploiting them in a way that both buyer and supplier benefit from is important, but not necessarily easy. Long term relations and trust become important. How often the transaction takes place and the product type, as well as the supply risk and the importance of the purchasing can determine a company's purchasing strategy and their relationship with their suppliers. These are however not the only criteria the buyer base their choice and evaluation of suppliers upon. Research shows that factors like price, quality and delivery are among the highest valued. But as mentioned earlier, the criteria used to select

suppliers and criteria used to evaluate suppliers' performance have not been separated in theory. Due to the unclear line between these as well as pre-qualification criteria, we made an figure that separated the different type of criteria to make this easier to understand, see Figure 2.5.

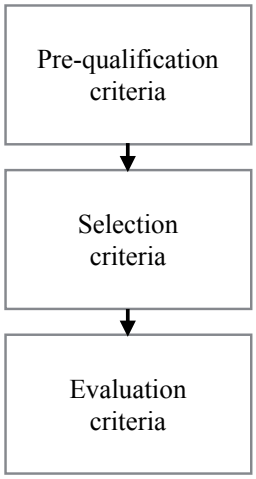


Figure 2.5: Different types of criteria

The process usually starts by evaluating the suppliers against the pre-qualification criteria, these criteria are normally certifications according to for instance ISO-standards or CSR-requrements. The next step is selecting the suppliers, and the suppliers who are considered have usually passed the pre-qualification requirements. The criteria used to select a supplier can be as mentioned earlier price, quality, capacity, etc. The last step is to evaluate the chosen suppliers. The evaluation criteria are mostly the same as the as the section criteria, but also includes performance measurement as well as soft variables, such as relational factors.

How these criteria are established and if they are based on each company's goals or strategy have unfortunately not been studied thoroughly. The criteria are usually used for selecting and evaluating the suppliers using models and methods of various kinds. Common for all the revised models is that they are multi-criteria methods. What is not thoroughly investigated is how these methods are used to decide who are strategic suppliers and who are less important.

CHAPTER 3

Methodology

In this chapter we will explain our selection of research method and present the selected methodology. Furthermore, we will account for the selection of informants and reflect around the researchers role in the study. Then we present the data collection process and the interviews and lastly discuss the quality of the data and of the research process. The aim of this chapter is to give an overview of the different steps of the research process as well as justifying the choices taken during the study.

3.1 Scientific approach to research

All research is based on a certain way to observe and understand the world. It is part of our ontological view on how the reality is constructed. This view will affect what we study and how we approach our research. On one side of the scale there is a belief that empirical research and the world is concurrent, which is part of the positivistic research tradition. On

the other side, the main perception is that the reality is constructed in the minds of people and therefore will be changing, also called social constructivism. In-between there is room for a reality divided into layers and a belief that absolute knowledge is an ideal, and that in reality knowledge is local and based on context. This research tradition is called critical realism and is the most common in western european countries (Davidsen, 2004).

Our research subject is based on peoples' own opinions regarding the evaluation of suppliers, as well as numerical information which can be considered "true". The interesting aspect is however to identify how people reflect around this subject within the context of the phenomenon, because we will never be able to understand completely how every company set evaluation criteria for their suppliers. We believe this puts us in a critical realism tradition, which has a pragmatic angle to it. Both qualitative and quantitative research methods are appropriate within this perspective, and a study might rely on both kinds of data.

Based on our research question; *On what basis do buying firms set evaluation criteria for their suppliers, and how do they use the evaluation system in practice? Do the supplier criteria and evaluation systems vary between the high-tech and low-tech industry?*, we will select an appropriate methodology to investigate this question. There are many ways to go forward from here, and we choose to use an qualitative approach to the study. This approach will be explained in the remainder of this section.

Qualitative research involves a mapping of processes and meanings that are not thoroughly examined or measured before, resulting in lack of theoretical support. The method emphasises the socially constructed nature of reality, and gives us an opportunity to have an analytical description and a deeper understanding of the contexts. Such a method is particularly suited to provide new information on an unclear subject (Denzin and Lincoln, 2011). One of the main reasons to choose qualitative method, is because we want to go in the depth of the phenomenon. This is best done with longer and deeper interviews. The method also favours direct contact and seeks interpretation of the subject rather than finding cause-effect relationships. The informant is the expert, and the scientist can allow him- or herself to be

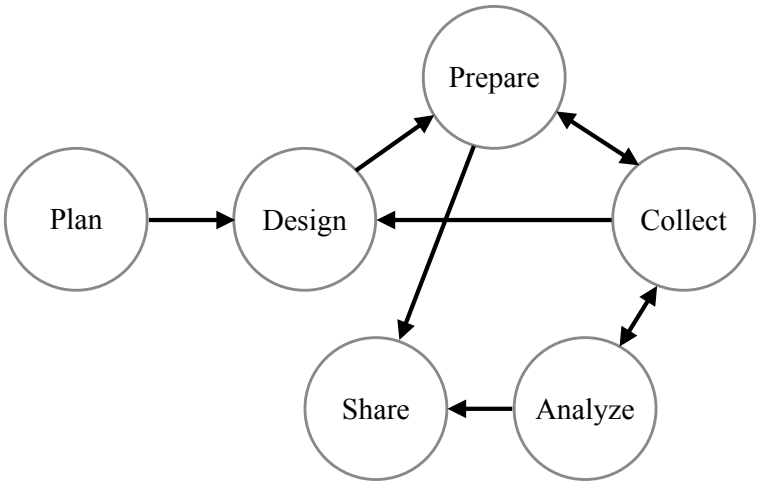


Figure 3.1: The process of qualitative research (Yin, 2014)

affected by the informant and vice versa (Yin, 2014).

According to Yin (2014), the research process of qualitative studies can be described as in Figure 3.1. This chapter will go through how to do the five first steps of this model; plan, design, prepare, collect and analyse. The master thesis is the final step; share, where we will share our results. Note that it is not a linear process, and the steps can be iterative and repetitive, as the direction of the arrows shows.

3.2 Choice of research design

This section will explain our choice of research design for this study. The design of a study should always reflect the research problem (Thagaard, 2013). We will start by quoting a definition by Yin (2014).

> A research design is the logical sequence that links the data to be collected and the conclusion to be drawn to the initial question of the study - or logical plan for getting from here to there, where here may be defined as the initial set of questions to be answered, and there is some set of conclusions about these questions.

> Between here and there may be found a number of major steps, including the collection and analysis of relevant data.
>
> — *(Yin, 2014, p. 28)*

Within qualitative methods there are several options for designing the research, namely experiments, longitudinal, cross-sectional, comparative research or case studies. To collect data the options are e.g. interviews, direct observation, participant-observation, documentation, archival records, and physical artefacts (Yin, 2014). Based on what we want to achieve with this research we have chosen a comparative, cross-sectional case study approach with different data collection methods like interviews, archival records and some observation. The nature of the case study will be elaborated in the next section.

3.2.1 Case study

The case study is a research strategy which focuses on understanding the dynamics present within one single setting (Eisenhardt, 1989). Yin (2014) defined a case study as "... an empirical inquiry that investigates a contemporary phenomenon in depth and within its real world context" (Yin, 2014). Hence, the main subject of the study is the case itself. This means the goal is not to generalise based on the case, however it can contribute to develop theory.

There are several reasons for using case studies. According to Yin (2014) a case study design should be considered when:

- the focus of the study is to answer "how" and "why" questions,
- you cannot manipulate the behaviour of those involved in the study,
- you want to cover contextual conditions because you believe they are relevant to the phenomenon under study, or
- the boundaries are not clear between the phenomenon and the context.

Our research question contains both "how" and "why" questions, as we want to gain a deeper understanding of how the firms develop and set the evaluation criteria and how they

use them, as well as why they choose these particular criteria.

To get a deeper understanding of the subject, we chose to study companies who operate in two different industries. This gives us two cases, the industries, within one common topic or phenomenon. This enables us to study contextual conditions in both industries. In research methodology this is called a multiple-holistic case study, which will be further elaborated in the next section.

Multiple-embedded case study

Yin (2014) makes a division between a holistic and an embedded, as well as a single or a multiple case study. The holistic and embedded division is connected to the unit of analysis, which is either single (holistic) or plural (embedded), while the single or multiple case study is connected to the number of cases. An illustration of the different case designs is presented in Figure 3.2.

A multiple case study enables the researcher to explore differences within and between cases. Comparisons will be drawn, and it is important that the cases are chosen carefully so that the researcher can predict similar results across cases, or predict contrasting results based on a theory (Yin, 2014).

A multiple-case design is regarded by many as more robust than the single-case design (Eisenhardt, 1989; Miles and Huberman, 1994; Yin, 2014). Siggelkow (2007) argues however that a single case can be a very powerful example, and the degree of data-depth is likely to suffer in a multiple case study (Dubois and Gadde, 2002; Siggelkow, 2007).

In our study we have chosen to study two units of analysis in each industry (case), which makes this a multiple-embedded case study and thus more robust. With two units of analysis in each case, we will be able to go in depth on each unit/company. After gaining information and understanding of the phenomenon within the two different industries, we can compare them to see if the handling and evaluation of suppliers is different across contextual factors, thus making it a comparative study (Mills, 2008).

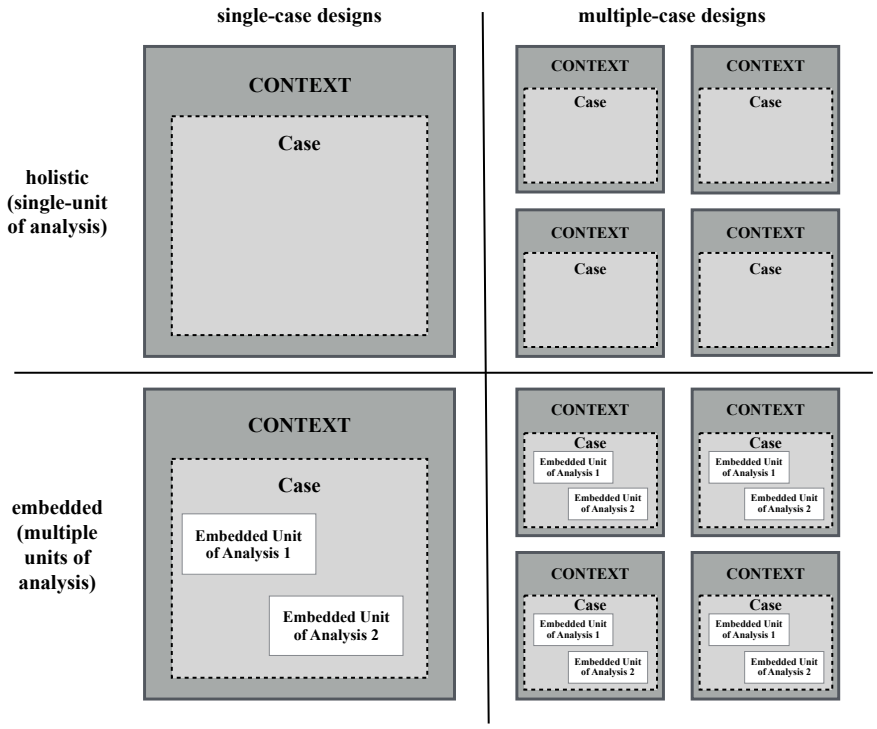


Figure 3.2: Types of designs in case studies (Yin, 2014)

A weakness with our study is that we only have two companies within each industry, but as mentioned this gives us an opportunity to go more in depth. The validity and reliability would have been stronger if we had more companies in each context. This would however be too time consuming within our given time frame, but we anticipate to add to both theory and practice through our limited study.

3.2.2 Choice of context

As this study aims to find out how companies evaluate their suppliers and how they set criteria for their suppliers, we found it interesting to compare two industries with a seemingly different approach and relationship with their suppliers. This led to an initial division between a high-tech versus a low-tech industry. Based on our theoretical research we assumed that the high-tech industry with its advanced products and few available suppliers would have more

collaborative relationships, whereas a low-tech industry might be characterised by a more arm-length relationship of the adversarial type. To limit the study we chose to focus on the subsea industry as a high-tech industry, and from the low-tech industry we chose the fashion retail industry. From both industries we have aimed to study companies representing a large share of the Norwegian market. The choice of the specific cases is based on what Yin (2014) calls to "predict contrasting result but for anticipatable reasons". We will now shortly present the two industries.

The subsea industry

The subsea industry delivers products and services used in marine biology, offshore oil&gas industry, undersea geology, underwater mining and offshore wind power industries. The industry requires advanced technology and precise systems to achieve their goals of improved efficiency and increased profits (SUT, 2015). This puts pressure on the whole supply chain to deliver high quality products at a reasonable cost, and favours close cooperation and high safety levels both in regard to employees and the environment.

The fashion retail industry

Companies in this industry operate physical retail establishments that sell clothing, shoes and accessories. Major companies in Norway includes the Varner group, Voice, Hennes & Mauritz and Texcon (Virke, 2015).

Personal income and fashion trends drive demand for clothing and shoes. The industry is highly fragmented with many providers, and the profitability of the companies depends on effective merchandising and marketing (Virke, 2015). Suppliers to the fashion industry are many and they deliver everything from raw materials to finished products. Large parts of the production of clothing occurs mostly in developing countries. This is because the production is very labor intensive, as it is difficult to automate processes such as tailoring. This is also why we categorised this industry as low-tech.

3.3 Data Collection

In qualitative method there are several ways to collect data. The most common ones are according to Yin (2014) interview, observation, use of archive data and other secondary information, e.g. video, text documents, photos or sound recordings. This section will argument for our chosen data collection method - interview. We will explain how we chose our informants and how the interview process was. In our research we also used some archive data and observation, and will therefore add sections about these methods.

3.3.1 Interview

Using interviews as a data collection method is considered effective and it provides a large amount of relevant information in short time. It makes it easy to focus on the research subject, and the researcher has the opportunity to ask in depth question and get further elaborations. Even though this method is time consuming and depends on correct understanding of the questions as well as sincere answers, the method is flexible, and the interviewer can create an open setting resembling a conversation more than an interview (Miles and Huberman, 1994; Ryen, 2002; Yin, 2014).

As we are investigating a phenomenon in two different industries, we found the interview to be a relevant and constructive way to collect data. This gives the opportunity to have a face to face, in-depth interview with central people in the organisations, trying to reveal the information we need to answer our research question. As we are trying to understand why and how supplier criteria are set, it would be difficult to investigate using e.g. quantitative methods because we know too little about the subject to ask precise questions that can be rated using a likert scale. Additionally, since the industries are different, it would be challenging to make a survey with terms that would be equally interpreted and understood by all respondents.

Based on our choice of using interview as our data collection method, we will now ac-

count for our selection of informants, the interview guide and the interview process.

Selection of informants

To answer the research question, the informants need to have knowledge about the phenomenon we are studying. This is the most important requirement for the interviewees. Of practical issues, the informants need to be available to us, and we need to establish contact with them. Then the informants must agree to participating in the study.

As we have chosen to study two different industries through in-depth interviews, we have used personal contact or a middleman to establish contact with the relevant informants. The informants have all fulfilled these criteria, which we set beforehand:

- Posesses a strategical role in the purchase department or similar
- Overview of the purchase processes and the supply chain
- Well acquainted with how the purchasing process takes place
- Management position/ Decision maker

Using informants who have met the criteria, has been important in order to get the information we needed to answer the research questions in a reliable way. Accessing the right people in the right companies is crucial to the result of the study.

The interview guide

In order to structure the interview and make the interviews as similar as possible, we used an interview guide as a template for the conversations. The themes and questions were based on the relevant theory presented in the previous chapter, on the research question as well as own interest in the subject. The questions were formed based on what we wanted to find out about the company's work methods and reflections around the subjects. Some of them were derived from theory covering all the topics, other questions reflected the lack of theoretical support, while some were inspired by suggestions to further research from research articles. To ensure

that we didn't interfere with the answers but at the same time getting as much information as possible, the questions where formulated as open questions. McCracken (1988) gives the following recommendation regarding the interview guide:

> The final questionnaire (...) will consist in a set of biographical questions followed by a series of question areas. Each of these will have a set of grand-tour questions with floating prompts at the ready. It will also consist in planned prompting in the form of "contrast," "category," "special incident," and "auto-driving" questions. With this questionnaire in hand, the investigator has a rough travel itinerary with which to negotiate the interview. It does not specify precisely what will happen at every stage of the journey (...) but it does establish a clear sense of the direction of the journey and the ground it will eventually cover.
>
> — *(McCracken, 1988, p. 37)*

The interview guide was pre-tested on other students and colleagues as a rehearsal. It is attached in Appendix C in an English version. The interviews were performed in Norwegian, but the interview guide has been translated.

The interview process

We have chosen to divide the interview process into three phases; before, during and after the interview. In this section we will shortly elaborate on the process to make it as transparent as possible.

Before the interview the informants were contacted individually. We scheduled appointments for the interviews and e-mailed a list of the main topics and most important questions for them to prepare. This would save all of us some time, and hopefully improve the quality of the answers.

During the interviews we used the interview guide as described in the previous section along with the recommendations from McCracken (1988) quoted above. It was a semi-structured

interview, as we used the subjects from the interview guide as a template, and then let the interviewees share their opinions and thoughts. The interviews were sound recorded, which gave the opportunity to listen to them over and over again. This was an advantage when we later were going to transcribe them. It is impossible to remember everything that was said and done. Recording of the interview is also a contributor to increasing the reliability (Ryen, 2002).

After finishing the interview we sat down to transcribe it, and to reflect on what was both said and unsaid. All immediate thoughts and reflections were written down in order to remember and document the interview as thoroughly as possible. The transcript was then sent back to the informants so they could give us feedback, and to make sure we had a correct understanding of the underlying issues.

The duration of the interviews was between one and two hours. In the fashion retail industry one person in each company was interviewed, whereas in the subsea industry with larger sourcing and supply organisations, two people were interviewed from each company.

In section 3.4 we will go through the data processing and preparation as the next step after transcribing the interview, but first we will account for our use of archive data and observation as additions to the interviews.

3.3.2 Archive Data

It is common to use document analysis in combination with interview (Thagaard, 2013). We have in this study used both the organisations' archive data and available public documents. The data have been given to us by the companies, partly anonymised to maintain the secrecy of their suppliers. The public data are collected from their websites and give additional information to the study. All these documents have been prepared before the study began. Given one of the weaknesses with the interview as data collection method, namely the informant's ability to manipulate the reality or answer what "seems best", we have used archive data as an addition to the interview. This is according to Yin (2014) and Miles and Huberman (1994)

called method triangulation, and is supposed to strengthen the results. We used the data to fill in information about the evaluation systems and to verify information given during the interviews.

3.3.3 Direct observation

As the case study should always take place in their natural setting, using observation can help achieve this (Yin, 2014). Observations are either direct or indirect. Direct observation is when you watch interactions, processes, or behaviours as they occur, while indirect observations are when you watch the results of interactions, processes, or behaviours. Due to the time limit, we decided to stay at the companies' offices after the interviews to observe how the purchasing departments worked, making it a direct observation. The observational data were useful in providing additional information, and by doing this we actually got an understanding of how the supplier rating systems were used. To increase the reliability of the observational evidence we decided to always be two observers (Yin, 2014). This also contributes to the method triangulation and in strengthening the results.

3.4 Data analysis process

> Data analysis is the process of bridging order, structure, and meaning to the mass of collected data (...) does not proceed in a linear fashion (...) is a search for general statements about relationship among categories of data.
>
> —*(Marshall and Rossman, 1989, p. 112)*

The various aspects of the research process is typically overlapping in qualitative research (Thagaard, 2013). An universal technique on how the analysis process should take place does not exist in the literature, but it is agreed that the analysis can be a time consuming nonlinear process (McCracken, 1988; Ryen, 2002; Thagaard, 2013; Yin, 2014). According to McCracken (1988), the data analysis process is the most demanding process in qualitative method.

The methodological approach however contributes to how the analysis is conducted. Our analysis process has been conducted using Systematic Combining as presented by Dubois and Gadde (2002). The approach is a combination of induction and deduction and is called abduction. The main characteristic of this approach is a continuous movement between an empirical world and a model world. Systematic combining is a process where theoretical framework, empirical fieldwork, and case analysis evolve simultaneously, and it is particularly useful for development of new theories (Dubois and Gadde, 2002). This iterative process allows us to analyse the data in a way that reflects the phenomenon in a fruitful way, by having a more dynamic interaction between the theory and the empirical findings.

Miles and Huberman (1994) divided the data analysis process into three concurrent flows of activity: data reduction, data display, and conclusion drawing/verification. We will in this section go though what needs to be done in terms of processing and preparation for the analysis. This includes how we preformed the transcribing, coding and about the analysis process. It does not contain the analysis itself - it will be presented in Chapter 4.

3.4.1 Processing and preparation of data

The first step to understanding the case or phenomenon is the processing and preparation of the collected data. We divide this process into transcribing and coding.

Transcribing

Representation of audible data into written form is an interpretive process which involves making judgments and is therefore the first step in analysing data. Transcribing may appear to be a straightforward technical task, but in fact involves judgements about what level of detail to choose, data interpretation and data representation. Even though McCracken (1988) advice to use a professional typist for the job, we decided to to the work ourself. Being involved in the whole process made us familiar with the data and made it easier for us to know what is actually there. The fact that we also where two researchers doing the work together

decreases the room for bias (Yin, 2014).

There are many definitions of transcribing in qualitative literature. The common view of transcription is that it is a process that is theoretical, selective, interpretive, and representational Davidson (2009). Transcription in our context is to transform the audible data form the interviews into written form, so that we have a text document from each interview. We chose to transcribe all the information to make sure that important information was not ignored.

Coding

The next step in the analysis is coding. Codes are labels that assign symbolic meaning to the descriptive or inferential information compiled in a study (Miles and Huberman, 1994). Coding is simply data reduction that will form the basis for reflection. The codes can be descriptive, interpretive, pattern codes and inductive or deductive. Thagaard (2013) emphasises the importance of reflecting on how to divide the material into categories, so it can help us accentuate the central themes.

Ryan and Bernard (2003) presented a useful list of techniques in their article about how to identify themes in qualitative research. The techniques presented where to identify repetitions, indigenous typologies, metaphors and analogies, transitions, compare and contrast, linguistic connectors and/or missing information.

Our coding process started with reading the transcript thoroughly, keeping Ryan and Bernard (2003)'s techniques in mind. We searched for words and sentences that the interviewees said repeatedly and embraced, as well as asking ourself questions like "What is this about?" and "How does it differ from the preceding or following statements?" By doing this, it helped us stay focused on the data themselves rather than on theoretical flights of fancy (Ryan and Bernard, 2003).

The choice of codes must be well justified (Yin, 2014). The themes from the literature review as presented in Chapter 2: Theory has been a guide to our choice of codes. We have coded the data manually, and started the process by using open coding, where we split the

text, and tried to link it to different concepts. The manual process has given us a closeness to the material, and more control over the whole analysis. Software can be a useful tool to encode and categorise relatively large amounts of data (Yin, 2014). We choose to use NVivo, which is a software program that can be used to encode text, audio, image and video. A computer program was used due to the advantages of locating materials quickly and easily, and reassuring better quality as the data has to be analysed more thoroughly when coding. It is also easier to visualise the relationship between codes and themes using a concept-mapping feature. More of the result and analysis will be presented in the Chapter 4, but first we will explain how we intend to do it.

3.4.2 Analytical techniques

Having conducted the preparation of the data through transcribing and coding, the data needs to be structured and then related to the research question and the theoretical foundation.

According to Miles and Huberman (1994), it is helpful to "play" with the data. They suggest different teqniques and analytic manipulations for this purpose. Some of them are not relevant to us while others are helpful and can be executed using the NVivo computer program. The techniques are as following:

- Putting information into different arrays
- Making a matrix of categories and placing the evidence within such categories
- Creating data displays - flowcharts and other graphics - for examining the data
- Tabulating the frequency of different events
- Examining the complexity of such tabulations and their relationships by calculating second-order numbers such as means and variances
- Putting information in chronological order or using some other temporal scheme

Yin (2014) suggests five analytic techniques of analysing data which can all be "effective in laying the groundwork for high-quality case studies". These are pattern matching, explana-

tion building, time-series analysis, logic models, and cross-case syntheses. Out of these five techniques we will in our analysis use these three; Pattern matching, explanation building and cross-case syntheses. The pattern matching aims to find patterns in both cases independently to see if the findings are showing the same patterns as anticipated from the theoretical explanations or if it reveals different patterns. Explanation building is taking a step further from pattern matching, where the goal is to analyse the case study data by building an explanation about the case (Yin, 2014). This is done by identifying the elements of explanations, thus seeking explanations of "how" and "why" something happened. Lastly, since we are comparing two different cases we will use the cross-case syntheses to look at similarities and variations between the cases.

Based on these techniques we will perform the analysis in Chapter 4. To ensure the high quality of the study, and that the transcription and coding has been done correctly and provide valuable data, the next section will evaluate the validity and reliability of the study.

3.5 Evaluating the quality; Validity and Reliability

The quality of the research depends on various factors and choices made before, during and after the data collection (Miles and Huberman, 1994), which will affect the scientific level of the research. This section will present some of these factors, referred to as validity and reliability, in order to show how the choices we have made affect the quality of this research. We will also reflect on our role as researchers, as it can affect the quality of the study.

3.5.1 Validity

Validity is described as the extent to which you can say that your research gives a good and true reflection of the reality. This section is based on an article by Johnson (1997) about different types of validity. We will go through each one of them and describe our actions and choices to increase the validity.

Descriptive validity

Descriptive validity is based on how well the actual events (incidents, objects, persons or behaviour) are described precisely and correctly.

To increase the descriptive validity we have been two scientists doing the interviews, in order to have two opinions and reflections regarding the observations.

Interpretive validity

The interpretive validity refers to the way the informant's thoughts, values, emotions etc. have been correctly understood and reported by the scientists.

To ensure interpretive validity we gave the informants opportunity to give a feedback on our notes from the interview, to secure our correct understanding of the underlying issues. This was suggested by Johnson (1997) as a strategy to strengthen this type of validity. Even though this strategy may not be perfect, as the participants may put on a good face, we hoped to receive good information and ensure that inaccuracies were identified (Johnson, 1997). The fact that we used the participant's direct quotations have improved our interpretive validity by having low interference on descriptions.

Theoretical validity

Theoretical validity is ensured if our theoretical explanations from the research are concurrent with the data we collected. This is related to how and why a phenomena occurs (Johnson, 1997).

We wanted through our research to develop a theoretical explanation on how buying firms developed criteria for their suppliers and if there where any differences between industries. In order to meet the requirement of theoretical validity, we have presented large amounts of data, and have been careful not to take them out of context. We also started this research with a literature review of existing theory, prior to the analysis of empirical data.

The findings in both the literature review and interviews were then discussed against each other. This means that our interpretations and conclusions have occurred through theory triangulating (Johnson, 1997).

Using our supervisor to read the material and see that it's consistent has improved the theoretical validity, as well as being two scientists doing the same. Extended fieldwork would have strengthened this study's theoretical validity, but due to the timeframe given it was not possible.

Internal validity

Internal validity is based on the researcher's ability to defend or justify the allegations about causal relationships drawn from the research, and is therefore most common in quantitative research. If the descriptive, interpretive and theoretical validity is good, then the internal validity should also be maintained. We have used both interviews and archive data as ways to collect empirical data, which improves the internal validity of this study.

External validity

The external validity is based on the research results' ability to be generalised to other settings, individuals, times etc. In qualitative methods this is not a kind of statistic generalisation, but either a neutralistic generalisation through "thick descriptions" or a generalisation through replication of the research. In other words, case studies like this, are generalisable to theoretical propositions and not to populations and universes. As (Yin, 2014, p. 21) said; *the case study, does not represent a "sample", and in doing case study research, your goal will be to expand and generalise theories (analytic generalisations) and not to extrapolate probabilities (statistical generalisations)*. This is also true for our study.

3.5.2 Reliability

Reliability is according to Maxwell (1992) the lack of random errors, and thus to which degree another scientist can reproduce the same results in a new replicated research project.

To increase the reliability of this research we have tried to be as open as possible about processes and thoughts regarding our choices, as well as documenting it well (Maxwell, 1992). This also applies to our choice of informants, and the fact that all our informants fulfilled the criteria have strengthen the reliability of this research.

According to Ryen (2002), it is possible to increase reliability in all stages of the research process. During collection of data, in this case the interviews, we recorded them so that we can go back and review the material over again. During the analysis work, it is positive for the reliability if multiple researchers categorise the same material. We did the categorisation and coding of the material independently, and then compared it to each other. In the research report, in this case the master thesis document, Ryen (2002) suggests to thoroughly explain the procedures around the data collection, as well as presenting larger samples of the data instead of summaries. We have tried to do this as well as we can.

3.5.3 Researchers role

As scientists, the responsibility of the research is in our hands, and it is helpful to reflect around our own role in the research process. This will increase the quality of the research by making it easier to correct our own behaviour and make reflected choices.

Even though we had some ideas about what we wanted to find in our data collection and analysis, we have tried to be open minded to what the data actually reveals, even if it was different than we initially anticipated.

Our experience as qualitative scientists is limited, so this was a relatively new experience for both of us. To increase our self confidence as interviewers we practiced beforehand. This helped us assure we had an open attitude towards the interviewee, making the setting more

relaxed and opening up for a better conversation.

3.6 The research process

A typical research process of a multiple-case study can be conducted as illustrated in Figure 3.3. We have tried to follow this recommendation during our research process, which has been a fruitful way to conduct the study as it naturally follows a order of logic, even though some of the processes are iterative and concurrent.

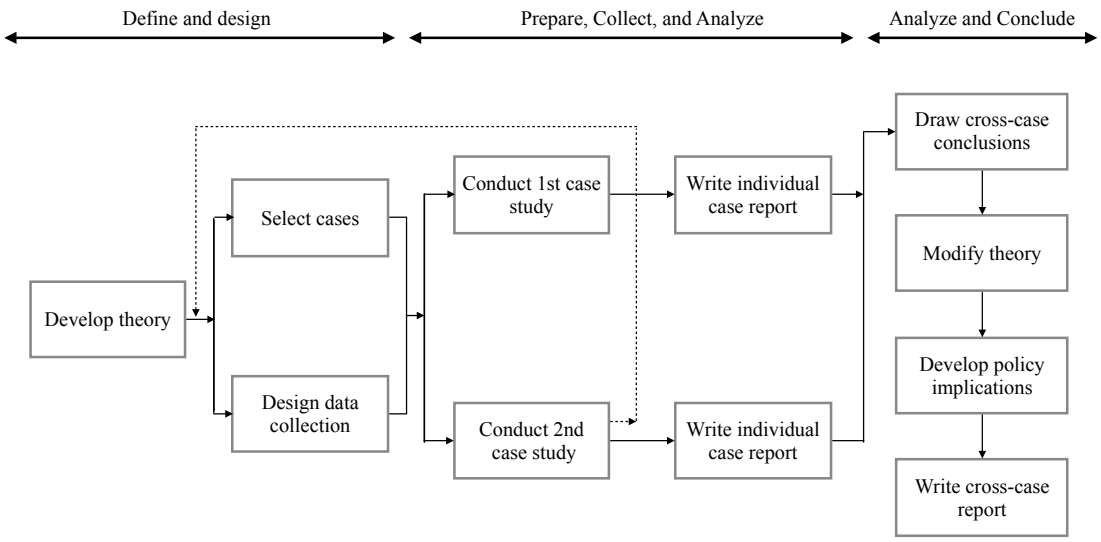


Figure 3.3: Multiple-case study procedure, source: COSMOS Corporation

This study has been conducted during the spring of 2015. The different stages of this process is illustrated in more detail in our Gantt diagram in Figure 3.4.

We defined the different milestones before we started working on the thesis, and set more short term goals to ensure a steady progress in-between the milestones. Biweekly meetings with our supervisor was also beneficial to the process as we had pressure to deliver drafts of our work.

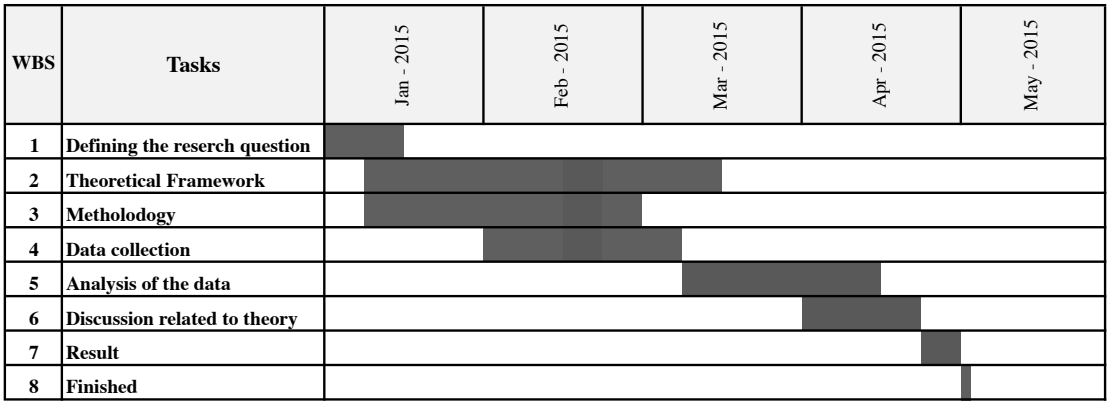


Figure 3.4: Gantt diagram describing the stages of this study

After carrying out the research based on the presented methodological choices, and ensuring good quality during the research process, we will in the next chapter present the results from the collected data.

CHAPTER 4

Analysis of the data

This chapter contains the analysis of the collected data. The data was acquired through in-depth interviews, archive data and some observation. First, we will present the two cases separately, and then we will compare them to look for similarities and differences, as well as other interesting findings the collected data give. Our cases are the two different industries; Fashion retail and Subsea, as shown in Figure 4.1. Within both of these industries we have interviewed two companies. Parts of the interviews will be presented as direct citations translated from Norwegian, marked by grey text boxes, while other parts will be presented in text. The themes of the presentation will follow the same structure as in Chapter 2: Theory.

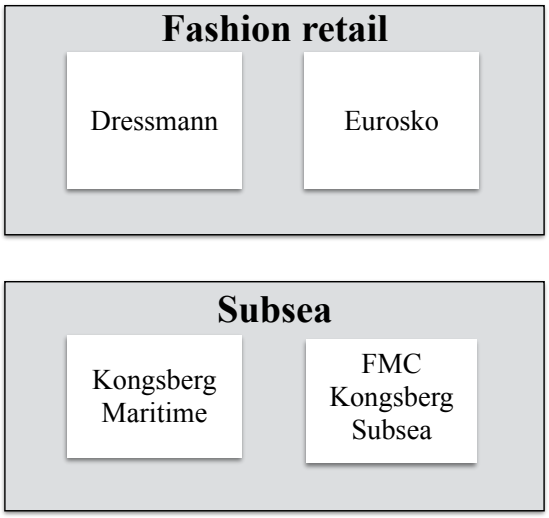


Figure 4.1: Presentation of the cases and units of analysis

4.1 The fashion retail industry

This section will present the data collected from interviews in the fashion retail industry.

4.1.1 Dressmann

The history of Dressmann and the Varner Group can be traced back to 1962, when Frank Varner started his first store in Grünerløkka. The chain name Dressmann did not appear until 1967, and was then one of the first providers of fashion clothing for men. Petter Varner, the son of Frank Varner, took over the business in 1991. There where 70 established stores and a turnover of 300 million NOK the same year.

Dressmann is today the Nordic region's leading fashion chain for menswear, with a turnover of 3,45 billion NOK. Dressmann's head office is located at Billingstad, outside Oslo. They have a workforce of around 2800 employees in total, distributed among nearly 430 stores in Norway, Sweden, Finland, Denmark, Iceland, Germany and soon also Austria.

Supply Chain Management

Dressmann as a chain controls the whole value chain themselves, from product design and development to customer sales in the stores. They have five product developers and three buyers at the headquarter.

> We solely have own produced goods, i.e. we do not manufacture goods here physically, but we are developing all the goods here. We have a product department which consists of a bunch of product developers, a bunch of buyers and a bunch of distributors and planners that address the entire product flow throughout the system (...) So all of it is developed and managed from Billingstad, but the production takes place in various countries in the world, mainly China, who stands for 70% of the production.

Additionally Dressmann have an office in Hong Kong, increasing production in Bangladesh as well as production in Turkey and India. In each country they have sourcing offices who are in charge of the production in their area. Even though the main office receives requests from potential suppliers almost every day, the responsibility lies with their sourcing offices. Being asked how many suppliers they operate with, they respond:

> hmm...lets see, [counting], on jeans we have three suppliers within bestsellers, trousers we have 2, on formal shirts we have 3, on sweaters we have 3, leisure shirts we have 2 ...that makes 12, have I forgotten something? hmm .. on the underwear we have 3. 15 .. yeah, about 15-20 suppliers for the bestsellers.

After a further review of all the suppliers on their list, Dressmann found out they have about 40 suppliers they consider important to their company.

When it comes to their buying process, a lot of travelling is required from the product developers and the purchasers.

> it almost always start with our product developers traveling to our suppliers. This is when they have made some thoughts and ideas and started to make sketches of how the collection should look.

To get information about new suppliers Dressmann use their offices abroad.

> This takes place in our offices in the different countries, like the Hong Kong office and our offices in Istanbul, Bangladesh, Dakar, and India. We receive a lot of requests, everyday we get inquiries from new suppliers who want to deliver to us. Now that we fortunately have these sourcing offices, we just send the entire request to them and they help evaluate the potential suppliers.

Buyer-supplier relationships

At Dressmann the suppliers have mostly been there for a long time.

> (...) we mostly have fixed vendors, we do not "shop" around from season to season, we use suppliers that we know and are confident with, we know what they stand for.. m-m.. This is important to us, as we look at supplies as more of a partner than a provider of a service or product.

Most of the suppliers at Dressmann are thus regarded partners rather than mere suppliers. They claim to know each supplier quite well and know their strengths and weaknesses.

> Yeah, again, they are our partners that we have used over a longer period; this is a good security. And our suppliers also know when they first come in, they will get a valuable partnership with us (...) Huh .. there are suppliers we use today who we have used for over 20-25 years. Not necessarily on the same product, but the products have also evolved over time. It will also always be someone new,

> the fact that we now in recent years have begun to produce goods in some areas makes the number of new supplier higher in that respect.

Dressmann has different types of purchasing strategies: Seasonal, bestsellers and Never-Out-of-Stock (NOS) products. They have different relationships with the suppliers for various kinds of products.

> Bestsellers are the products we have frequently and for several seasons, and only change to new colours. These products require less development and are less demanding than other developments.

> NOS stands for "never out of stock". By that we mean that we should never run out of this product (...) Our system automatically generates orders based on what we have set to be maximum and minimum down to each colour and size, both per store, but also central warehouse. The orders go to a supplier who in some cases has a physical inventory of these goods, or it goes through a so-called fast track production (...) in principle, when one product is sold, a new product is ordered.. Instantly!

Communication with the suppliers vary, and is based both on face to face as well as electronic communication. Parts of the process is demanding and time consuming, so using electronic communication saves both time and money.

> The largest suppliers may visit us once every season (...) communication takes place today by mail, by telephone, traveling to the supplier, and the things you need to concretise it's done though mail or phone. This is time-saving and resource-saving in many ways (...) there are many rounds back and forth from one has the first meeting until we land a collection.

To increase their buying power, Dressmann use a back-up supplier for most of their products.

> We always send new developments to at least two suppliers. By doing that we have a stronger foundation in this process. If there is an repetition of an item, then we usually use the same suppliers we have used previously (...) It's a strength to be able to have several supplier to play against each other. We want to buy the best product at the lowest price. If we only have one option, we loose the flexibility and have nothing to compare to.

Supplier evaluation criteria

The most important criteria for Dressmann is that the supplier fulfils the CSR requirements. They need to meet these to even be considered.

> The most important thing is that suppliers are working within our CSR requirements. There are heavy documents, code of conduct and vendor manuals that they must follow. There are e.g. requirement for living conditions, working conditions of employees, salary, security requirements and any chemicals that may be used in the various garments. This is very important to us, we can not and will not work with suppliers who can't deliver on these requirements.

Subsequently, they regard quality as most important when the CSR requirements are met.

> (...) they must deliver top quality, and it should be at a competitive price, they should have reliable deliveries and shall of course be someone that we work well with, who look at us as equally important as a partner as we look at our suppliers.

> If we have to choose between price and quality, the quality will always win!

Another criteria important to Dressmann is delivery precision and flexibility, as they heavily operate with sales campaigns. Every season, before sending out the purchased orders, Dressmann performs a marketing campaigning for the entire season. It is therefore important for them that the suppliers deliver on time.

> We buy a very large volume by the various providers, we use fewer suppliers and use what we have instead of shopping around. The risk of working with a supplier who fails to deliver what we need when we need, it is enormous.

> If the supplier doesn't deliver on time, we can lose an entire campaign (...) it not just cost of goods we loose, but it's the expected revenue lost.

With the CSR, quality and delivery criteria being so important to them, Dressmann mean they are one of the more demanding customers in the fashion retail business.

> We have a higher demand on our suppliers than many others, it's not just something I believe, but I know that. We see that compared to the rest of the Varner group as well. We also get to hear that from our suppliers that we are much stricter than other major players around the world (...) we are a bit proud of it too really, because we are very concerned about what we deliver to our customers. What the suppliers deliver only reflects back to Dressmann (...) Our customers don't have any relation with our suppliers, it's just us.

Dressmann have no structure when it comes to how the criteria are developed, but follow their instinct based on experience.

> The product developers and the purchasing team together develop these criteria. They evaluate together the portfolio of suppliers, and discuss back and forth and make a decision (...) The criteria come from experience and common sense. I would say we also want to make it easy for ourselves and then we made some criteria that do this.

They don't differ between various kinds of suppliers, and state they withhold the same criteria regardless of the importance of the supplier, as they should all be regarded partners.

> We have the same requirements in everything we do. We do not take lightly on this, we don't want to go into a situation where we think that it is not so dangerous since we're only buying for one season, and we are very concerned about what we meet the customers with. We will meet our customers with a good product whether it is a product we only buy for one season or if it's something we have with us many years into the future.

Supplier evaluation system

The Varner group has a supplier list with ranking of all their suppliers, and all the chains use this list additionally to their internal supplier list.

> They are ranked primarily with these CSR requirements; the ranking is marked with comments and the colours red, yellow and green. Green is only good to go, yellow means there are things that are not entirely in order or things that should be remedied, and red is not allowed to use.

Table 4.1 illustrate Dressmann's CSR ranking of their suppliers where all sensitive information is removed. Enlarged version is found in Appendix D. The first column refers to the level of risk of the suppliers, suppliers with the colour red have high risk, where yellow suppliers have a medium risk and green is suppliers with a low level of risk.

Supplier level	SUPPLIER	Agent	Bik Bok	Carlings	Cubus	Dressmann	Solo	Urban	Vivikes	Volt	Wearhouse	Wow	Factory no. (MF)	Factory Name	Country
L						*							MF00651		India
-			*			*							MF30054		Turkey
M						*							MF00311		China
M						*			*				MF00333		China
-			*		*	*	*				*	*	MF01068		Bangladesh
-			*	*	*	*			*			*	MF23319		China
M				*		*							MF00115		China
L			*		*	*							MF01070		Bangladesh
M						*							MF01154		China
L						*							MF00407		Norway
L			*	*	*	*			*	*			MF30056		Turkey
H					*	*							MF00421		China
M			*	*	*	*		*	*	*		*	MF30068		Turkey
-					*	*			*				MF01215		China
L						*							MF01076		India
M						*							MF00678		Bangladesh
-				*		*							MF004216		China
M			*	*		*		*					MF00911		China

Table 4.1: Part of Dressmann's CSR list (sensitive information has been removed)

The list is managed and updated by the CSR department, but the representatives from each chain together with the CSR department have regularly meetings to discuss all the cases.

> We have a CSR forum and procurement forum where representatives from each chain meet regularly, every two months approximately, where such things are reviewed, things that are unacceptable, or particularly positive.

With the strict CSR requirement, Dressmann also try to help their suppliers to a certain extent by setting demands for improving the conditions and continuing working with them.

> (...) we have a general policy to rather help the suppliers rectify the things that must be repaired instead of pulling out, and this ensures the workplaces again. If we pull out, we can't influence and they will probably only use others who are not as demanding as us, and the conditions will probably not be better if we pull out of it. We take responsibility for this. It's just too easy to pull out.

> If they don't show the ability or willingness to rectify the things that we have set, then it's not possible for us to work with them.

Dressmann don't keep other supplier evaluation rankings in addition to the CSR list. They only differ on the suppliers' competence, but this is not put in system either, only based on the purchasers' and product developers' memory and knowledge.

> Our list will never contain suppliers that are not approved by the CSR department. Also we have our list of our preferred suppliers and we evaluate the list internally at least once every season - when we plan the whole collection

> No, call it a huge mass, apart from the green, yellow and red located on Varner group level (...) We have a list of suppliers that we work with regularly, they are preferred suppliers all together, but they have different strengths and weaknesses when it calls in relation to any type of clothing that can be produced while others can not (...) We then discuss which of the suppliers are best for that specific job, some are good for a sweater, some are good for a blazer, while others are not.

Their ERP system help Dressmann keep track of the suppliers' delivery performance, but they mostly use it to make sure the products arrive in time for campaigns etc.

> We keep track of all delivery through our system. (...) If the suppliers somehow fail to deliver, we will remember this.

Without any ranking system, they still have a list of preferred suppliers, even though it's only a sheet of paper with names written down.

> The so-called preferred suppliers on our list must have delivered something good before, we know they have good quality. The price needs to be good in terms of

quality, they should be reliable and have a good delivery record. They must also be perceived as a partner for us and that the communication and cooperation is good.

(...) sometimes we just go with our gut feelings, how the chemistry is with the supplier. As long as they delivered on everything else ... on all the criteria I mentioned earlier (...) When you meet someone and you feel that this is a person or a company it is easy to work with and who have the same values as us, then it is easier to choose them rather than another who seem a bit more complicated

4.1.2 Eurosko

The Eurosko chain was founded in 1983 and the members of the chain own the stores. EuroSko is part of the Euro Sko group, alongside Shoeday, DNA and Skokanonen, and is today Scandinavia's largest footwear chain with over 300 stores in Norway and Sweden. Yearly EuroSko sell about 2,3 million pairs of shoes, a total of more than 2 000 millions NOK, making them one of the leading shoe retail chains in Scandinavia. In their segment of leisure shoewear, the Euro Sko Group has a market share of nearly 50%.

Supply Chain Management

EuroSko design and develop own brands such as Roots and Softwalk, as well as selling shoes from external brands. Buying external brands is called doing pick ups.

> We do a little bit of both, some pick ups, where we pick parts of the collection from the different suppliers. We also have 3-4 suppliers where we develop everything from scratch; leister, sole etc.

Since the members of the chain own the stores in a buying cooperation concept, the collection then needs to be sold to each individual store. The purchase orders to the suppliers are then placed after reservations from the different stores.

> As a chain we must sell the collection instead of placing it out in stores. We have a sales exhibition for the stores every season.

The collection starts to form about a half year in advance, where they start by traveling around to different sales exhibitions for pickups or directly to the supplier's office to develop styles for their owned brands.

> We start by traveling to different trade shows, do some picking or send samples to suppliers. After a few months the sample gets in and the buyers will then evaluate and decide what style to go with. Then we have a week where we prepare for the internal exhibition, a week with the sales exhibition and lastly placing the PO's (Product Orders).

They have a large supplier base, but their quantities lies on very few suppliers. They have a large supplier in Portugal, a large in Taiwan and two large ones in China.

> (...) we have about 3-5 very large suppliers or three really large. But we also have a premium collection, this is a collection with small quantities, meaning more suppliers (...) actually, we have a lot of suppliers, but only a few we work dedicated towards.

Their sourcing process varies depending on country and the size of the purchased orders for that season. This applies to both purchased orders for pick up products and self developed products.

> We do sourcing mostly by looking at the exhibition shows, and there we get a feeling of what type of products they have. We also ask others about their experience and whom they work with. We ask the suppliers for references (...) then there is of course visiting the companies, especially many of the smaller European suppliers (...) we also have a controller in the East and India that checks the production as well as our CSR departments who check and look from their perspective. The process varies, depending on how much we buy and if it is interesting to talk about developing things and not only do pick ups. Then we will happily travel and visit them.

Their buying department is relatively small compared to the number of orders and products.

> We have tree buyers in total; a buyer for the children, men and women's collection. We also have 3 merchandisers plus a Portugal office that do the following up on a lot of the suppliers there, and also China and India. (...) we are not so many compared to how many products we have.

Buyer-supplier relationships

Most of EuroSko's suppliers have been working with them for a long time.

> the majority of our biggest suppliers have been working with us for over 20 years, we also get some new suppliers here and there, but thats maybe 2-3 maximum each season. It is really a very stable supplier base.

Many of the bigger suppliers have been with them for over 20 years. This has resulted in continuing working with the same ones, which is a habit combined with a good experience.

> It is the experience - a long relationship really, and eventually you become accustomed to what they can achieve and what they can deliver (...) The suppliers that have become big for us have done something well before (...) they have a good extra service, and we are somewhat secure with them and which is a good feeling to have.

EuroSko's relationship with the different suppliers vary, the degree of communication is also different depending on the importance and specialty of the supplier.

> There are differences from supplier to supplier, some require more supervision than others. It varies; I am in contact with the big suppliers quite regularly, mostly once a week at least. (...) with the small suppliers I usually only meet these at exhibition shows once per season (...) otherwise I travel and visit the big suppli-

> ers every season, to see them face to face. (...) we see more of the large one in Portugal during the fall season.

As mentioned earlier, EuroSko only have a few suppliers they consider big. Asking about the quantities, the result was that their biggest suppliers could get over 40% of the total orders that season.

> Our biggest supplier gets orders of 400 thousand pairs, maybe? Then it is our largest. The number of pairs differs, we may have one million this fall, whereas in the summer it is 1.2 to 1.4 million pairs (...) the largest suppliers have over 80% of the total quantity

Having that said, it does not necessary mean that all their PO's to the largest suppliers are big.

> We have orders ranging from 150 pairs to 25000 (...) some of our major suppliers that deliver many pairs for us usually also get orders as low as 150 pairs (...) They may have the sole ready making this possible. This is of course in Portugal, it not possible to do this in the East.

Since they only have big orders to some suppliers, the relationship with the ones they buy smaller quantities from, is more challenging.

> It is harder to work with those we don't work so concentrated with. We very often have comments on fit and quality. We are very small compared to others in these circumstances, resulting in low purchasing power, so it is easier to get through stuff like that when we buy larger quantities.

It is important for them to continue a good relationship with the suppliers if they first choose to work with them.

> When we open a collaboration with a potential supplier, we want and try to use them over several seasons. This is to cover the investment simply.

Supplier evaluation criteria

EuroSko don't have a fixed list of criteria that suppliers must satisfy, but asking them of what's most important, the answer is quality, price, values and cooperativeness.

> Quality is very important to us, both in delivery and execution, so that's what we think about the most. Price is also of course important, and perhaps even more important now when we have problems with the exchange rate. (...) they need to know what is important for us, what the fit and quality should be (...) it is cooperativeness also, like when we put such large volumes that they can do us a favour in smaller agreements.

It is important for Eurosko to provide products that hold good quality. By quality they mean shoes that are comfortable to wear, that the stitching is well made, and that the material holds a certain quality.

The CSR department also has some requirement that the suppliers must fulfil.

> We have a Code of Conduct and chemical list and all the premise that all the suppliers get. They also get a form they must fill in. It's the CSR department that's responsible for this.

As it's important for EuroSko to retain a good quality reputation, the country of origin of the products becomes important. They also deliberately develop and pick different styles from different suppliers to make the process easier. That way they don't have to choose a certain supplier instead of another.

> There is a lot of politics in the picture (...) we will always choose the biggest supplier if possible, we want to keep the suppliers we know can deliver, someone we know have good quality. So we may have to choose other suppliers when we need decrease our price levels. (...) It is often a debate that Portugal has good quality, so then it becomes a bit like politics in it (...) we try to keep the development central in one place, not have stock products in different places and later have to choose.

EuroSko feel that the trends in the industry are now changing, and the trends are moving faster, and own designed products have become more important.

> Everything moves much faster really, so you have to design everything from sketch (...) there was perhaps development in the old days but not in a large extent, it was much more pickups before, ehm.. there were also a lot more suppliers then, now we have focused a lot on the biggest and sorted the suppliers a little.

The change has led them to see the importance of having good collaboration with the suppliers that could work as a partner for them.

> Finding that kind of partner is important to us and our collection.

Since there is no formal structure on the criteria, the buyers in Eurosko form them based on experience and common sense.

> We don't have any list of criteria that the suppliers must fulfil, it is mostly based on what we have done before and common sense

Supplier evaluation system

The Euro Sko Group has a CSR department where one of their jobs is to rank the suppliers regards to the degree of risk.

> We have a system with smileys, and green, yellow and red on the basis of the degree of risk.

It is important for them that the CSR requirement is in place, especially from the larger suppliers, but since they don't buy large quantities from so many, it's hard to influence and help many of the suppliers.

> The bigger the supplier is, the more important it is getting these things in place. If we see that some of the smaller suppliers don't deliver one season, it's easier for us to talk about whether to just get rid them. We do not have the power to do anything anyway so there is no point in trying.

Despite this, EuroSko tries to help some of theirs important suppliers by e.g. placing some of their orders in Portugal for the spring collection as well. Portugal is known for good quality and are often more expensive than other countries. The willingness to pay from customers are higher for fall-boots than summer sandals, this has resulted that the Portuguese suppliers have very few orders during spring and summer.

> Often we try to "save" the Portuguese in the summer season. The fact is that we often choose to place the order at companies that need to be kept running throughout the year, so that they can deliver to us in the fall and stuff like that. So that they do not have to close.

Beside the CSR list, there's basically no strategy or ranking of their suppliers. They claim that the shoe industry is very old fashion and that decision is mostly based on experience and what have been done before.

> it all comes down to how we feel about a certain supplier (...) It is very much depending on remembering and you get the feeling when you have a lot of contact with a supplier constantly, we know where the pressure is all the time. There are some suppliers who are good and some that are not, but we do not have a system or routine at all.

> We haven't got any strategy (...) we may compare two smaller supplier against each other if they have the same products, then we look at price and quality

To have some control over how the supplier perform, the buyers call in for a biweekly meeting where delivery performance and complains are discussed. They don't have a systematic approach to this.

> We have a biweekly complain-meeting where we discuss and solve the cases (...) We have an office in China, they're working more with checking production and stuff (...) we handle things along the way, so if there is a problem we talk about it without putting it into a system. We are very analogue!

Despite the lack of strategy and ranking of the suppliers, there are still suppliers that are preferred, especially those the company has worked together with on developing new styles.

> We very often choose what we have designed and made together with a supplier instead of a picked style - since we've been involved in the whole process and know the execution and stuff like that have been done properly.

4.1.3 Summary of the fashion retail industry

This section will provide a short summary of the findings from the two companies we have interviewed. It can't be generalised to the whole fashion retail industry, but is an illustration of how things are done in these two companies.

The main difference between the two companies is that Dressmann is a much larger company with bigger purchased orders, making them more important for their suppliers and therefore has greater influence on them. In Table 4.2 are some other important and relevant similarities and differences we have found between the two companies:

Similarities	**Differences**
Mostly buy large quantities	Purchasing power and influence towards suppliers
Relationships with suppliers are important	Number of large suppliers
Long-term supplier relationships	Full ownership versus buying cooperation
Common CSR list for the whole retail group	
Criteria coming from common sense and experience	
No specific supplier evaluation system	

Table 4.2: Similarities and differences between Dressmann and Eurosko

As we can see from Table 4.2, there are many similarities in the fashion retail industry and their work methods and way to approach their suppliers. Both companies are part of a larger retail group, and the only formal supplier criteria they follow is the groups CSR requirement. Internally, they both consider the performance of their suppliers, and give them increased importance as they are performing well. This is not systemised work nor based on a distinct strategy, but is based on the memory and "gut feeling" of the purchasers, who holds the power towards the suppliers. There are few requirements to become a supplier, but they must provide quality items in the right style to be considered. Dressmann are more strict when it comes to the CSR requirements, and have a greater perceived bargain power towards their suppliers. The ordered quanta are mostly large, as they purchase for all stores.

4.2 The subsea industry

This section will present the most relevant data collected in the subsea industry through archive data and our interviews with Kongsberg Maritime and FMC Kongsberg Subsea.

4.2.1 Kongsberg Maritime

Kongsberg Maritime (KM) is a wholly owned subsidiary of the Kongsberg Group with roots back to 1814 when the Kongsberg Weapon factory was established. KM is headquartered in Kongsberg and consists of three divisions; Subsea, Merchant Marine and Offshore. The company has 4700 employees on a world basis with an annual turnover of 8,2 MNOK in 2013. KM is responsible for 60% of the total turnover in the Kongsberg Group, and hence is the largest department when it comes to revenues. KM Subsea is located in 8 places in Norway. They deliver products for the Subsea industry, such as subsea systems, fishery research products, positioning systems, echo sounders, and so forth (Maritime, 2015).

The next sections will go through the collected data from interviews at KM regarding the main topics from the theory.

Supply Chain Management

KM Subsea have a large supply base, where about 80% are located in Norway. They are often dependent on one main supplier for some product types because there are no alternatives, but try to have a second source for the majority of their products. When it comes to important suppliers, they say:

> (...) about 50 suppliers account for 80 % of the total value. The rest of them represents paper, pens etc.

The purchase function in KM is under improvement, and the past year they have been working with how they internally handle purchasing, from sourcing to evaluation.

> In procurement, we have operational purchasing, logistics, sourcing, quality control, quality departments that checks if all the procedures are followed, and planning department. So we had to start dividing and make the interface - who does what. Most global companies already have this in place, but we had to start from scratch.

As part of this process KM say they want to acquire a web-based system for the purchasing function, where they easily can find all the relevant information about their suppliers. Today they mostly use Excel-sheets for this.

> If you don't know how the suppliers deliver, perform, then it's not possible to tell them how they should be improved. We want a web-based solution where you get up all the numbers. Where you can view all suppliers' deviation, discounts. We have a goal that suppliers must be 5% cheaper every year. All these parameters are connected to the supplier development program that the sourcing and quality departments works with.

Buyer-supplier relationships

The supplier relationships at KM are mostly long-term relationships, and they regularly have contact with their 50 most important suppliers.

> We replace perhaps 5% of the suppliers each year. Many have existed with us for 10 years. The top 10 suppliers based on revenue, I'm sure have been with us at least for 10 years.

> Sourcing has meetings with each of the suppliers (...) The ten largest we at least meet every month, others less frequently. It depends on the person in charge of the supplier, because the guys in sourcing are different. Some prefer monthly

> meetings, others phone meetings or visiting.

Supplier evaluation criteria

As a part of their quality work internally, KM has during the past years worked on a Supplier Quality Manual (SQM). The SQM as a 16 pages document was finalised the previous year, and sent to all the 50 suppliers they are currently focusing on. The suppliers sign they have received it and will try to work accordingly, something 45 out of the 50 have done. However, the informant states that a document like this doesn't automatically mean they cooperate well and only receive good quality. Before they could send it to their suppliers, they had a large job to do internally in KM.

> It was this work that took 18 months. It was sent back and forth in KM and then we launched it the first week of September (...) So it was negotiated and rooted in the organisation, and went thousand times back and forth.

Figure 4.2: Kongsberg Maritime classifications of their suppliers

Supplier Classifications	Basic Supplier	Core Supplier	Preferred Supplier	Strategic Company Partner
1. KM strategic product technology or unique or protected manufacturing processes				■
2. Global perspective and capasity (Focus on end user/customer, International player, regulators and stakeholders).				■
3. Commitment to the KM values (Determined, Reliable, Collaborative, Innovative)			■	■
4. Contribution to increased IP (KM-Intellectual property)			■	■
5. Contribution to excellence (best practise, unique, world class).			■	■
6. Sucessfull completion of R&D projects (Within scope, time and overall cost)			■	■
7. Sucessfull fulfillment of additional KM quality requirements. (Change control, CAPA, SPC, KPI's monitoring, Lean implementation).		■	■	■
8. Proactive approach to fullfill KM «needs & wants» (R&D, Quality, Purchase, Logistics and overall cost)	■	■	■	■
9. Quality & Delivery (ISO 9001. Fulfillment of standard baseline. Continual improvements. Yearly positive trends.	■	■	■	■
10. Succesfull over time (Fulfillment of delivery precision and capasity, flexibility requirements)	■	■	■	■
11. CSR, Code of Ethics - Kongsberg directive	■	■	■	■

Table 4.3: Kongsberg Maritime criteria and classifications

What came out of this process was among other things, a list of 11 criteria for the suppliers. The criteria are divided into four classifications. The classifications are shown in Figure 4.2, and Table 4.3 shows both the classifications and their belonging criteria. Bellow follows some comments from KM about some of the criteria.

> The basic one is code of ethics. Next: successful over time - do they understand what we want etc? Are they ISO-certified? (...) R&D, quality, purchasing: Do they have an ERP-system and know have we work? Next: is CAPA implemented, is KPI's measured, have they participated in a R&D project and worked closely with us the whole project? Contribution to excellence: Are they a company who works in the best practice methods? When it comes to contribution to IP - do they possess anything that contributes to our knowledge in a positive way? Are they working according to our values? Are they a global supplier with the capacity to make us better? The latter two are making the supplier strategic - are they

> producing a product improving our market position?

KM are however open about where the requirements are adapted from, based on the experience of the quality manager from the automotive industry. About the 11 criteria, he says:

> It is actually so that they [the requirements] are coming from me (...) Yes, I have done this before. 20 years ago. So these are actually the requirements to come up to a level where automotive were 20-25 years ago (...) But I can say.. there is nothing in these 11 steps that is rocket sience, really (...) It's common sense.

Supplier evaluation system

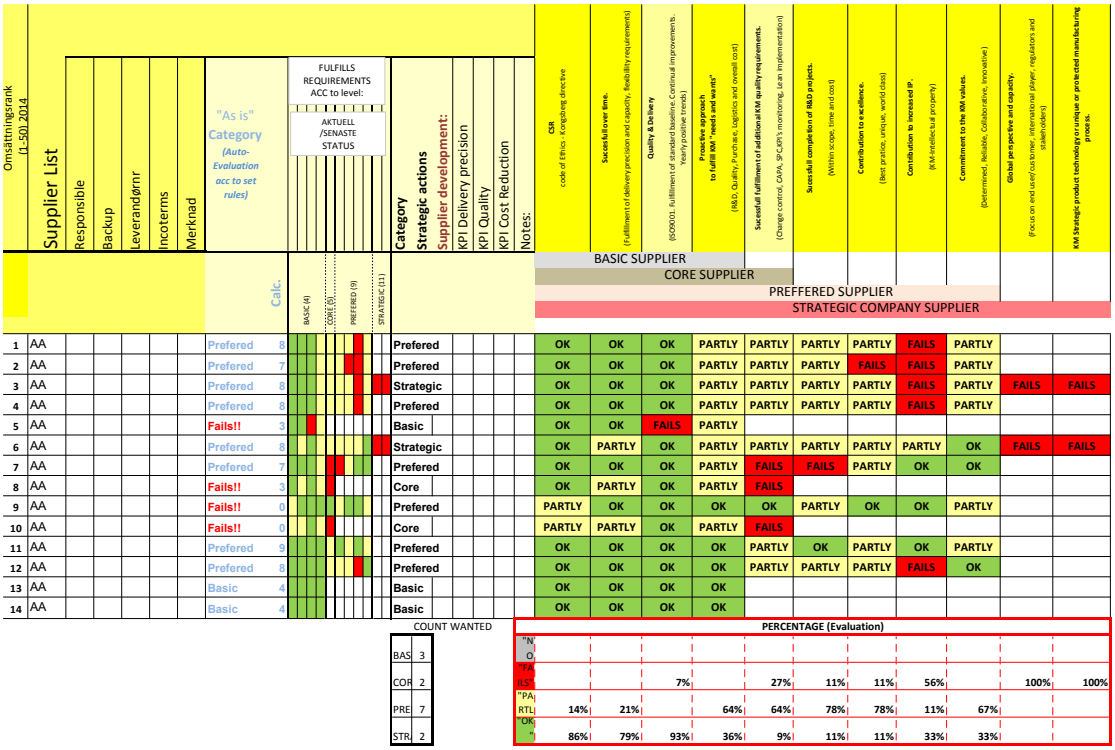
The excel sheet with all the information about each of the 50 suppliers is currently working as KM's evaluation system, where they continuously update their information. They call it the SEAL, and then give some explanation about how it works.

> The SEAL gives us four classifications/levels based on how great power we have over them or how dependent we are on them. It is important to remember that a basic supplier is not less worth than a core supplier. That would be like saying water is less worth than...gin&tonic...You can't exist without these suppliers.

> Okey, so we have these classifications. The basic ones are possible to replace quickly and often. They don't have.. ehm.. they can sell screws, electric cables...commodities you can buy wherever you like.

The classifications as shown in Table 4.2 gives an understanding of how they are structured, and the evaluation looks like in Table 4.4. The table has been anonymised by removing sensitive information, and a larger version is found in Appendix D.

The suppliers receive a score based on the 11 criteria, divided into green (OK), yellow (partly) and red (fails). This gives them a total summary and puts them in one of the four



	Omsåttningsrank (1-50) 2014	Supplier List	Responsible	Backup	Leverandørnr	Incoterms	Merknad	"As is" Category (Auto-Evaluation acc to set rules)	Calc.	Category	Strategic actions	Supplier development:	KPI Delivery precision	KPI Quality	KPI Cost Reduction	Notes:	CSR code of Ethics - Kongsberg directive	Succesfull over time. (Fulfillment of delivery precision and capacity, flexibility requirements)	Quality & Delivery (ISO9001, fulfillment of standard baselines. Continual improvements. Yearly positive trends)	Proactive approach to fulfill KM "need s and wants" (R&D, Quality, Purchase, Logistics and overall cost)	Sucessful fulfillment of addition al KM quality requirements. (Change control, CAPA, SPC/KPI's monitoring, Lean implementation)	Sucessfull completion of R&D projects. (Within scope, time and cost)	Contribution to excellence. (Best pratice, unique, world class)	Contribution to increased IP. (KM-intellectual property)	Commitment to the KM values. (Determined, Reliable, Collaborative, Innovative)	Global perspective and capacity. (Focus on end user/ customer, international player, regulators and stakeholders)	KM Strategic product technology or unique or protected manufacturing process.
								FULFILLS REQUIREMENTS ACC to level: / AKTUELL /SENASTE STATUS	BASIC (4) / CORE (5) / PREFERED (9) / STRATEGIC (11)								BASIC SUPPLIER / CORE SUPPLIER / PREFFERED SUPPLIER / STRATEGIC COMPANY SUPPLIER									
1	AA							Prefered 8		Prefered							OK	OK	OK	PARTLY	PARTLY	PARTLY	PARTLY	FAILS	PARTLY		
2	AA							Prefered 7		Prefered							OK	OK	OK	PARTLY	PARTLY	PARTLY	FAILS	FAILS	PARTLY		
3	AA							Prefered 8		Strategic							OK	OK	OK	PARTLY	PARTLY	PARTLY	PARTLY	FAILS	PARTLY	FAILS	FAILS
4	AA							Prefered 8		Prefered							OK	OK	OK	PARTLY	PARTLY	PARTLY	PARTLY	FAILS	PARTLY		
5	AA							Fails!! 3		Basic							OK	OK	FAILS	PARTLY							
6	AA							Prefered 8		Strategic							OK	PARTLY	OK	PARTLY	PARTLY	PARTLY	PARTLY	PARTLY	OK	FAILS	FAILS
7	AA							Prefered 7		Prefered							OK	OK	OK	PARTLY	FAILS	FAILS	PARTLY	OK	OK		
8	AA							Fails!! 3		Core							OK	PARTLY	OK	PARTLY	FAILS						
9	AA							Fails!! 0		Prefered							PARTLY	OK	OK	OK	OK	PARTLY	OK	OK	PARTLY		
10	AA							Fails!! 0		Core							PARTLY	PARTLY	OK	PARTLY	FAILS						
11	AA							Prefered 9		Prefered							OK	OK	OK	OK	PARTLY	OK	PARTLY	OK	PARTLY		
12	AA							Prefered 8		Prefered							OK	OK	OK	OK	PARTLY	PARTLY	PARTLY	FAILS	OK		
13	AA							Basic 4		Basic							OK	OK	OK	OK							
14	AA							Basic 4		Basic							OK	OK	OK	OK							

COUNT WANTED

BAS	3
COR	2
PRE	7
STR	2

PERCENTAGE (Evaluation)

"N O											
"FA ILS"			7%		27%	11%	11%	56%		100%	100%
"PA RTL	14%	21%		64%	64%	78%	78%	11%	67%		
"OK	86%	79%	93%	36%	9%	11%	11%	33%	33%		

Table 4.4: Kongsberg Maritime's evaluation system: SEAL

categories.

> We have categorised the suppliers in basic, core, preferred and strategic. At this point we don't have any that are strategic if we strictly look at the evaluation category. For some products we only have one supplier, so it should be strategic, but isn't according to the sheet.

KM want the "as is" description of each supplier to be based mostly on facts, but there is also room for some own reflections in the SEAL.

> The excel sheet with our 50 largest suppliers contains information about who is responsible for every supplier. We can then look at their score as well as our own commentary like "performs well on quality" and a status of "as is" and "wanted".

> The commentaries are our assumptions, as an add on to everything. When we are discussing the supplier, we then remember e.g. failed deliveries and discuss "what is the risk of it happening again?" etc. The goal is for the suppliers to improve.

The information stored in the SEAL is available to all departments with supplier contact, to keep track of how things are at the current state.

> We have a categorisation with the purchasers too, and lately the knowledge about the suppliers has increased even more. We can never say 100%, but we might say with 80-90% accuracy if they are cooperative and if they have helped us. But this is a lot of feelings, and it shouldn't be. We need to base this on facts, and then we have the remote audit as a source...

To fill inn and update the "wanted" classification, which reflects KM's own thoughts about each supplier, the sourcing, procurement and quality departments have a large meeting twice a year where this is discussed. The comments on the sheet can be used in the biannual evaluation of the "wanted" state.

> Anyways.. we have filled in the 11 steps, and then the total evaluation changes automatically. The "wanted" section doesn't change automatically, this is our evaluation every 6 months. We want everyone to be aware of what we want with this supplier, and together we come up with a plan.

The sheet is used internally but also externally towards each supplier in order for them to improve.

> ...Now we are in that phase where we should become good at following up the suppliers and use what we have facilitated with these tools (...) We can also show the supplier how they are performing and is categorised. When they want to know what they can do to become green, we show them the SQM and then they might understand why they don't fulfil the criteria.

With the evaluation system, the suppliers are then encouraged to develop their skills in the desired way, leading to more efficiency and better products. The work with the SEAL is a continuous task, and it has been improved several times during the time they have used it.

4.2.2 FMC Kongsberg Subsea

FMC is a global market leader in subsea systems, and a provider of products and services to the subsea industry. The company has more than 20.000 employees worldwide, and operates 28 production facilities in 17 countries. FMC is headquartered in Houston, Texas, and is in the subsea division divided into three regions; Asia-pacific, Eastern and Western region. The Kongsberg office is the headquarter of the eastern region (FMC, 2015).

Supply Chain Management

FMC have many suppliers in their supply chain. They haven't got a strategy when it comes to the number of sources for each product, but do an evaluation in each case. They are however aware that they should try and reduce their supply base.

> At last count we had a total of 650 suppliers. 200 of those count for 95% of the total, meaning we have a supplier amount that should be lower than 650. And then we talk strategy, because we don't say: "250 is a good number". We operate in many different technologies (...) These different areas affect the supplier strategy we have. We need to go through each technology bit by bit and sum up how many suppliers we ought to have. I know it's more than 200, but it's also fewer than the 650 we have today.

The dependency on each supplier varies, from suppliers they buy "bits and pieces" from, to suppliers they are totally dependent on. Their products are categorised in small, medium and large parts, where small parts are sizes around 20kg, medium ones are 1-3 tons, while large parts can weigh up to 1000 tons.

> We have suppliers who deliver technology we are totally dependent on, and where there exists only one. Sensor technology for instance. Or those who have designs with Intellectual Property rights...They have patented technology. Sometimes

> the physical size of the product forces us to choose a specific supplier, as the case of a supplier in Brazil.

In their operating business, FMC are also subject for different requirements, which affect themselves as well as their suppliers.

> We are underlying four types of requirements, really. These are from the law, the customers requirements (technical ones etc.), our own requirements to ourselves because we want to sell ourselves on technology, and then there's local content. These are our conditions when selecting suppliers. It also entails a lot of documentation, and it must be documented from supplier to customer.

FMC also states that the sourcing and supply actions are becoming more and more global, and a larger coordination between the global supply chain is increasing as a consequence of this.

> We are now better at using each others suppliers, in the past 5 years we have begun to have an global view on it.

Buyer-supplier relationships

Many of the suppliers at FMC have been there for a long time. They don't want to exchange them often as it takes a lot of effort to qualify a new supplier. Many of their relationships go back 20 years. New suppliers often get routine jobs to begin with, but might get greater responsibilities over time.

> If we get a new supplier, it's really just to get an extra leg to stand on, we do not exclude the other one (...) those who have been there the longest is somehow our bread and butter supplier while the new ones get smaller orders, like bits and pieces (...)

FMC usually try to solve problems rather than choosing another supplier. They want to keep the same suppliers, because they need to account for their parts for 30-40 years, and need suppliers who still exists then. This implies development of their suppliers rather than exchanging them every four years.

> Once they've become a supplier for FMC and a problem arises, we will try to solve the problem together with that supplier (...) We need the suppliers to exist in the next 30 years due to guaranties and the need for spare parts etc. (...) For us it is much more important to develop a supplier, making them really good at what they do and getting their costs down rather than replacing them. It simply takes too much time and effort to switch.

The sub category lead of FMC is in charge of the strict sourcing process, as well as the quarterly reviews where they go through the suppliers' performance and progress. In the daily business, it is the purchasers who maintain the relationships with the suppliers.

> It is the purchasers on the different projects who have the weekly reporting with the suppliers, and daily follow-up if anything happens (...) So they are in the operational work, and if anything major happens they tell me and my boss if they need help to solve an ongoing problem.

To make it easier for the purchasers to handle the daily business, the suppliers and FMC sign a contract regulating their relationship and clarifying the expectations of the cooperation. These are set for a longer period of time, e.g. two years or so.

> ...then we have to make a contract together and agree on the format of reporting, how they notify us, what the actual job is, payment plans etc...agree on these things so the purchaser can relate to it. Then no-one gets disappointed.

Supplier evaluation criteria

To become a supplier for FMC is a long pre qualification process with many controls, forms to fill out and audits to be done. The process can take up to a year. When a supplier is approved as a certified FMC supplier, they are regularly measured on the selection criteria, and can be excluded if there are too many incidents in their disfavour.

> ...if we think it looks good, and that it's worth giving them a try, we sign a NDA (Non disclosure agreement) and the Global purchasing terms, saying there is no bribery and such. It's a 20 pager with our rules and regulations.

If the supplier additionally proves to be reasonable on price and their processes around giving offers seems good, FMC are willing to do further testing of their safety and quality.

> ...then I request a safety and quality audit. I send it to the people in charge of the audits, and they give me a date we can go to the site for an audit related to ISO standards and certifications. They have their own quality requirements.

When the process of being qualified based on certification is finished, there are some criteria that are important to consider for FMC

> It is quite interesting when you look at these value criteria that are the base, that means SQDC (Safety, Quality, Delivery and Cost).

Out of these four main criteria, safety seems to be the most important one and is present in the whole subsea industry, but at the same time it is so basic that quality will actually be the one they must measure up to.

> Our main criteria, what we measure, is what we call SQDC. Those are the main bullet points, we measure everything here on these premises. You can be cheap and good, but if it's a cowboy industry and you hurt yourself and everything, it's actually a reason for rejection with us (...) Safety isn't what we measure, it is a minimum requirement to be in our loop at all, or else we are not allowed to use them. So to me, quality is the first thing, then we can avoid mistakes because the supplier has done it a million times before on the exact same part. Then you improve on what your are doing.

Price is also an important factor for FMC to measure, because they are dependent on their suppliers to deliver the best possible offer to their own customers like BP, Shell, Statoil etc. When they get the job, the whole supply chain benefits. FMC also express a need for suppliers who are flexible in their production, because they operate in an industry based on forecasts, and projects and because they are not perfect either.

> There have been some cases where we have signed a new contract with a customer when the design isn't fully developed. When that happens, we contact our supplier and say that we need to buy something from you, but we do not really know what that is yet (...) when this happens it's a lot of variation orders ongoing between us and the supplier (...) We are very dependent on working with a supplier who is flexible, willing to adapt. Adapting can mean breaking the procedures and fix the problem afterwards.

Even though a supplier qualifies according to all the criteria, there are still doubts internally towards a new supplier. This is based on the importance of trust in the relationship, and the human component is strong. Sometimes it might take them six months extra after the qualification before everyone is comfortable with using a new supplier.

> Humans are by nature dependent on trust, and when a supplier has been with us for a long time, the process becomes beyond sourcing. The design and engineering and those who are involved with the project implementing need to have confidence in the supplier. There will always be resistance to start working with a new supplier internally; this process takes time.

When asked about where the criteria originated, they call it common sense, and try to explain why these criteria are important with some examples.

> It's probably an industrial spin-of and common sense, safety is the same in all construction work (...), the quality is because; if something in the bottom of the sea doesn't hold or breaks the result is predicament, we cant just fix it within a day, or stop the whole process (...) it seems like everyone is scared that something might happen and therefore require many additional tests and protocols, which means that prices will rise (...) Delivery, we've got a lot of customers who are listed and standing there with their shareholders and stock holders. If one delivery suddenly slips and these people don't get their Return on Interest, they will be pissed and the stock prices will drop.

To summarise the supplier evaluation criteria mentioned by FMC, these are; safety, quality, delivery, cost, then there is flexibility and the human factor of cooperation history and trust. Note that there is also a long process to even become a FMC supplier, as mentioned above.

Supplier evaluation system

The criteria are put quite explicit, and the suppliers are regularly through quarterly reviews measured based on these criteria.

> We have something called the quarterly reviews, where the supplier visit us or we come to them. We then go through their numbers; have there been any safety incidents? How is the quality, is it what we wanted? Have there been some mistakes, are the documents in place? Did we receive it on time?

There is no common system for a supplier evaluation, but sourcing keeps track of their own suppliers and keep track of the performance of the suppliers based on memory and to some extent excel sheets where they can frequently access the wanted data and figures. The following explanation is how one of the sourcing managers illustrates how he regards the evaluation of their suppliers. He also stresses the importance of a supplier performing well over time to become preferred, comparing it to a frequent flyer program.

> The suppliers are ranked in different levels, in the bottom we have the global qualified supplier, which is our foundation. We also have those who are in our strategy, the preferred ones at the top, being the suppliers that we have major contracts with in the form of exclusivity or if there is investment both ways. It's almost like a triangular shape (...) We have approximately 40 suppliers in the bottom in our department and maybe 4 in the top.

The supplier evaluation is based on both hard and soft variables, and it is the total of them that creates the entire impression of the supplier.

> It's like performance over time (...) we evaluate both soft and hard variables, (...) we also look back on the communication and our relationship with them, how they are to work with (...) Our evaluation is divided in the form of numbers and soft-evaluation.

Not having a explicit system for evaluating the suppliers, FMC use their SAP system to some extent. When a supplier has been evaluated to perform poorly according to SQDC, the

review board uses the system and blocks the suppliers who are no longer qualified, thus making it impossible for the purchasers to place orders with this supplier. Other times souring just recommends the purchasers to not use a certain supplier because of low performance, but without blocking it.

> The review board sends out updates each month, the mail might say that this provider will be blocked within the next 6 months unless we take some action (...) Sometimes it's okay that they're being blocked while other times it is critical that we take action.

There is however a recognition of the difficulty of having an evaluation system that captures everything, especially when the human component and case specific evaluation is important.

> It is not possible to have a list of bullet points and just check the squares, we're talking about of recognition and a natural synergy with FMC globally and this supplier (...) There is no template that can help you with this (...) We must look at the big picture, you can't read about this in a textbook or list. It's possible to write about the phenomenon but it is not possible to get a blueprint of how we got there. The process is very situational.

4.2.3 Summary of the subsea industry

As we can see from the two companies, there are some similarities and some differences. Note that this summary doesn't generalise to the whole subsea industry, but is a summary of the two companies we have studied.

These are the main similarities and differences relevant for this study that we have found between the two companies:

Similarities	**Differences**
Strategic approach to suppliers: development rather than exchange	Project based versus product line purchasing
Need for long term relationships with suppliers	Differences in size, but not necessarily in size of orders.
Documentation is important	Specific supplier evaluation system vs no specific system
Relying on suppliers' capabilities to develop products	
Customer-driven activity	
High standard pre qualification for suppliers	
Contracts run with 3-5 years duration	
Supplier criteria set based on industry requirements and experience	
Supplier selection criteria same as supplier evaluation criteria	

Table 4.5: Similarities and differences between KM and FMC

As the summary for the subsea industry shows, there are more similarities than differences when it comes to supply chain management and the underlying issues we have studied. Both companies are dependent on their customers for projects, however FMC seems to be more project based than KM. The project focus in both companies affects their suppliers, because in order to win projects, both KM and FMC need to keep close cooperation with their supplies, and help developing them to meet competition in the market as a whole supply chain. There are strict procedures and high requirements for becoming a new supplier of both companies, and they use the same criteria to evaluate their suppliers. KM have however

concretised this more than FMC, and have therefore developed a supplier evaluation system. The criteria are quite similar, with focus on the basic CSR/safety requirements, quality, cost, delivery, flexibility and the relationship/cooperativeness of the suppliers. Both companies in the subsea industry measure the performance of their suppliers, but they have systemised this work differently, and KM has come a step further with working strategically with their supplier evaluation system in order to develop their suppliers strategically. This work has recently been initiated at FMC.

4.3 Comparative analysis

In this section we will compare our to cases; the low-tech and the high-tech industries, represented by the fashion retail and the subsea industry. In order to understand the main differences and similarities between the two industries, we will go through each of the subjects and do a comparative analysis. This will in the next chapter be related to relevant theory.

4.3.1 Supply Chain Management

Supply chain management	
Fasion retail industry	**Subsea industry**
Global supply chain	Global supply chain
Prefer few suppliers	Prefer few suppliers
No sourcing department	Separate sourcing department
Many potential suppliers	Few potential suppliers
Buy finished products	Buy parts and components
Each customers has low buying power	Each customer has high buying power
Seasonal purchasing	Project-based purchasing

Table 4.6: Comparative analysis: Supply Chain Management

The main differences between the two cases lies in their supply chains. While both industries have global supply chains and prefer few suppliers, the subsea industry spend large resources in the sourcing department compared to the fashion retail industry. The raw materials in the fashion industry are easy accessible with many providers, resulting in many potential suppliers. In the subsea industry, on the other hand, they are dependent on patented and/or protected technology, making them more dependent on their suppliers. The fashion industry may design and develop own products, but usually buy the finished goods from their suppliers. The subsea industry, however, often buy parts and components for own assembly. The purchasing patterns are different because the fashion retail industry plan their purchases from season to season, usually twice a year. In subsea, they normally buy products based on their projects, but also keep stocks of standardised components. With many small customers

in the fashion industry, the customer has low bargain power towards the retailers, whereas in the subsea industry the customers are few and large, making each customer more powerful.

4.3.2 Buyer-supplier relationships

Buyer-supplier relationships	
Fasion retail industry	**Subsea industry**
Long-term relationship	Long-term relationship
Regular contact	Regular contact
Important with good cooperation	Important with good cooperation
Reciprocal perception of relationship	Reciprocal perception of relationship
Easy to replace	Hard to replace
Capacity driven	Capability driven

Table 4.7: Comparative analysis: Buyer-supplier relationships

In both cases the importance of long-term relationships is stressed, with relationships going 20 years back. They see the value of regular contact to ensure a good climate for cooperation, and in both industries they prefer suppliers who are eager to put an effort into the relationship. The mindset in both industries when it comes to relationships with their suppliers is quite similar, but the main difference is that in the fashion retail industry the suppliers are used for their capacity, whereas in the subsea industry they are more dependent on their suppliers' capabilities. This makes the suppliers in the fashion industry easier to replace than in the subsea industry.

4.3.3 Supplier evaluation criteria

Comparing the two cases, many of the same criteria seem to be important, and there are many criteria the suppliers need to measure up to. Both industries emphasise CSR and even puts it as a pre qualification criterium, but the focus is on different aspects of their social responsibility. In the fashion retail industry, CSR focuses on child labour, use of chemicals etc., whereas in the subsea industry safety is the main focus. Other important criteria are quality,

Supplier evaluation criteria	
Fasion retail industry	**Subsea industry**
Important to hold the same values	Important to hold the same values
CSR is fundamental	Safety is fundamental
Same requirement for all suppliers	Same requirement for all suppliers
Criteria derived from experience and common sense	Criteria derived from experience and industry standard
Purchasing department defines the criteria	Sourcing department sets the criteria

Table 4.8: Comparative analysis: Supplier evaluation criteria

cost, delivery precision, flexibility and soft variables like cooperativeness and trust. These criteria apply to all suppliers regardless of size, strategic importance etc. The main differences between the two cases are that the subsea have stricter industry laws and regulations which contributes to determining the criteria. In the fashion retail industry the criteria come to a greater degree from experience and common sense. As mentioned, subsea spends more resources on sourcing, and the criteria seem to be set by the sourcing department. In the fashion industry, the purchasing department is in charge of this.

4.3.4 Supplier evaluation system

Supplier evaluation system	
Fasion retail industry	**Subsea industry**
Selection criteria used for evaluation	Selection criteria used for evaluation
Using soft and hard variables for evaluation	Using soft and hard variables for evaluation
Individual assessment of each supplier	Individual assessment of each supplier
Use memory and own perception to evaluate performance	Use excel-sheet to evaluate performance
Purchasing department responsible for the evaluation	Sourcing department responsible for the evaluation

Table 4.9: Comparative analysis: Supplier evaluation system

There is not an extended use of explicit suppliers evaluation systems in either of the industries, but the subsea industry seems to be more conscious about this. Both cases evaluate their suppliers based on the selection criteria in combination with performance measure-

ments and soft variables such as the perception of the relationship. They also need to be easy to communicate and cooperate with. In the fashion retail industry these evaluations are based on memory and gut feeling, while in the subsea industry they use their ERP system and Excel sheets. Again, the purchasers are in charge of the evaluation in the retail industry, and the sourcing departments are responsible in the subsea industry.

CHAPTER 5

Discussion related to theory

In this chapter we will analyse the collected data presented in Chapter 4: Analysis. The discussion will be related to the presented theory in Chapter 2, following the same subjects; Supply chain management, buyer-supplier relationships, supplier evaluation criteria and supplier evaluation systems.

5.1 Supply Chain Management

The development of supply chain management, described by "the purchasing function has gradually been seen as a strategic issue in organisations" (Cavinato, 1999) is apparent in both of our cases, however stronger in the subsea industry. With long life cycles, expensive products and the dependency on winning bids towards their customers, the subsea industry needs to think strategically in order to follow the competition and the market requirements. The need for strategic supply chain management is thus not so strong in the fashion retail indus-

try.

The subsea industry, as a high-tech industry, has a greater need for rapid technological development of new products. As scholars state; how well the supply chain performs can affect the degree of product innovation and the firm's quality performance (Chen and Paulraj, 2004). This makes the sourcing and purchasing function important, as well as developing the suppliers so they increase productivity and efficiency in the whole supply chain. This kind of pressure also exists in the fashion retail industry, but to a lesser extent, and the main focus of the supply chain is therefore to lower the prices and increase the quality.

The shape and complexity of the supply chains in the two industries are somehow different. Related to Figure 2.1 in Section 2.2, the fashion retail industry generalised, operates as a Direct supply chain and an Extended supply chain. They serve the whole chain themselves, from production to end customer, and control most of the functions. They buy more standardised finished goods, which simplifies the processes and decreasing the need for coordination of the supply chain. From the subsea industry, collected data show a more complex supply chain with longer distances from ultimate supplier to ultimate customer and other support functions. They often buy components and parts that they assemble themselves, increasing the need for coordination. This puts them in an Extended supply chain and the Ultimate supply chain because the complexity of the supply chain might require more people in-house to keep track of all the processes and functions. The purchase and sourcing functions in the subsea is from what we have learnt larger than in the fashion retail industry. The form of the supply chains in both cases are thus quite similar to existing theory, as this theory has been developed through 30 years, and gives a quite broad description of the field from practice. As we narrow down the subjects the differences from theory to data will be more evident.

The purchasing process in both industries is similar to the activities Weele (2010) suggested. The difference is that in the subsea industry they have separate sourcing departments taking care of the sourcing as well as evaluation process, while the product line purchasers are

in charge of the ordering and expedition of the orders. In the fashion retail industry the purchasers control the whole process from selecting suppliers to evaluating their performance.

When we look at the number of transactions and the product type, as shown in figure 2.3, the difference is more visible. While the fashion retail industry has a high transaction frequency and more standardised products, the subsea industry include the whole scale from often to seldom transactions and from standardised to unique products. The difference in transaction frequency and product type will according to Stuckey and White (1993) result in differences in a company's purchasing strategy and their relationship with their suppliers.

Other factors influencing the purchasing strategies are also the supply risk and the importance of the purchase, like Kraljic (1983) suggested. The importance of the purchase seems to be similar in both industries, but the supply risk however differs. The fashion retail industry has a lower supply risk, while the subsea industry has a high supply risk as there are few suppliers with patented technology for many of their vital products. This leads to the four different product types, where the subsea industry may have more strategic- and bottleneck products, and the fashion retail have more products thats are non-critical and leverage products.

A part of the supply risk is the risk of missing deliveries from the suppliers. For a buying company, this will affect their ability to deliver to their own customers. To illustrate this, we made Figure 5.1. As we can see from the figure, there is a need for different strategies and degree of control or surveillance of the suppliers. The strategy depends on the size of the consequences towards the company's customers. For instance, if the risk of a missing delivery is large, and the consequences of failing to deliver to the customer is large, the company needs to strictly surveil the order. If the risk is low and the consequences are small, they only need to follow normal purchasing routines.

Looking at our two industries, the consequence of loosing a customer is larger in the subsea industry than in the fashion retail industry. Loosing a customer in the subsea industry can mean a loss of million dollar projects and risking all future projects for this customer. In

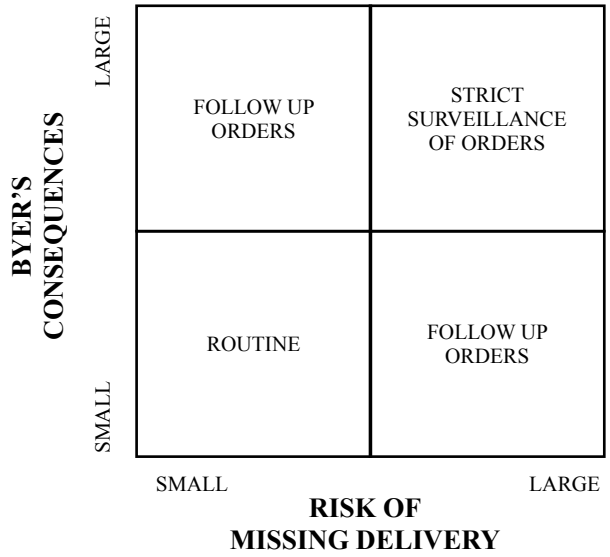


Figure 5.1: Buyer's consequences related to risk of missing delivery

the fashion retail industry this could be risking the sale of some 30 dollar shirts during the delayed delivery period, but not the customer's loyalty as there are many substitutes. With a greater supply risk in the subsea industry, combined with larger negative consequences of failing to deliver, the need for surveillance of the supply chain is larger than in the fashion retail industry.

We will get back to how these factors have affected the industries' relationships to their supplier in the next section about Buyer-supplier relationships.

5.2 Buyer-supplier relationships

When it comes to buyer-supplier relationships, Tables 2.3a and 2.3b give an overview of the most common advantages and disadvantages with closer cooperation with suppliers. Findings from our data collection suggest that the advantages are greater as they all prefer long-term relationship and regular contact with supplier, and have goals of even closer cooperation. The disadvantage of for instance more dependency is weighed up by development of the supplier, and the loss of proprietary information is regulated by contracts, as well as de-

pending on a relationship of trust between buyer and supplier. These kinds of relationships are built up through years of cooperation, and both cases underline that they won't give important deliveries and orders to a new supplier.

The is a correspondence between the factors explaining the buyer-supplier relationship presented by Subramanian et al. (2010) and what we found in our analysis. Many of the factors were mentioned in both cases as important for a good relationship with their suppliers and for continuous collaboration. If a supplier for instance didn't show willingness for commitment or cost reduction, they were likely to be phased out by the companies. The other factors such as quality (in both product and delivery), trust and social support were mentioned as important for the relationship to continue.

After analysing the two cases the findings suggest that the types of buyer-supplier relationships are different in regards of dependency on the suppliers. This is much related to the difference in transaction frequency and product type among the industries, as well as the difference in supply risk. With increasing risk and more dependency on suppliers, a strategic collaborative kind of relationship is more likely to occur.

The subsea industry were more dependent on their supplier due to the lack of alternatives or patented technology. They emphasise the suppliers' competence in production, as well as post-purchase service. This type of relationship is what Gules and Burgess (1996) suggested as a collaborative relationship.

Even though the case for fashion retail industry has shown the importance and use of long-term relationship, the other characteristics in the industry like using short-term contracts, tough negotiation, multiple sourcing and focus on price as well as easily replaceable suppliers, make their relationship with their suppliers more adversarial - arm's length.

We tried to illustrate these differences in Figure 5.2, by showing that there is an overlap in kind of relationship, but that our data reveals a more collaborative mindset in the subsea industry, whereas the fashion retail industry is more adversarial.

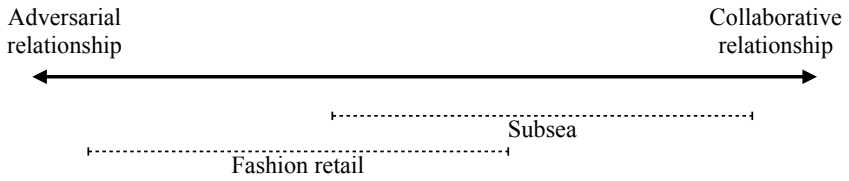


Figure 5.2: Illustration of relationship types in fashion retail and subsea industries

The differences between the two approaches are however not as clear as presented in the theory. Both cases have elements from both the Traditional and the Supplier partnering characteristic by Wu and Weng (2010), as seen in Table 2.4 in Chapter 2.

5.3 Supplier evaluation criteria

The unclear line between supplier selection and supplier evaluation in the literature has followed us in the collected empirical data. In articles the terms are used interchangeably and seem to describe the same content, and from our empirical findings the data suggest that the companies don't separate the evaluation from the selection criteria. From the analysis of both industries, we found that their evaluation criteria where based on the same requirements as the selection criteria but with additional performance measurements.

The set of criteria from Weber et al. (1991) literature review remain as some of the most important criteria in our findings; quality, delivery performance and cost were mentioned in all of the interviews. Table 5.1 shows the important evaluation criteria from Weber et al. (1991) and Dickson (1966), where we have marked the criteria from our data collection as they were mentioned. CSR was not mentioned on this list, but has been seen as a major requirement in both our cases.

Based on the type of industry the company participates in, type of product, strategy, customers and many other variables, the set of criteria will vary, as we have seen in both theory and our empirical data. A difference in the cases was that the fashion retail industry hasn't had the need to go beyond the criteria in the earlier studies. The subsea industry however

Evaluation criteria	Fashion retail	Subsea
Price	X	X
Deliver on time	X	X
Quality	X	X
Equipment and capability		X
Geographic location		X
Technical capability		X
Management and organization	X	X
Industrial reputation		X
Financial situation		X
Historical performance	X	X
Maintenance service		X
Service attitude	X	X
Packing ability	X	X
Production control ability	X	X
Training ability		
Procedure legality	X	X
Employment relations	X	X
Communication system	X	X
Mutual negotiation	X	X
Previous image		
Business relations	X	X
Previous sales	X	X
Guarantee and compensation	X	X

Table 5.1: Evaluation criteria from our data collection

had felt the need to look beyond this and focus on supplier's technological capacity, financing capability, and after-sales service as Dey et al. (2014) mentioned. The supplier practice in terms of managerial, quality and financial performance, as well as consideration of the supplier's capabilities including co-design capabilities stated by Narasimhan et al. (2001); Talluri and Narasimhan (2004) is also more important in the subsea industry due to a need for long product lifetime combined with guarantees. They must be able to fix a leakage at the bottom of the sea 30 years from now, and thus need to have a long-term perspective on their suppliers.

Additionally, CSR was told to be the most important pre-qualification criteria in both

cases, although there were different parts of CSR that were stressed. The fashion retail industry emphasises more the social acceptance; without child labour, approved factories and elimination of hazardous chemicals that could harm the environment, while the subsea industry emphasised the safety of the workers and environmental issues.

The process of generating criteria as well as evaluating the relevance of existing decision criteria in supplier selection has not gained much attention in the SCM and purchasing literature. What we found in the collected data was that these criteria often derived form experience and what the companies called common sense. All these criteria where formed to either increase the firm's financial performance, customer responsiveness, or the firm's quality performance. The subsea case also indicates that many of the criteria were just industry standards required in order to deliver to the industry at all, as a pre-qualification. There were however some differences within the subsea industry, where sourcing managers at KM implemented standards from their previous work experience, while FMC are starting to develop criteria based on their own experience.

5.4 Supplier evaluation system

Several articles have contributed to different systems and methods for supplier evaluation. Findings in both cases indicate that none of the companies used the models presented in theory, but have formed their own systems for evaluating suppliers.

From the collected data, we see that the evaluation systems from both cases had in common the use of multi-criteria decision-making approaches, considering several criteria in the same model. As mentioned before, literature is not clear when it comes to the difference between selecting a supplier and evaluating it, and this section shows again that there is a blur between them. Both cases implied that they used the same criteria for selecting for evaluating, but that the evaluation criteria also included past performance as well as human-related factors.

The main difference in the two industries is that the subsea case has seen the increasing importance of strategic sourcing; this may be related to the type of supplier relationship as mentioned earlier. The subsea industry has also indicated a higher dependence on their suppliers compared to the fashion retail industry. As a result of this, the data suggest that there is a more systematised evaluation system in subsea; they are somehow more conscious in this aspect.

To summarise the goal of evaluating suppliers, we made Figure 5.3 as a model to illustrate the outcome the concept of supplier evaluation produces. Whether the company uses a formal supplier evaluation system or not, the goal is the same; to know when to replace, keep or develop a supplier.

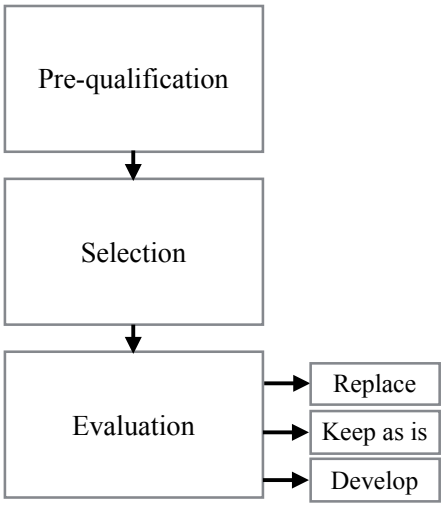


Figure 5.3: Outcome of supplier evaluation

CHAPTER 6

Conclusion and implications

This chapter will give an answer to the research questions, a short summary of the theoretical and practical implications of this study, as well as a suggestion for further research. The research questions were:

> On what basis do buying firms set evaluation criteria for their suppliers, and how do they use the evaluation system in practice?
> Do the supplier criteria and evaluation systems vary between the high-tech and low-tech industry?

Findings from this study suggests that buying firms set the evaluation criteria based on their experience, both from own company as well as earlier experience from other companies and industries. The goal of setting such criteria is to minimise both internal and external costs and to deliver the required quality to the customer at the right price level. The criteria are developed from what the companies all call "common sense", and the criteria are often

the same as the selection criteria. This has been unclear in the theory, but it's now evident they are mainly the same.

When it comes to using evaluation systems, buying firms in our two cases all somehow measure the performance of their suppliers, but the structure differs between the high-tech subsea industry and the low-tech fashion retail industry. In the high-tech industry the measurement is more structured and in writing, whereas the low-tech industry is more based on purchasers' memory and feelings towards the suppliers. The human component is however important in both industries.

The most important supplier criteria are the same for both industries, and are thus not case-specific. CSR, quality, price, delivery and relational factors are the most important, regardless of degree of technical complexity of the products.

6.1 Implications

Based on our analysis and conclusion, the implications will explain how this study is relevant to expand existing knowledge and how it's relevant in practice.

6.1.1 Theoretical implications

The subject of setting evaluation criteria has previously not been extensively studied, making this study a supplement to the existing theory of supplier criteria and supplier evaluation.

Our study has contributed to reducing the gap in theory about supplier evaluation criteria by concretising the unclear line between supplier selection and supplier evaluation, as well as suggesting that companies in our two cases - the fashion retail and the subsea industries - base their criteria on the organisation's own experience and industry standards - what they call common sense.

Based on the data from our study there may be a weak link between supplier selection practices and supplier evaluation criteria, and that the models provided by theory may not

be prominent in real world applications. Practitioners seem to value experience and trial-and-error over advanced models.

6.1.2 Practical implications

One of the goals of this study was to provide information about how supplier criteria are set in order to understand how the suppliers must act and think so that they can develop their skills and competencies.

As the criteria were similar in both industries, they seem to be quite general. For suppliers who want to specialise in an industry, they need to be aware of the current requirements, especially the pre qualification criteria. Then they need to adapt a mindset of continuous improvement and long-term perspective in order to meet the remainder of criteria.

For buying companies who want to develop an evaluation system, they should look deeper into their needs, find out what they actually want from their suppliers, and make it measurable. As one of the interviewees stated: "If we don't know what we want from our suppliers, we can't tell them how to improve". The criteria need to reflect the company values and needs in a way that is understandable to the suppliers.

Furthermore it is possible that our findings can be transferred into other industries and settings in the future.

6.2 Further research

The theoretical implications from this study suggest that this subject needs further research in order to be generalisable to a larges population. We suggest a survey design using quantitative data and many respondents will provide information about how supplier criteria are set on a wider basis. Then the theories derived from this study can be tested to see if they are true or false, and confirm or decline the results from this study.

There would also be an interesting angle to the research topic to investigate further what the buying company gains from setting such criteria for their suppliers in both the financial aspect but also in quality improvements, cooperation climate or other benefits.

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APPENDIX A

Explanation of rating factors

Total cites

The Total cites shows the total number of citations to the journal in 2013.

The journal Impact Factor

The journal Impact Factor is the average number of times articles from the journal published in the past two years have been cited from 2013. An Impact Factor of 1.0 means that, on average, the articles published one or two year ago have been cited one time. An Impact Factor of 2.5 means that, on average, the articles published one or two year ago have been cited two and a half times. The citing works may be articles published in the same journal. However, most citing works are from different journals, proceedings, or books indexed by Web of Science. While the 5-year journal Impact Factor is the average number of times articles from the journal published in the past five years have been cited in 2013.

Eigenfactor Score

The Eigenfactor Score calculation is based on the number of times articles from the journal published in the past five years have been cited in 2013, but it also considers which journals have contributed these citations so that highly cited journals will influence the network more than lesser cited journals. References from one article in a journal to another article from the same journal are removed, so that Eigenfactor Scores are not influenced by journal self-citation.

Article Influence

The Article Influence determines the average influence of a journal's articles over the first five years after publication. The mean Article Influence Score is 1.00. A score greater than 1.00 indicates that each article in the journal has above-average influence. A score less than 1.00 indicates that each article in the journal has below-average influence (Reuters, 2014).

Table A.1: Rating of referred journals

			JCR Data More Information			Eigenfactor® Metrics	
Journal	**JCR Title**	**Number of articles**	**2013 Total Cites**	**Impact Factor**	**5-Year Impact Factor**	**Eigenfactor® Score**	**Article Influence® Score**
Journal of Operations Management	J OPER MANAG	**6**	**5596**	**4.478**	**7.718**	**0.00695**	**2.066**
International Journal of Production Economics	-	**4**	**-**	**-**	**-**	**-**	**-**
Academy of Management Journal	ACAD MANAGE J	**3**	**19426**	**4.974**	**8.443**	**0.02525**	**5.244**
Journal of Supply Chain Management	J SUPPLY CHAIN MANAG	**3**	**1072**	**3.717**	**4.946**	**0.00200**	**1.079**
European Journal of Operational Research	EUR J OPER RES	**3**	**26370**	**1.843**	**2.625**	**0.04965**	**0.945**
Journal of Purchasing & Supply Management	J PURCH SUPPLY MANAG	**3**	**609**	**1.609**	**-**	**0.00091**	**-**
Academy of Management Review	ACAD MANAGE REV	**2**	**17707**	**7.817**	**9.698**	**0.01436**	**5.321**
Omega, International Journal of Management Science	OMEGA-INT J MANAGE S	**2**	**3829**	**3.190**	**3.626**	**0.00720**	**1.085**
Decision Sciences	DECISION SCI	**2**	**2671**	**1.561**	**3.025**	**0.00295**	**1.114**
International Journal of Production Research	INT J PROD RES	**2**	**9031**	**1.323**	**1.718**	**0.01090**	**0.351**
European Journal of Purchasing and Supply Management	-	**2**	**-**	**-**	**-**	**-**	**-**
Scholarly Journals	-	**2**	**-**	**-**	**-**	**-**	**-**
Information Sciences	INFORM SCIENCES	**1**	**12028**	**3.893**	**3.969**	**0.02642**	**0.889**
Journal of Cleaner Production	J CLEAN PROD	**1**	**8939**	**3.590**	**4.088**	**0.01540**	**0.751**
Knowledge-Based Systems	KNOWL-BASED SYST	**1**	**2629**	**3.058**	**2.920**	**0.00666**	**0.603**
Strategic Management Journal	STRATEGIC MANAGE J	**1**	**17225**	**2.993**	**5.929**	**0.01876**	**3.094**
Journal of Business Logistics	J BUS LOGIST	**1**	**491**	**2.886**	**3.713**	**0.00169**	**0.881**
Journal of Marketing Research	J MARKETING RES	**1**	**10909**	**2.660**	**3.796**	**0.01741**	**2.847**
International Journal of Information Management	INT J INFORM MANAGE	**1**	**1169**	**2.042**	**2.243**	**0.00237**	**0.509**
International Journal of Operations & Production Management	INT J OPER PROD MAN	**1**	**3238**	**1.518**	**2.472**	**0.00239**	**0.542**
Journal of Small Business Management	J SMALL BUS MANAGE	**1**	**1336**	**1.361**	**2.298**	**0.00151**	**0.641**
Journal of Business Research	J BUS RES	**1**	**6774**	**1.306**	**2.341**	**0.00969**	**0.631**
R&D Management	R&D MANAGE	**1**	**1500**	**1.266**	**2.635**	**0.00230**	**0.812**
Education	HIGH EDUC	**1**	**1949**	**1.124**	**1.354**	**0.00404**	**0.536**
Harvard Educational Review	HARVARD EDUC REV	**1**	**1293**	**1.080**	**1.317**	**0.00191**	**0.826**
International Journal of Computer Integrated Manufacturing	INT J COMPUT INTEG M	**1**	**817**	**1.019**	**1.143**	**0.00161**	**0.246**
IEEE TRANSACTIONS ON ENGINEERING MANAGEMENT	IEEE T ENG MANAGE	**1**	**1761**	**0.938**	**1.557**	**0.00228**	**0.540**
International Journal of Management Science and Engineering Management	EMJ-ENG MANAG J	**1**	**204**	**0.333**	**0.546**	**0.00013**	**0.065**
Journal of Purchasing and Materials Management	-	**1**	**-**	**-**	**-**	**-**	**-**
Procedia - Social and Behavioral Sciences	-	**1**	**-**	**-**	**-**	**-**	**-**
Total Quality Management	-	**1**	**-**	**-**	**-**	**-**	**-**
Total Quality Management and Business Excellence	-	**1**	**-**	**-**	**-**	**-**	**-**

APPENDIX B

Supplier evaluation models explanations

Data envelopment analysis

DEA is a nonparametric multi-factor productivity analysis model that evaluates the relative efficiencies of a homogenous set of decision-making units in the presence of multiple input and output factors. A unit with an efficiency score of 1 is considered to be efficient and a score of less than 1 indicates that it is inefficient. For every inefficient unit, DEA identifies a set of efficient units that can be utilised as benchmarks for improvement (Narasimhan et al., 2001).

AHP

This decision-making method is a technique for systematic considering of decision data and information - it can solve problems that have many criteria and it can be used in many different situations. The AHP method allows discussions and exchange of interpretations and includes mathematical calculations to eventually end up with one (or more) preferred options (Saaty, 1990).

Fuzzy AHP

By the integration of integral value calculation and the extent fuzzy approach, the ambiguities involved in the data could be effectively represented and processed to make a more effective decision. The reason why fuzzy AHP is used in supplier selection decision is that the decision making environment in such a system is so complex and with the help of fuzzy logic approach the model will represent the real life case more accurately (Aktepe and Ersoz, 2011).

APPENDIX C

Interview guide

A translated version of the interview guide can be seen at the next page.

Interview guide

26.01.15

Introduction

- About the research
- About the interview and analysis

Preliminary questions

- About the enterprise
- Type of products
- Their core competence
- About the interviewee

Theme 1: Supply Chain Management

- Tell us about your Supply chain.
- How does the value chain work?
- How many suppliers? Important suppliers…
- About the purchasing process; what type of purchase? When?
- The percentage of turnover being procurement?
- How do you get in contact with a supplier?

Theme 2: Byer-Supplier Relationship

- Can you tell us about your relationship with your suppliers?
- Communications
    - How, how often?
- Close / distant?
- Onetime purchase or Long-term relationships?
- Advantages / disadvantages of the different types of suppliers?

Theme 3: Supplier Evaluation Criteria

- What do you look for in a supplier? What type of criteria?
- Which criterion is the most important one?
- How to acquire information about the different suppliers?
- How do you choose a supplier?
- Do you have a list that you need to follow? Guidelines for purchasers?
- Where have these criteria come from?
- Who develops the criteria? Why?
- Are there different criteria for different types of products?

Theme 4: Supplier Evaluations Systems

- How you rank the different suppliers? Do you have an evaluation system?
- Do you have a system that does this automatically? A routine?
- Are some suppliers characterized as "strategic" supplier?
- Are the suppliers classified in different groups? What determines these groups?
- Do you treat suppliers in different groups differently? With regard to communication, involvement in projects etc.?

APPENDIX D

Evaluation systems enlarged

See next pages for the enlarged version of Kongsberg Maritime's and Dressmann's evaluation systems.

Table D.1: Kongsberg Maritime's evaluation system: SEAL

Supplier level	SUPPLIER	Agent	Bik Bok	Carlings	Cubus	Dressmann	Solo	Urban	Vivikes	Volt	Wearhouse	Wow	Factory no. (MF)	Factory Name	Country
L						*							MF00651		India
-			*			*							MF30054		Turkey
M						*							MF00311		China
M						*			*				MF00333		China
-			*		*	*	*				*	*	MF01068		Bangladesh
-			*	*	*	*			*			*	MF23319		China
M				*		*							MF00115		China
L			*		*	*							MF01070		Bangladesh
M						*							MF01154		China
L						*							MF00407		Norway
L			*	*	*	*			*	*			MF30056		Turkey
H					*	*							MF00421		China
M			*	*	*	*		*	*	*		*	MF30068		Turkey
-					*	*			*				MF01215		China
L						*							MF01076		India
M						*							MF00678		Bangladesh
-				*		*							MF004216		China
M			*	*		*		*					MF00911		China

Table D.2: Part of Dressmann's CSR list