

# Strategic Alignment in Procurement for a Swedish OEM: Supply Chain Management for Enhanced Performance

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# Abstract

<b>Title:</b>	Strategic Alignment in Procurement for a Swedish OEM: Supply Chain Management for Enhanced Performance
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<b>Collaborators:</b>	CEPA Steeltech AB
<b>Background:</b>	Developing strategies to meet different customer demands and conditions is important for companies to succeed. This thesis explores how to differentiate larger customers demand with the company's own business objectives in mind for a small procurement organization.
<b>Purpose:</b>	The purpose of this thesis is to provide recommendations for CEPA's procurement organization to improve performance by better aligning with key customers.
<b>Research Questions:</b>	RQ1: How does the present procurement organization perform with regards to strategic alignment to the rest of the supply chain? RQ2: How can relevant procurement methods, principles, and tools contribute to enhancing the performance of CEPA's procurement organization? RQ3: How should CEPA strategically evolve its procurement practices to address current challenges and align with broader organizational objectives?
<b>Methodology:</b>	Single, embedded case study.
<b>Findings:</b>	The study found strategic misalignment between the key customers and the procurement department. Where two main customers, consisting of different supply chains needing of different approaches, is currently approached with the same strategy.
<b>Key words:</b>	Strategic alignment, Procurement, Purchasing, Just In Time, Original Equipment Manufacturer



## Sammanfattning

<b>Titel:</b>	Strategisk linjering inom inköp för en svensk OEM: Supply chain management för förbättrad prestanda
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<b>Samarbetspartners:</b>	CEPA Steeltech AB
<b>Bakgrund:</b>	Att utveckla strategier för att möta olika kundkrav och förutsättningar är viktigt för att företag ska lyckas. Denna avhandling utforskar hur man kan särskilja större kunders krav med företagets egna affärs mål i åtanke för en liten inköpsorganisation.
<b>Syfte:</b>	Syftet med denna uppsats är att ge rekommendationer till CEPAs inköpsorganisation för att förbättra prestandan genom bättre linjering till nyckelkunder
<b>Forskningsfrågor:</b>	F1: Hur presterar den nuvarande inköpsorganisationen när det gäller strategisk linjering till resten av försörjningskedjan? F2: Hur kan relevanta inköpsmetoder, principer och verktyg bidra till att förbättra prestandan för CEPAs inköpsorganisation? F3: Hur bör CEPA strategiskt utveckla sina inköpsmetoder för att möta aktuella utmaningar och anpassa sig till bredare organisatoriska mål?
<b>Metodologi:</b>	Singel, inbäddat fallstudie.
<b>Resultat:</b>	Studien fann strategisk olinjering mellan nyckelkunderna och inköpsavdelningen. De två nyckelkunderna, som har olika krav på försörjningskedjans tillvägagångssätt, hanteras för närvarande med samma strategi.
<b>Nyckelord:</b>	Strategisk linjering, Anskaffning, Inköp, Just In Time, Original Equipment Manufacturer



# Acknowledgements

Contribution: This thesis has been a complete collaboration between the two authors. Each author has been involved in every part of the process and contributed equally.

This master's thesis is the final project of our Master of Science in Mechanical Engineering at Lund University. The years pursuing our education here in Lund have been very fruitful. We have developed competencies and skills that prepare us for future work life, as well as strengthening our own characters. Firstly, we would like to send much gratitude towards our university supervisor Eva Berg, who has been an instrumental part of our journey. Her concise feedback and positive encouragement have been valuable. Secondly, we would like to thank Stefan Kraft, our supervisor at CEPA for his generous attitude towards us pursuing our ideas in the thesis. He has been positive to us collecting data and we appreciate his humility. Thirdly, a great thanks to all individuals at CEPA that has helped us throughout this thesis. Their professionalism and humility has been consistent throughout this thesis. Lastly, we would like to thank each other for completing such an extensive project that proved joyful.

Jonatan Andersson & Björn Lindgren  
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# Abbreviations

JIT = Just in Time

TP = Traditional Purchasing

AHP = Analytic hierarchy process

WIP = Work in progress

SCM = Supply chain management

DOT = Delivery on time

OEM = Original Equipment Manufacturer

Q1 = First Fiscal Quarter, etc.

EOM = End of Month

KPI = Key performance indicator

MOQ = Minimum Order Quantity

SCRM = Supply Chain Risk Management

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# Chapter 1

## Introduction

### 1.1 Company Profile

This master thesis is carried out in association with Ceba Steeltech AB (**CEPA**), which is a part of Stockforsa Invest AB. It aims at exploring the company's procurement operations and to compare its situation with relevant literature. The findings will be summarized, leading to the development of recommendations for the company. CEPA has about 80 employees and is located in Höör, Skåne, Sweden. The company also has production in Poland on a smaller scale than in Sweden. CEPA is a subcontractor in the engineering industry and the biggest customers are Customer A and Customer B. The company is an Original Equipment Manufacturer (**OEM**) and produces parts for other, often more complex products.

### 1.2 Background and motivation behind the project

As business becomes increasingly competitive, procurement becomes more recognized as a key business driver and its role as an important part in the value chain becomes increasingly fixed. Since most companies spend more than half their sales turnover through the procurement of materials and services, it is no surprise that there are great advantages to be had for companies that are efficient in their procurement (van Weele and Rozemeijer, 2022).

The procurement organization can work with a number of different strategies and principles to successfully supply the production with material cost efficiently. One strategy or set of principles is not necessarily better than another, but is simply better suitable for different sets of circumstances (Chopra and Meindl, 2007). As an example, a company that deals with a high degree of certainty in demand and works with accurate forecasting might not focus on responsive procurement. This is because more accurate forecasts allow for more accurate production planning, which requires less responsiveness from the procurement organization as they can plan and act on more certain information. Another company might be in a market segment where there is a lot of uncertainty regarding demand. This would invite a more responsive strategy and it might be wise to work and reduce lead times from suppliers (Fisher, 1997).

In the manufacturing industry, the unavoidable tie-up of capital in various inventory

types forces companies to consider the associated costs and financial commitments. In the given context, procurement organizations play a crucial role in reducing tied-up capital. By strategically managing procurement, these organizations can optimize inventory levels, ensuring that they meet demand without excess storage. Efficient procurement practices can contribute to minimizing the capital tied up in material (van Weele and Rozemeijer, 2022). CEPA has expressed a desire to reduce their degree of tied up, which is one of the goals this thesis aims to help them achieve long-term.

The degree to which Swedish companies communicate their supply chain strategy to suppliers and customers is lower than the communication with top- and middle management (Norrman and Näslund, 2013). This is a cause for misalignment in the supply chain and incentives might need to be introduced to align the supply chain. Misaligned incentives often lead to issues such as excessive inventory, stock-outs, inaccurate forecasts, inadequate sales efforts, and even poor customer service (Narayanan and Raman, 2004).

*“A supply chain stays tight only if every company on it has reasons to pull in the same direction.” (ibid.).*

As one of the authors of this thesis has for a short period worked with operational purchasing at CEPA, this thesis has its foundation in the observations made during that time. The operational performance of the procurement organization is mainly related to the operator’s judgment. It does not necessarily follow a set of predetermined and carefully set principles based on science and studies conducted for similar companies aiming at increasing operational performance operating in a similar context.

Performance in this context refers to the organization’s ability to enhance the efficiency of producing and delivering products to customers, resulting in improved quality and reduced lead times. This, in turn, contributes to enhancing the organization’s position in the market. This definition is derived from Younis, Sundarakani, and Vel (2016).

### 1.3 Problem formulation

CEPA has expressed a desire to oversee their procurement division. The initial information from CEPA highlights a multitude of problems and areas that need to be investigated further. Some examples of problems include:

- High degree of tied-up capital - leading to increasing costs, especially now with holding cost rent going up, due to interest rate hikes (Bank, 2024).
- Low inventory turnover rate: This may indicate overstocking, resulting in high storage costs and potential obsolescence.
- Problems with liquidity, cash flow and payment terms.

These are examples of problems, or symptoms, that point to a larger underlying issue. It is evident that the purchasing organization could be more efficient and possibly that the supply chain is suboptimal in terms of strategic alignment.



## 1.4 Purpose

The purpose of this thesis is to provide recommendations for CEPA's procurement organization to improve performance by better aligning with key customers.

## 1.5 Research questions

***RQ1: How does the present procurement organization perform with regards to strategic alignment to the rest of the supply chain?***

This question first seeks to gain insight into the supply chain and the context in which CEPA operates before evaluating the current situation and the performance of the procurement organization. It is essential to understand the company strategy and the demands that are placed on the organization before trying to evaluate its performance. It is first when the context and the current situation are understood that RQ2 and RQ3 can be answered.

***RQ2: How can relevant procurement methods, principles, and tools contribute to enhancing the performance of CEPA's procurement organization?***

This question aims to explore the academic literature that could be relevant to define and increase performance for CEPA and the current situation of procurement organizations. This is based on the strategy explored in RQ1, which should align with the demand of the production, market, and key customer segments.

***RQ3: How should CEPA strategically evolve its procurement practices to address current challenges and align with broader organizational objectives?***

Here, the question aims to result in recommendations for CEPA based on the current situation explained in RQ1 and the relevant academic literature explored in RQ2. It is impossible to base recommendations solely on the current situation or solely on the literature. Both are needed to make recommendations, since it is circumstantial. That is why performance for the procurement organization can not be defined correctly before we understand the situation and the demands that are placed on the organization.

## 1.6 Limitations

The primary focus of the master thesis will be to investigate CEPA's procurement organization. The first part of the process will be to collect qualitative data through interviews with actors in the CEPA's supply chain. The thesis will feature two embedded cases, namely, Customer A's and Customer B's supply chains. Qualitative data will be collected from customers, CEPA and from the first-tier supplier in the supply chain. First-tier suppliers are the suppliers in direct contact with CEPA, instead of e.g. second-tier suppliers that are a the supplier of a supplier. Quantitative data will be collected through the CEPA's ERP system and through surveys. The thesis will ultimately lead to recommendations for the company, although it should be noted that these recommendations will not be implemented as part of the thesis itself.

## 1.7 Outline of the thesis

### Chapter 1 - Introduction

The introduction gives a background to why the thesis is relevant to pursue academically and practically. The introduction includes an academic background on the subject as well as the company. Furthermore, problem formulation, purpose, research questions are presented here.

### Chapter 2 - Methodology

This chapter gives an overview of the methodology used in the thesis proposed by Yin (2017). It gives a description of the case study used, how the data was collected, and finally how it was analyzed. It also covers the research credibility of the thesis.

### Chapter 3 - Frame of reference

The frame of reference presents existing literature within the subject area. It is divided into two main areas: strategic alignment and procurement strategies. Strategic alignment is more company-focused; procurement strategies is more procurement-focused. The frame of reference ends with an investigating framework.

### Chapter 4 - Empirical Study

The empirical study comprises data collected from interviews, observations, surveys, and archival records. It begins by collecting data from all points of view to better understand the supply chain and the alignment within it. Then it continues with data collected regarding the procurement organization. Lastly, the empirical study concludes with an in-depth examination of data collected from the ERP system.

### Chapter 5 - Analysis

The analysis is based on the data collected from the empirical study and is compared to the investigation framework from the reference frame. Suitably, the analysis chapter follows the same structure as the frame of reference chapter.

### Chapter 6 - Discussion and recommendations

In this chapter the analysis is discussed and based on the discussion recommendations to the company are made. The recommendations are mainly linked to procurement strategy related to their largest customer as well as CEPA's supplier delivery performance.

### Chapter 7 - Conclusion

The last chapter ends the thesis by looking back at chapter 1 and answering its research questions. It also specifies how the thesis has contributed to academia in form of theory and how it contributed to the company practically. Finally, the chapter concludes with limitations and possible future research on the area.

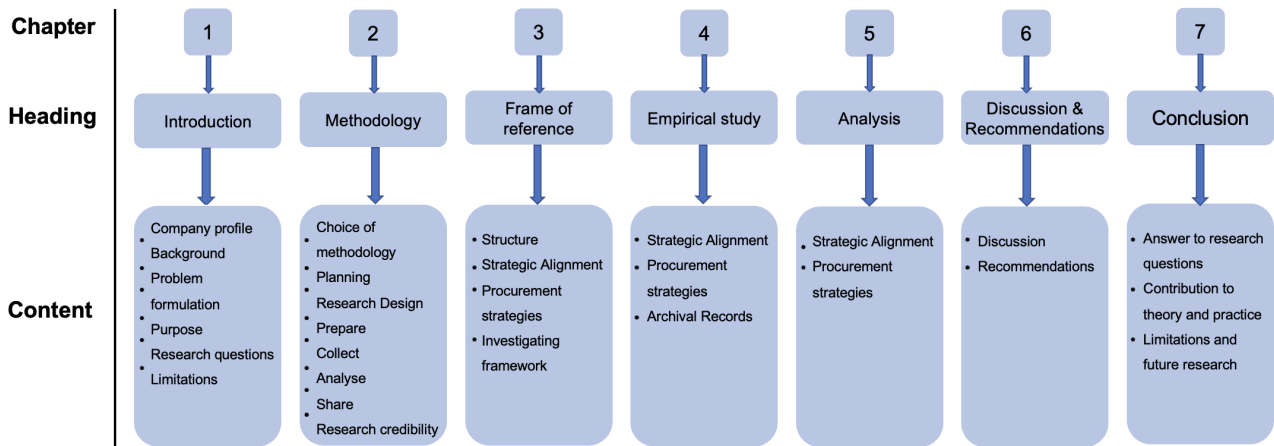


Figure 1.1: Outline of the thesis

# Chapter 2

## Methodology

### 2.1 Choice of method

A case study investigates a contemporary phenomenon in depth and within its real-world context. The phenomenon in this thesis is the role of a procurement organization in strategic alignment for an OEM. Although previous master theses have covered procurement for OEM, these have often been for larger organizations. Therefore, knowledge can be gained by looking at a smaller organization. The case study research was better suited for the thesis, as the project aimed to better analyze the role of procurement organizations in strategic alignment, rather than to solve a specific problem (Holmström, Ketokivi, and Hameri, 2009); (Yin, 2017).

There are different case study research methodologies to choose from. The one featured in this master thesis comes from Robert K. Yin shown in Figure 2.1. Yin (ibid.) proposed a linear but iterative work process, which is suitable for this thesis. For example: When the data collection or analysis phase began, it was reasonable to expect that the authors of the thesis would have to return to the literature review. Another reason being that input from management at the company could change the thesis's direction. Worth mentioning is that the Division of Engineering Logistics, where the thesis was written, recommended Yin for case studies.

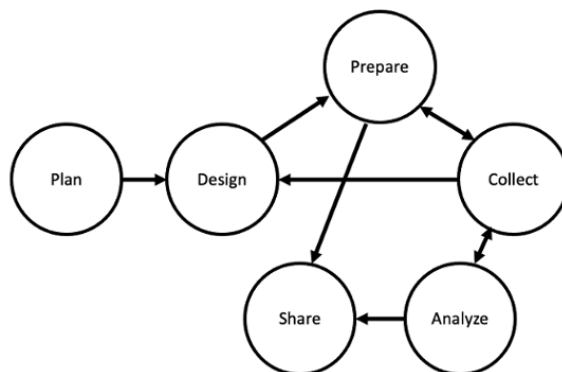


Figure 2.1: The thesis's work process taken from Yin (2017, p.30)

## 2.2 Planning

The first part of planning was to identify the relevant situation for doing a case study compared to other research methods. As Yin (2017) pointed out, there is no exact formula for choosing case study research, but there are factors that indicate it. However, the more research questions that seek to explain some contemporary circumstance, the more suitable case study research becomes. Table 2.1 displays which research method is suitable depending on the conditions.

Table 2.1: Choosing between different research methods according to Yin (2017).

Method	(a) Form of Research Question	(b) Requires Control Over Behavioral Events?	(c) Focuses on Contemporary Events?
Experiment	how, why?	yes	yes
Survey	who, what, where, how many, how much?	no	yes
Archival Analysis	who, what, where, how many, how much?	no	yes/no
History	how, why?	no	no
Case Study	how, why?	no	yes

The research questions featured in the master thesis could be categorized as "how" and "why". Since the case is the purchasing department with embedded unit of analysis participating in supply chains, control over behavioral events are impossible. Control over behavioral events would be necessary in an experiment-like setting, where a hypothesis is tested. This leaves contemporary events as the divider between history and case study. Since a company's procurement division and its underlying supply chains were examined in real time, there was a focus on contemporary events.

There are many different types of case studies, as shown in Figure 2.2. A primary distinction in the design of case studies is between the single case study and the multiple case study (ibid.), where this thesis is a single case study. The reason being that the case of CEPA's procurement organization is a common case as Yin (ibid.) puts it. Where day-to-day purchasing decisions and processes might not align with the functional strategy, which is affected mainly by demand and supply uncertainties. In addition, the functional strategy might not align with the business objectives and the competitive strategy of the organization, which should be derived from customer priorities. Therefore, a single case study was deemed appropriate on the basis of this rationale.

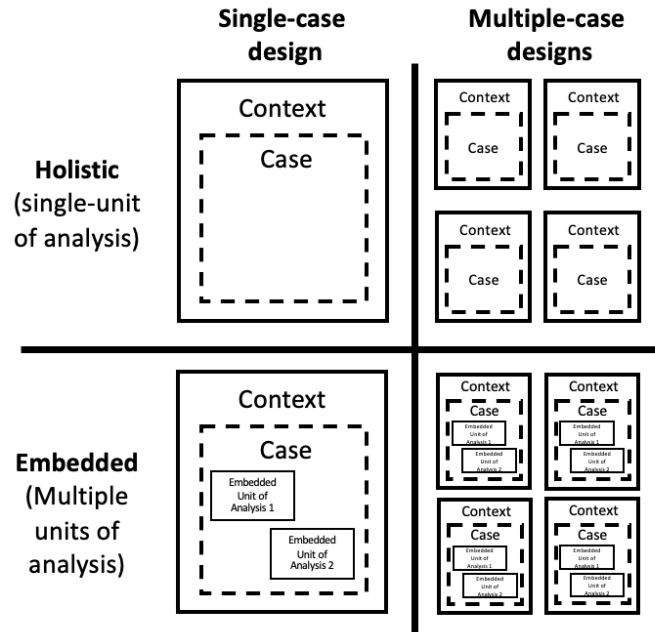


Figure 2.2: Different types of design for case studies (Yin, 2017, p.54)

In the case of CEPA’s procurement organization, there is a specific context within which they operate, which is illustrated in Figure 2.2. In this case, the context is the Swedish manufacturing industry that CEPA is a part of. A case study can go deeper where the case contains embedded units of analysis. It could also have a more holistic approach. An important remark to differentiate the holistic and the embedded case study is that the subunits need to be a part of, or within, the the original case according to Yin (2017) for it to be an embedded case study. CEPA’s main supply chains can be divided into two parts; Customer A and Customer B. These two can be considered to be logical subunits for CEPA’s procurement organization and therefore the embedded units of analysis.

In contrast to a holistic case, an embedded case study provides more logical limitations since the subunits are already defined and the research questions are set. The subunits also add opportunities for extensive analysis, enhancing the insights and adding credibility to the single-case. However, a potential problem with an embedded case study could be that too much emphasis is put on the subunits, ultimately failing to return to the original unit of analysis. An advantage of having embedded units of analysis is that you can compare them through a cross-case analysis and gap them towards each other and relevant literature. This could act as a decision making basis for how CEPA should operate in the future.

## 2.3 Research Design

The research design is the logical plan to get from the research questions to the conclusion of these questions. In a case study such as this, there are five crucial

components that are especially important for a case study, which is laid out here. The first component is the questions themselves and whether a case-study approach is suitable for them at all. As the questions in this thesis are explanatory, “How” questions, they are the first sign that implies that a case study could be suitable (Yin, 2017), this has been elaborated on earlier in the subsection "Planning".

Secondly, propositions might be needed to start moving in the right direction. The propositions in this case are not as critical as one might think since each research question builds on each other. But one proposition that starts research questions 1 of is that the procurement’s organization performance is sub-optimal. If not, it would be optimal and RQ2 would not be a necessary question, since it would not be possible to further enhance the performance. Third, the case itself must be clearly defined; In this thesis, it is CEPA’s procurement organization, which has clearly defined boundaries as an organization.

Fourth, linking data with propositions is a component of the case that foreshadows the data analysis, research questions, and the eventual propositions connected to these. The analysis that later will combine the data or assemble it to eventually reach a conclusion that should be built directly on the collected data. This way it follows a clear pattern, with one of its aims being reducing the likelihood of collecting data that are not used, as it consumes time and effort, or collecting too little data to prevent proper analysis.

Lastly, one should think about how to interpret the strength of the case study findings. In many studies based on statistical methods, one considers it statistically significant if  $p < 0,05$ . In a case study such as this, much of the analysis will not rely on statistical methods, and therefore it is important to use an alternative to validate the findings. In this thesis, the research design, analysis, and conclusions drawn from the collected data was to find, address, and discuss alternative explanations for the findings. The more alternatives that are addressed and rejected, the stronger the thesis findings will be (ibid.).

## 2.4 Prepare

### 2.4.1 Desired skills for the researchers

Proper preparation for data collection is crucial; If not done well, it can jeopardize the case study, rendering the work done up to that point in vain. The data collection procedure itself is not randomized in a case study, which increases the demand for researchers’ skills. In accordance with Yin (ibid.) the first, a central part of this stage is to understand these desired skills and values that the researcher of the case study should possess. These skills are as follows.

#### **Developing a protocol for the study**

A case study protocol and a survey questionnaire have only one thing in common, namely that they both ask questions that are directed at a single focus for data collection. A case study protocol is more than a set of questions and consists of procedures and general rules to be followed. It should consist of the following sections:

- An overview of the case study which consists of: the objectives and guidance, case study issues, and the relevant reading for topics investigated.

- The data collection procedures which consists of: procedures to protect human subject, the identification of likely sources of data.
- The protocol questions which consists of: the specific questions for each potential source of information.
- The outline for the case study report which include: the formation of data, use and presentation of relevant documents and bibliographical information.

This can be seen in Appendix A.

### **Training for a specific case study**

The goal with the training is that all members of the case study team understand the basic concepts, terminology, and methodological issues relevant to the study (Yin, 2017). In this case with a case study team consisting of two members, many of the training steps suggested by Yin (ibid.) follow naturally; such as the discussion of the purpose, the main research questions, and the selection of the case. The review of the case study protocol and it's relevant theoretical framework and literature is something which the case study researchers are doing thoroughly, as well as the methodological review.

### **Asking good questions**

Good questions leading to a rich dialogue paved with evidence which prompts further explorations with the potential for unexpected insights are part of the core of the case study research methodology. The key takeaway is that successful case study researchers are characterized by their ability to ask meaningful questions that do not simply seek answers, but drive research forward (ibid.).

### **Being a good listener**

Being a good listener is about being able to receive a large amount of new information without bias (ibid.). It is about hearing the exact words used, since the terminology often reflects an important perspective. Also, capture the mood and maybe most importantly understanding the context from which the interviewees is perceiving the world as it is important to understand what the interviewee means and not only what they say. There are also benefits to be had for being able to catch important messages between the lines, something that a poor listeners may not even realize is there (ibid.).

### **Staying adaptive**

A case study can start to drift in a different direction than originally planned. It is then important to remember the purpose of the case study, but also to be willing to adapt procedures or plans when new events that were not expected occur (ibid.). Minor changes are inevitably necessary as few case studies will end exactly as the researchers planned.

### **Have a firm grasp of the issues being studied**

The main way to stay on target is to recall the purpose of the case study. The frame of reference and purpose will both be needed. Analytical judgments must be made during data collection as to what to pursue further and if something contradicts another source of information (ibid.).



## 2.4.2 Research ethics

To perform a trustworthy case study, the researcher must strive for the highest ethical standards possible. It is important to be aware of one's own biases and to try to avoid them. One potential bias is the ability not to be open to contrary evidence. If research comes up that negates your finding, a researcher might not bring it up. In addition to avoiding biases, the elements of ethical research are as follows:

- Avoiding plagiarizing and falsifying information
- Taking responsibility for your own work
- Keeping up with relevant literature to ensure credibility.
- Specifying limitations and keeping information confidential if needed.

Extra care should be taken when research involves human subjects. It is the researcher's duty to inform participants on the context of the case study, this being a prerequisite to gain their informed consent. The researchers of this thesis have offered anonymity for its interviewee subjects as well as asking permission to record the interview. Company representatives have been given examples of sensitive information in the thesis and the report has been changed to meet these wishes to the extent where it does not hurt the validity of the thesis.

## 2.5 Collect

The data collection in this thesis has been carried out through interviews within the case company CEPA, as well as surveys to suppliers and customer, and historical data through the ERP-data. The archival data from the ERP-system has been collected to further investigate and bring up quantitative data based on the qualitative data from the interviews.

### 2.5.1 Literature review

The purpose of the literature review is to identify and demonstrate an understanding of already established knowledge within the subject. It summarizes existing knowledge to prepare researchers for their work. According to Rowley and Slack (2004), all research needs to be informed by existing knowledge in the subject area. This is crucial because in order to add to established knowledge on strategic alignment and procurement strategies one needs to know the knowledge that laid the foundation academically. When gathering literature, multiple academic articles and textbooks were used. These were mainly found through LUBsearch, Google Scholar, Web of Science and through previous courses at Lund University. LUBsearch and Web of Science are both accessible through Lund University. When searching for articles and textbooks keywords were used such as: strategic alignment, procurement strategies, JIT-purchasing, to name a few. The literature review started with scanning documents, inspired by Rowley and Slack (*ibid.*). Scanning documents is time efficient and gives a some insight to themes that should be included in the literature review.

Initially, the literature review was grouped into three large parts, namely: strategic alignment, procurement strategies, organizational development. However, due to the thesis direction changing its course during the project this was reconsidered. The most vital parts "Organizational development" were moved into Strategic Alignment and Procurement strategies. Another reason why "organizational development" was

removed was due to time constraints. In Figure 2.3 the scope of the data collection is shown.

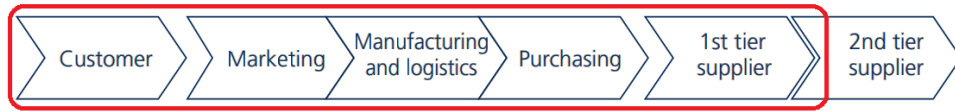


Figure 2.3: The flow of demands in the supply chain, with the thesis's limitations encircled. Own illustration based on van Weele and Rozemeijer (2022, p.213)

### 2.5.2 Interviews

When data were collected through interviews, it was important to understand that the context in which one is trying to gather information should guide how the interview is conducted. According to Lekvall (2007), an exploratory study, or a partial exploratory study, has a frame of reference prepared before the interview. There is often a vast amount of data that is collected through these exploratory and explanatory interviews, which often creates a need to work iteratively with the literature to the established frame of reference. It was also suggested by Lekvall (ibid.) to approach each interview as a regular and relaxed conversation and to avoid any similarities with a cross-examination, which is in line with how Yin (2017) suggests approaching interviews.

By approaching an interview as a casual conversation and starting each new subject with broad open-ended questions, one can expect to gather as much relevant information as possible with ease for both the interviewee and the interviewer (Lekvall, 2007). There could of course be cases where the interviewees answer leaves more to the imagination than what is wanted within a subject; this invites according to Lekvall (ibid.) the interviewer to ask probing questions. An example of an interview guide used is seen in Appendix B. This is a form of question where an encouraging sound, body language such as a nod, or follow-up question is asked to get more information from the interviewee in an informal and open way to get more information of higher quality.

It is important to understand that there might occur misinterpretations, as two different interviewees might mean different things by expressions commonly used. It is therefore of great help for the quality of the data collected that one tries to define expressions and word to make it substantial (ibid.). If interviewee A answers "Often" to a question regarding e.g. how often an order is placed to a certain supplier, that might mean a few times each day. For interviewee B, the answer "Often" might mean every week. At first glance at an interview protocol one might not notice, but the underlying difference could be huge and is best clearly defined by follow-up questions.

In this case study, CEPA managers and employees were interviewed. Originally, representatives from customer companies and first-tier suppliers were supposed to be interviewed as well. Due to these being difficult to reach, surveys were sent out

instead, as suggested by the market manager. The survey sent to customers are seen in Appendix C and the survey sent to the suppliers are seen in Appendix D. One of the topics which is covered in the interviews is strategic alignment, where data is collected through the supply chain to see if value is co-created in an efficient way, or if there are misalignments that could be addressed in a later stage of this thesis. In interviews, one often sees the "hows" and "whys" that many case studies set out to find (Yin, 2017).

With a broad range of interviewees spanning from top management to employees engaged in daily operations across various functions and departments, including sales, purchasing, production, and warehousing; There arises a crucial need to standardize questions and define expressions to ensure the quality of substantially important data. There are different ways of standardizing the questions, one that is rather obvious is to phrase each question in the same way for each interviewee (objective standardization), another way is to phrase each question in a way that the interviewee is likely to be most likely used to (subjective standardization) (Lekvall, 2007). The interviews that were held in this case study have an informal approach to allow for exploratory changes in the interview, as well as explanatory. It will use objective standardization for questions that were asked to multiple interviewee, e.g., questions regarding the corporate strategy of CEPA.

The aim of the interviews shown in Table 2.2 is to develop a understanding of the CEPA business and its corporate strategy, the market, and how managers and employees work in relation to this. When data were collected on the context in which CEPA operates, such as uncertainties and product characteristics, data were collected through follow-up interviews for the procurement organization. This organization consists of two people, one procurement manager and one operational purchaser. The selection of the interviewees was determined by the flow of demands depicted in Figure 2.3, to identify any misalignments.

Table 2.2: Interview sessions

<b>Interview Object</b>	<b>Date</b>	<b>Interview length [minutes]</b>
Procurement manager	2024-02-12	61
Plant manager	2024-03-12	43
Marketing manager	2024-03-13	68
Production manager	2024-03-13	62
Operational purchaser	2024-04-02	44
Warehouse manager	2024-04-02	64
Procurement manager	2024-04-10	51
Operational purchaser	2024-04-16	57

Here observations were made in daily work, where the processes connected to procurement were mapped. Decisions on an operational, tactical and strategic level were examined with the data from the interviews regarding strategy in mind, to see if there is a misalignment. The analysis made from this data required quantitative data from the ERP system that would help to examine whether there was alignment in the

strategy and operations, by providing a true depiction of operational coherence.

### 2.5.3 Archival records

The ERP system has been a vital tool in collecting data during the master thesis. The ERP system can be seen as an archival record of Yin (2017). A strength of the ERP system is that it is precise and provides quantitative data. Yin (ibid.) lists a number of strengths in having archival records in your case study research: stability, unobtrusiveness, specificity, and broadness. Extracting data from an ERP system is useful because it can be used any number of times during research. One of its main strengths is its broadness, while it can also be very specific. Some weaknesses of an archival record can be retrievability, biased collection, and accessibility. Data can be difficult to retrieve in terms of knowing where to look. Another potential danger is that the researcher is biased when it comes to collecting data. An example of this can be if the researcher unknowingly leaves out important data. And when appropriate data are found, another problem can be gaining access to those data. Data extracted from the ERP study have been extracted from the one-year period of 1/1 -2023 to 31/12 -2023. An example of data extracted from this period is from invoices in the system, and more specific such as: payment terms, amount of cash to be able to weight them. As well as amount of deliveries over year 2023, with order confirmed dates and the actual arrival date.

### 2.5.4 Surveys

In a case study, it is important to use triangulation through multiple sources of evidence (ibid.). For this, surveys were used as it is an efficient way of collecting quantitative data from multiple respondents. The survey sent to customers is shown in Appendix C and the survey for suppliers is shown in Appendix D. Originally surveys were going to be used explicitly to gather data from customer and suppliers, outside of the supply chains of Customer A and Customer B. But due to not being able to get an interview with Customer B, surveys was used instead as suggested by the Market manager. The survey started by introducing the subject studied and the purpose, and will include any instructions that are needed for the respondent to complete the survey. The questions asked, or the rated statement, would then follow an order that felt natural and logical, and the first couple of questions should not be too sensitive or demanding according to Lekvall (2007). The survey includes information about who is answering the questions; in the case of this case study, it could be relevant to see if the respondent is working on a strategic, tactical, or operational level. This to put the answers in the right perspectives and explore alternative explanations to why they have answered in a certain way. Another method of the survey is the use of control questions, where a question that aims to extract a certain piece of information is repeated and phrased in a different way, to see if the respondent is consistent (or truthfully) when answering the questions (ibid.). These types of control questions should be used sparsely since it puts an extra strain on the respondent.

When conducting quantitative data collection, one has to think through variables. A variable is something that attributes value. There are different scales to use when conducting surveys. The surveys featured in this case study, see Appendix C & D, was a Likert scale since only the values at the end have an explanation giving an interval. For example, a survey question on how satisfied customers are with CEPA as a supplier was a scale between 1 and 7. Here, 1 is defined as the worst possible and 7 extraordinary (ibid.).

Initially, data collection was planned to be carried out through interviews, as seen in Appendix A, Figure 7.1. However, getting them to participate in an interview proved to be difficult. This prompted the use of surveys instead; see Table 2.3. Surveys were sent to customers as well as suppliers, customers' surveys can be seen in Appendix C, and the suppliers' survey can be seen in Appendix D. The ten largest customers represented 80% of the company turnover and suppliers for 70% of procurement costs. Suppliers were much more willing to respond than customers. The customers only had an answer frequency of 40% as opposed to the supplier's 90%. The validity of the surveys depends on how many responses each survey received. Important to note is that the surveys have both a quantitative and a qualitative part. So, even though only four customers answered the customer surveys, their qualitative part has more validity than the quantitative. The suppliers were in turn more willing to answer surveys and the quantitative part has more validity here since nine answered. Due to the small sample size, the qualitative part is more of interest in the surveys than the quantitative part. An important note is that Customer B did not answer the survey, which is discussed in further detail in Section 2.8.

Table 2.3: Answer Frequency Surveys

Surveys	Answers	Surveys Sent Out	Answer Frequency
Customers	4	10	40%
Suppliers	9	10	90%

The ten customers chosen for the surveys were the top revenue contributors in 2023, representing the ten largest in terms of revenue share. Similarly, the ten selected suppliers were chosen based on their share of spend, representing the top ten suppliers where the highest expenditures were made in 2023. This was made to capture as much direct value by collecting insights from the important suppliers. The decision to send out surveys was made in collaboration with the market manager, as no response was given to a requested interview for Customer B. An interview with Customer A was deemed unlikely according to the Marketing manager, while an answer to the survey was not. The dates for the surveys to suppliers, shown in Appendix D, and the surveys to customers, shown in Appendix C, are shown in Table 2.4, as well as the dates for the reminders sent.

Table 2.4: The dates for when surveys to suppliers and customers, first reminder, and second reminder, was sent

	Suppliers	Customers
<b>Survey sent</b>	19/03-2024	24/03-2024
<b>First reminder sent</b>	22/03-2024	27/03-2024
<b>Second reminder sent</b>	No second reminder was sent	03/04-2024

## 2.6 Analyse

For case study analysis, there are few fixed formulas or instructions to use. Rather, it depends more on the researchers own style of empirical thinking, evidence presentation, and considerations of alternative interpretations. Although it was difficult to

know in advance how the data would be analyzed, Yin (2017) pointed out four strategies for analysis.

1. Relying on theoretical propositions
2. Working your data from the "ground up"
3. Developing a Case Description
4. Examining plausible rival explanations

This thesis has used Yin (ibid.) second strategy, working with data from the "ground up". This means that this method involves immersing oneself in the data to identify patterns and concepts. This approach can lead to the development of new insights and relationships within the data. This is in line with the thesis's research questions as one needs to immerse itself in the data in order to answer them. As for the structure of the analysis, the analysis builds upon previous chapters such as Chapter 3: Frame of reference, see page 18 and Chapter 4: Empirical study, see page 40. The analysis is divided into two subchapters: Strategic alignment and Procurement strategies. Customer A and Customer B have been compared to relevant literature that is shown in the Frame of reference. The summarized findings can be found at the end of the subchapters. Besides Yin's analytic strategies, he proposes five analytic techniques for case study research:

1. Pattern Matching
2. Explanation Building
3. Time-series Analysis
4. Logic Models
5. Cross-case synthesis.

Pattern matching is according to Yin (ibid.) one of the most sought after techniques. It is a technique used to compare what your empirical data with your predicted data (propositions). The method helps validate findings of the case by seeing if reality matches your predicted data. If this is the case, this strengthens the internal validity of the case study. Pattern matching has been used in the thesis.

Explanation building is a type of pattern matching but more complex. It is used to analyze case study data by creating an explanation of the case. The goal is to build an explanation about how or why a particular outcome happened. This is suitable for explanatory case studies like this one since it aligns with the research questions being "how" and "why". To explain something means to outline a presumed set of causes and sequences that led to an outcome. Explanation building has been used in this thesis.

Time-series analysis is a technique where you examine data points collected at different times to identify patterns and changes over time. This technique was deemed not suitable for this thesis as there are no thesis data that was mainly built upon CEPA's 2023 numbers.

Logic models are tools used to visualize the sequence of events in a process. They show how each event or outcome leads to the next in a cause-effect pattern. Logic models are useful in case study evaluations and studying theories of change. Logic models were deemed not relevant for the thesis.

Cross case synthesis is the last technique and only applies for multiple-case studies. Because of this this technique will not be used in the thesis since this thesis is a single case.

## 2.7 Share

This case study was shared through a final report, both to the company CEPA and to and through Lunds University. The conclusion and findings will also be presented at Lunds University orally. An important part in this stage is to include and display enough evidence for the readers to draw their own conclusions (Yin, 2017).

## 2.8 Research quality and credibility

A large share of the data collection of this study has been interviews in which CEPA's managers and employees have been interviewed. Since the study is focused on strategic alignment, data from customers have been collected, but in surveys rather than interviews. This was done because Customer B was unable to be contacted to participate in an interview, which hurts the credibility of this thesis, mainly by lowering its validity. To combat this, the surveys included other customers to be able to identify patterns, as well as focusing on qualitative questions. In-depth interviews with strategic purchasers or procurement managers at Customer A and Customer B would strengthen the credibility of the study. However, Customer B did not respond to the survey and therefore the data related to Customer B are less credible. This primarily limits the validity of the study, and restricts the amount of analysis and conclusions that can be made in regards to Customer B.

Data were collected through the ERP system, focusing on 2023. To ensure reliability and avoid seasonal bias, this data span a full year. As mentioned in this thesis, the lead times in the ERP system at CEPA seem to not be updated regularly. This raises the question of the reliability of the rest of the data in the system. However, the data that has been collected are in part financial data, which have more significant consequences and need to match customers and suppliers, which strengthens its reliability. As for the data collected in regards to the delivery precision's, this is something that is updated for each separate delivery and is deemed reliable.

# Chapter 3

## Frame of reference

### 3.1 Structure of the chapter

The chapter presents the relevant literature that acts as the basis for conducting the case study. Figure 3.1 presents the structure and how each area of the literature is related to the research questions. The literature review starts off by gathering information about strategic alignment, this is because this will be more vital for research question 1. The Data collection phase will heavily rely on the strategic alignment literature. Procurement strategies will be affecting all research questions as this is the most purchasing specific area. Worth noting is that in congruence with the RQs building upon each other, the same goes for the literature parts.

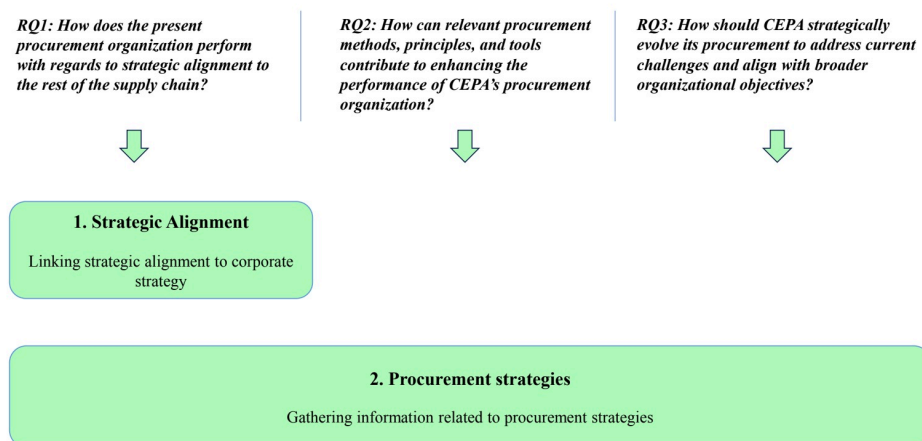


Figure 3.1: Image of the structure for the literature chapter.



## 3.2 Strategic alignment

Supply chain managers will succeed only if they understand the needs of key customers and strive to maintain alignment between the supply chain's design and its customers' changing needs and desires.

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*Melnyk et al. (2010, p.38)*

Strategic alignment ensures that objectives, structures, and processes fit both internal and external members of the supply chain, as well as the various functions (Wong et al., 2012). Supply chain management (**SCM**) involves resolving the imbalances caused by conflicting objectives in marketing, sales, manufacturing, and distribution by effectively managing the trade-offs between supply policies, manufacturing economics, and complexity (Houlihan, 1985).

Supply chain management became a popular concept during the 90s. SCM's increasing popularity stems from various factors. As corporations increasingly turn to global sourcing for supplies, they are forced to seek more efficient methods for managing material flows. Global sourcing and a heightened focus on time and quality has emphasized SCM's importance. Delivering 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 for market presence (Mentzer et al., 2001).

The following definition is provided by Cooper, Lambert, and Pagh (1997)

*Supply chain management is an integrative philosophy to manage the total flow of a distribution channel from supplier to the ultimate user*

Since general consensus on SCM according to Mentzer et al. (2001) is that it covers flows, one can divide SCM into different flows. Zailani (2012) distinguishes these flows into the following three:

- Information flow
- Material flow
- Financial flow

In regards to information flow. Zailani (ibid.) concludes that information sharing ensures that actors in the supply chain are able to fulfill demand faster when information is shared. Information sharing makes way for information flow in SCM and this facilitates effective decision making among actors in the supply chain. Information flow can be information related to: inventory, sales, demand forecasting, production planning. A satisfactory information system is very important as this acts a prerequisite for adequate material flow Zailani (ibid.). Material flow is closely related to inventory management, a proliferated concept in logistics. Material flow is recognized as being an integral part of SCM and that supply chain performance can be improved by redesigning material flows. Different supply chain strategies have different inventory needs. Where a market-responsive supply chain invites significant buffer stocks of parts or finished goods, a physically efficient one invites minimizing inventory throughout the chain (Fisher, 1997).

For financial flow, Financial information is crucial for effective supply chain management, allowing organizations to assess their current financial position and make informed decisions. Evaluating suppliers and customers based on financial strength is essential to ensure smooth supply chain operations. However, there is limited focus on financial aspects in existing supply chain literature (Zailani, 2012)

### 3.2.1 Corporate strategy

The corporate strategy, also referred to as the competitive strategy, should be based in customers priorities (Chopra and Meindl, 2007). If the company strategy is not based on customer priorities, it would not be competitive; as a strategy derived from the customer demand would doubtlessly satisfy the customer demand to a higher degree. The transition from financial metrics to those that emphasize customer satisfaction has been ongoing for some time and a key reason for this is that these customer-centric approach can better reflect the company's competitive strategy (Eccles, 1991). With this reasoning, the importance of understanding the needs of the customers becomes apparent.

The corporate strategy and it's business objectives, derived from customer priorities, need to cater to a specific market segment or segments. These market segments are a distinct subgroup within a larger market that shares similar characteristics, needs, or behaviors. Depending on the company and what it offers, it is possible to meet the demand of different market segments. One segment might be able to provide accurate demand forecasts; in other words, the demand uncertainty would be low. Another might not have any type of forecasts at all, with a volatile demand. These two different market segments, categorized by their different customer needs, would invite two different supply chain strategies, responsive or efficient (Chopra and Meindl, 2007). This concept is illustrated in Figure 3.2.

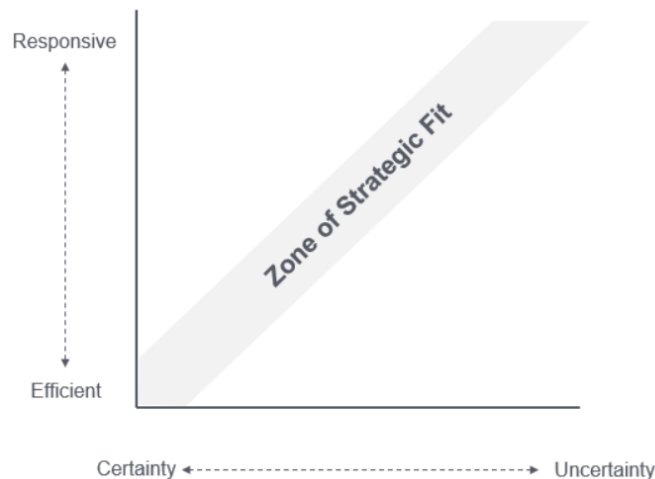


Figure 3.2: The fit between uncertainty and the type of supply chain according to Chopra and Meindl (2007, p.32).

### 3.2.2 The product and the supply chain

It is understandable that the market a company serves places diverse demands on its supply chain. Similarly, the nature of the products also dictates the type of supply chain which is suitable. According to Fisher (1997), products can be categorized into two main groups: Functional and innovative. Functional products are characterized by their consistent and predictable demand, along with extended life cycles. These functional products typically fulfill basic needs of its customers. However, this predictability often leads to increased competition, resulting in decreased profit margins. However, innovative products often have higher profit margins but are associated with shorter life cycles and more erratic demand patterns. This match or mismatch between supply chain strategies and products can be seen in Figure 3.3.

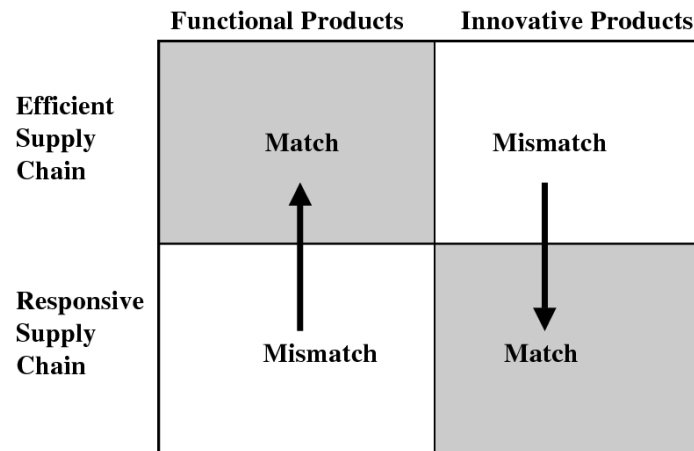


Figure 3.3: Product category's match with different supply chain strategies according to Fisher (1997, p.109)

In Figure 3.1 this concept is expanded upon, showing the differences in the aspect of demand for functional and innovative products. The stability of functional products invites competition, which often leads to lower profit margins, and many companies introduce additional reasons for the customer to buy their offers (ibid.). Although innovation can allow companies to achieve higher profit margins, the newness of the products often create an uncertain demand, which they must cope with to succeed (ibid.).

Table 3.1: Functional and innovative products with their differences in demand according to Fisher (1997, p.107).

	<b>Functional (Predictable Demand)</b>	<b>Innovative (Unpredictable Demand)</b>
<b>Aspect of Demand</b>		
Product life cycle	More than 2 years	3 months to 1 year
Contribution margin	5% to 20%	20% to 60%
Product variety	low (10 to 20 variants per category)	High (Could be millions)
Average error in forecast	10%	40% to 100%
Average stockout rate	1% to 2%	10% to 40%
Lead time required for made-to-order products	6 months to 1 year	1 day to 2 weeks

It is not uncommon for companies to start shifting the direction of supply chains without being aware of it (Fisher, 1997). Once the nature of a product is understood, being a functional product with predictable demand or an innovative one with unpredictable demand, the choice of supply chain orientation remains (ibid.). In Figure 3.2, the characteristics of an efficient supply chain and a responsive supply chain are shown.

Table 3.2: Physical efficient versus market-responsive supply chains (Fisher, 1997, p.108)

	<b>Physical efficient process</b>	<b>Market-responsive process</b>
Primary purpose	Supply predictable demand efficiently at the lowest possible cost	Respond quickly to unpredictable demand in order to minimize stockouts, forced markdowns, and obsolete inventory
Manufacturing Focus	Maintain high average utilization rate	Deploy excess buffer capacity
Inventory strategy	Generate high turns and minimize inventory throughout the chain	Deploy significant buffer stocks of parts or finished goods
Lead-time focus	Shorten lead time as long as it doesn't increase cost	Invest aggressively in ways to reduce lead time
Approach to choosing supplier	Select primarily for cost and quality	Select primarily for speed, flexibility, and quality
Product-design strategy	Maximize performance and minimize cost	Use modular design in order to postpone product differentiation for as long as possible

### 3.2.3 Supply chain alignment

As previously extracted from the quote from Melnyk et al. (2010), supply chain alignment is important for its performance. Since poor business performance is often caused by a company's failure to align its internal supply chain processes with its strategic goals (Tamas, 2000). The alignment between members of supply chain can be even harder as each member of the supply chain; suppliers, assembler, distributor, retailer e.g., tries to maximize only its own interests (Lee, 2004). As an example of internal misalignment from Lee (ibid.) within the company HP is brought up as an example. Where the division for integrated circuits within HP had low inventory, as it was a key success factor, which caused longer lead times between the integrated circuits division and ink-jet printer division. This lead time caused the ink-jet printer division to build inventory of far more expensive printers to cope with sudden demand fluctuations. Both divisions are content, the integrated circuit division with its low inventory of relative inexpensive products, and the ink-jet printer division as they have the inventory on hand to handle demand uncertainties. But from HP's perspective it would be far less expensive to build inventory of integrated circuits to lower the leadtime to the ink-jet printer division which would allow for a more agile response in demand. That would from HP's view point be a far more inexpensive way to cope with uncertainty.

The question of how to achieve strategic alignment then becomes apparent. It has previously been the topic of literature reviews such as Wong et al. (2012). The enablers for supply chain alignment has been identified as organizational structure, internal relation behavior, top management support, customer relational behavior, information sharing and business performance measurement system (ibid.). These enablers and what they are characterised by are expanded on in Table 3.3. The largest barriers to implementing a supply chain strategy, is according to Norrman and Näslund (2013), lack of time and functional silo-thinking. This study (ibid.) was carried out in Sweden, which adds weight behind it for the context of this thesis as the scope of the case is within Sweden.

Table 3.3: Identified enablers for strategic alignment according to Wong et al. (2012).

<b>Enabler</b>	<b>Description</b>
Organisational structure	Control span Business process owner Cross-functional knowledge flow Process-oriented organization Inter-department activities
Internal relational behaviour	Cross-functional team Mutual understanding Joint problem solving Joint planning
Customer relational behaviour	Goal sharing Cost sharing Profit sharing Joint problem solving Joint planning
Top management support	Listen to employees Management involvement Provisions of resources Provisions of finances Recognise importance of SCM Understand supply chain capabilities
Information sharing	Share relevant information Share accurate information Share sufficient information Timely information sharing Knowledge to use shared information
Business performance measurement system	Linked to strategic objectives Shared metrics Shared targets, incentives and rewards Timely reporting

### 3.2.4 Incentive alignment

Incentive alignment, or risk sharing as it is also referred to as, is as previously established an important part to align the supply chain to enhance performance of the supply chain. In this paper, incentive alignment is defined as the process of distributing costs, risks, and benefits among the participating members, based on Simatupang and Sridharan (2002). Examples of this could be payments; where the focus is on how someone gets paid instead of how much. It could also be contracts/agreements and joint investments. There is an assumption that the individual members of the supply chain makes their decision based on the compensation they receive from others (Simatupang and Sridharan, 2005). This is in line with Lee (2004) as previously cited.

### 3.2.5 Key performance indicators

Another part of the supply chain alignment is key performance indicators (**KPI's**). This is both relevant for the alignment within a company, as well as for a supply chain. The balanced scorecard that Kaplan and Norton (2001) brought forth emphasises the linkage between measurement and strategy. This is broken down and can be seen in

Figure 3.4. Further these measurements, the KPI's, needs to reflect the reality of a situation and not be constructed in a way that instead makes the company look good. An example from (Hammer, 2007) is that companies often measure delivery accuracy, or Delivery on Time (**DOT**), against the last promised date instead of the required date from the customer. This, of course creates the illusion that the company is performing better than perceived by the customers, which exemplifies one of Hammer (ibid.)'s seven deadly sins: Vanity.

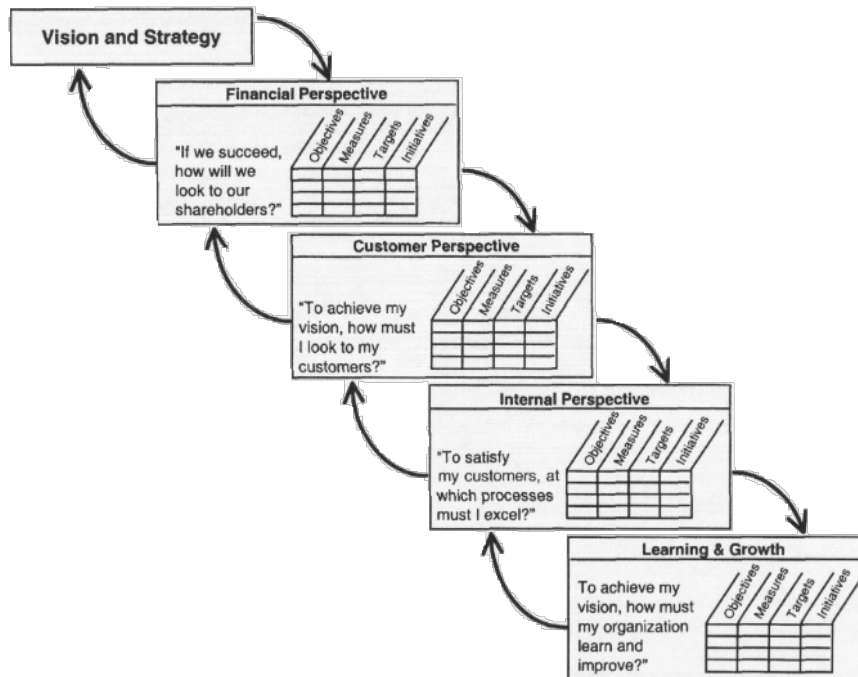


Figure 3.4: The balanced scorecard defines a strategy's cause-and-effect relationships (Kaplan and Norton, 2001, p.91).

A KPI plays an important role in the management of a business as it provides information for decisions and actions, and is as Kaplan and Norton (2001) pointed out strategically important. But a common problem is the lack of system thinking when these measurement systems are applied to supply chains. The measurement activities in a supply chain is seldom managed as a system, but as several different smaller systems (Holmberg, 2000). This unalignment in measurement makes strategic alignment harder to achieve and might prevent the supply chain from reaching its potential true output. That the measurements between members of the supply chain should be integrated not simply interfaced is a supply chain fundamental according to Oliver, Webber, et al. (1982).

According to Neely, Gregory, and Platts (1995) performance measurement systems can be analyzed at three levels, these can be seen in Table 3.4 along with considerations to each level of performance measurement. At level one, Individual performance measures, there are five groups of metrics; reliability, responsiveness, flexibility, cost and efficiency (ibid.). In this model, systematic prioritization of metrics is lacking,

but there have been suggestions to combine it with the Analytic hierarchy process (**AHP**) (Wang, Huang, and Dismukes, 2005).

Table 3.4: Performance measurements levels and considerations according to Neely, Gregory, and Platts (1995).

<b>Level (1, 2 or 3)</b>	<b>Consideration</b>
Individual performance measures	What performance measures are used? What they are used for? How much do they cost? What benefit do they provide?
Performance measurement system	Have all the appropriate elements (internal, external, financial, non-financial) been covered? Have measures which relate to the rate of improvement been introduced? Have measures which relate to the long-term and short-term objectives of the business been introduced? Have the measures been integrated, both vertically and horizontally? Do any of the measures conflict with one another?
Relationship with internal and external environments	Do the measures reinforce the firm's strategy? Do the measures match the organizational culture? Are they consistent with the recognition and reward structure? Do some measures focus on customer satisfaction? Do some measures focus on what the competition is doing?

A significant portion of the Swedish companies asked by Norrman and Näslund (2013) claim that they measure a lot but that there is often a functional focus and not a process-oriented one. There is a risk for companies to commit what is sometimes referred to as "the ultimate sin" with respect to performance measurement systems, which is a lot of measurements and reports but no actions (Neely, Gregory, and Platts, 1995). The measurements should be used to:

- Find gaps, issues and improvement areas
- To see if the strategy is followed
- To determine if a process is effective and/or efficient
- To create a standard and to provide feedback on process performance
- To take necessary corrective action
- For incentives and rewards

### 3.2.6 Silo-thinking

Silo-thinking is where a sector starts seeing its own goals as more important than the organization as a whole (Stone, 2004). This can result in lower performance for the company and misalignment within. The measurements are an important part of many aspects of a company's performance and growth, and as mentioned earlier, they should be integrated and not simply interfaced (Oliver, Webber, et al., 1982). This is also relevant for the departments within the company. One might think that decentralized and team-oriented organizations would make it less likely for the so-called



silo-mentality to occur, but that is not the case. Communication often becomes more troubled as well. A classic example of functional silos is brought up by Shapiro (1977) with the sales and manufacturing departments. Examples are provided such as the market department's view on problem areas compared to manufacturing. In a problem area where cooperation is important, e.g., cost control, a typical marketing comment might be, "Our costs are so high that we are not competitive in the marketplace," while a typical manufacturing comment would be, "We can't provide fast delivery, broad variety, rapid response to change, and high quality at low costs." These viewpoints and their lack of cooperation between departments are neither uncommon nor exclusive to the market and manufacturing departments.

The high cost of lack of collaboration makes it clear that these silos must be teared down. According to Stone (2004) the answer lies in the following seven actions:

1. **Reward cooperative behavior:** Rewarding cooperation instead of just individual achievement fosters the desired behavior within the company.
2. **Encourage innovation:** Leaders should promote innovative approaches to work, allowing for greater efficiency, effectiveness and mitigating the resistance to change.
3. **Create a culture of collaboration:** Open communication and modeling cooperative behavior by senior management are essential in creating trust between departments.
4. **Clarify responsibilities:** Clearly defining roles and emphasizing the overarching responsibility to exceeding customer expectation and outperforming competitors helps competing against the real enemy: the company's competition.
5. **Promote cross-functional initiatives:** Encourage collaboration between teams from different areas of the organization to enhance overall performance.
6. **Approach new opportunities cautiously:** Before entering new business territories, seek buy-in from potential stakeholders and/or consider collaborative approaches by leverage opportunities.
7. **Organize retreats for team building:** Conduct retreats to practice conflict resolution skills, communications and exemplify the importance of cooperation to achieve corporate goals.

### 3.3 Procurement strategies

For the procurement organization there are different established functional strategies to meet the demand that the supply chain puts on the organization. There is no right or wrong strategy for all procurement organizations, but there is one that is most suitable for a organization in a certain set of circumstances.

Most commonly an organization uses what will be referred to in this thesis as traditional purchasing, or traditional procurement. To expand on traditional purchasing lets break it down into some key activities within purchasing and how traditional purchasing reasons according to Ansari and Modarress (1990).

- Establishing lot size - Purchases are made in larger batches to reduce transport costs, achieve a quantity discount, and often with a just-in-case approach.

- Selecting suppliers - Multiple sources of supply are often selected with short term contracts, for any given part.
- Evaluating suppliers - product quality, delivery performance, and price are things that are emphasised, and about 2 % reject for suppliers are acceptable. As an example, CEPA had less than 1% rejects for 2023 (Procurement manager, 2024).

There are many functional strategies with which the purchasing organization can work to increase its operational performance. This term, operational performance, has not yet been defined since it depends on the functional strategy in use. Inventory turnover rate could be used as one KPI to measure a part of operational performance, but it would be more important if the procurement strategy had a just in time (**JIT**)-approach (Kwak, 2019). To define operational performance before the context of the market in which the company operates has been established, the supply chain with its uncertainties has been mapped, and of course, the company’s business goals understood, would be folly.

Supply chain uncertainty is an issue that every practicing manager struggles with (Tomas et al., 2010), coming from the increasing complexity of global supply chain networks, leading to among other things delivery delays and quality problems (Bhatnagar and Sohal, 2005). There are multiple supply chain uncertainties depending on who you ask. Davis (1993) argues that supply chain uncertainty can be divided into three categories: demand-, manufacturing process- and supply uncertainty. Where demand uncertainty, coming from inaccurate forecasts or volatile demand, is regarded as the most hazardous. According to Simangunsong, Hendry, and Stevenson (2012), there are two strategies for addressing supply chain uncertainty. Either reducing uncertainty or coping with uncertainty. An example of reducing uncertainty in the supply chain can be faster information sharing with customers or implementing the use of forecasts. However, a way to cope with uncertainty can be to have a responsive supply chain.

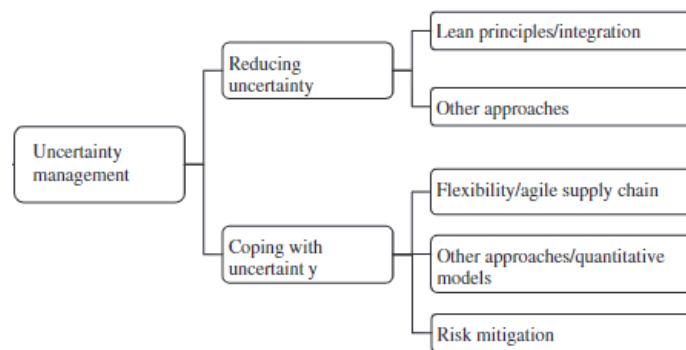


Figure 3.5: Uncertainty management according to Simangunsong, Hendry, and Stevenson (2012, p.4495)

### 3.3.1 Alignment of purchasing activities on different strategic levels

The position of procurement within an organization is very much determined by management’s perception of its role. If management views procurement primarily as

an operational function, it will likely be situated lower in the organizational structure. Conversely, if management recognizes procurement as a key driver of competitiveness and strategic value, the procurement manager may hold a higher position, possibly reporting directly to the board of directors (van Weele and Rozemeijer, 2022).

Several factors shape management's perspective on procurement:

- Share of procurement in end cost price: The greater the share of procurement costs in the end-product's cost price, the more strategically significant procurement becomes in management's eyes (ibid.).
- financial health of the company: During periods of financial strain, management tends to scrutinize procurement operations more closely, placing higher demands on cost efficiency and accountability (ibid.).
- dependency on the supply market: Companies reliant on concentrated supply markets typically prioritize procurement due to the potential risks and opportunities associated with market dynamics (ibid.).

According to van Weele and Rozemeijer (ibid.) tasks, responsibility and authority can be divided into three different levels: strategic level, tactical level and the operational level. The strategic level refers to those activities and decisions that influence the market position of the company long term. These activities primarily are under responsibility from top management. Some example of activities under strategic level are:

- Choices regarding category sourcing strategies, such as opting for multiple or single sourcing, embracing global sourcing, or considering outsourcing and in-sourcing.
- Creating long term contracts with preferred or key suppliers, such as procurement agreements, licensing arrangements, partnership agreements, or co-design agreements.
- Decisions to engage suppliers as collaborative partners in the development of new products, product innovation and pursuing new business ventures
- Assessments regarding backward integration, involving financial engagements with suppliers or startups to ensure future access to critical materials.
- Large investment decisions such as buildings, equipment IT hardware

The tactical level refers to engagement from procurement function related to specifications as to what needs to be purchased, supplier selection and contract negotiation. Unlike strategic level's long term focus, Tactical level often has a medium term impact (one to three years). They necessitate cross-functional collaboration, as effectively addressing them requires coordination and cooperation from other disciplines within the company, including engineering, manufacturing, logistics, and quality assurance.

Examples of procurement activities at this level are according to van Weele and Rozemeijer (ibid.):

- Reaching agreements on corporate or annual supplier framework agreements.
- Developing value analysis programs, which aim at design review and product standardization.
- Implementing a cross-functional, cross-business category sourcing structure within the company.

- Establishing and executing certification programs for suppliers, including supplier audits, to enhance the quality of incoming goods and materials.
- Collaborating with suppliers to support the company's sustainability initiatives and strategies.
- Selecting and contracting suppliers in general, and implementing programs aimed at reducing the supply base in particular.

The operational level encompasses all tasks concerning the ordering and expediting functions. Broadly, it encompasses all activities associated with the requisition-to-pay process. This level involves activities such as ordering materials, overseeing deliveries, processing payments to suppliers, and resolving quality disputes regarding incoming materials and purchased services. Specifically, the operational activities of the procurement function include:

- Managing the ordering process, including releasing orders based on existing agreements with suppliers.
- Conducting all expediting activities related to released orders.
- Addressing troubleshooting, which involves resolving daily operational issues regarding quality, supply, and payment in supplier relationships, akin to fire-fighting.
- Establishing procedures for handling invoices and ensuring timely payments to suppliers.
- Monitoring and assessing supplier quality and delivery performance.

### 3.3.2 JIT Purchasing vs traditional

JIT purchasing means providing material for manufacturing "just in time" for when they are needed. Through JIT purchasing, suppliers are closely integrated into the manufacturing process of the JIT manufacturer. Instead of operating as separate entities, the relationship between the manufacturer and its suppliers is characterized by a high degree of coordination and collaboration. Gunasekaran (1999) lists five characteristics central to JIT purchasing

- Smoothed flow of materials between suppliers and buyers
- Order cost reduction
- Stock reduction
- Quality
- Product simplification

The JIT purchasing concept attempts to reduce replenishment lead time by utilizing suppliers located close to the using plant and by ordering small quantities, which in turn reduces a supplier's workload per period. JIT purchasing requires acknowledgement as a strategic component in the overall corporate strategy (ibid.).

To better understand the difference between JIT Purchasing and Traditional Purchasing (TP) Ansari and Modarress (1990) divides purchasing activities into three categories, full responsibility, partial responsibility, related aspects. Establishing lot sizes is an important factor in procurement, here JIT purchasing advocates small lots

with frequent deliveries as opposed to TP who embraces large batches and less frequent deliveries. The financial benefits for small lot sizes is reduced costs related to inventory and holding. Smaller lot sizes also leads to increased flexibility in relationship to meeting demand. On the other hand for TP, larger batches means is lower shipping costs, handling costs and discount rates. This is also due to their rationale that shipping- and handling costs are seen as constant.

Among the most important decisions a buyer can make are supplier selection. For supplier selection a procurement division must come to crossroads between choosing single sourcing and dual sourcing. Supporter of multiple sourcing state that multiple suppliers drives competition between them, in turn incentivizing to give the buyer the best possible products and prices. In terms of Supply Chain Risk Management (**SCRM**) it can also be beneficial to have multiple suppliers if an accident were to take place at a plant. Multiple suppliers adds flexibility for a buyer, this also applies to technical aspects (Ansari and Modarress, 1990).

According to advocates of JIT purchasing, there are numerous benefits to using single sourcing. The primary one being that you receive specific attention from a supplier since, you stand for a larger part of their share, if not all. This means that a buyer can more easily build a long term relationship to their supplier. A long term relationship increases loyalty which likely increases quality and reduced risk of interrupted deliveries. It also is more operational efficient time wise, because the buyers does not have to spend time on choosing other suppliers. Another benefit of single sourcing is that it can lead to lower prices since buyers buy larger volumes and therefore can have discounts (ibid.).

When it comes to evaluating suppliers JIT and TP are similar, but differ primarily in one aspect: rejects. TP accepts rejects, Ansari and Modarress (ibid.) writes that a 2% reject rate is acceptable. In JIT purchasing 0 rejects is acceptable. The reason behind this is that JIT purchasing tries to reduce uncertainty and if the objective is to have minimum stock, uncertainties like reject are not acceptable. When negotiating with suppliers, TP's primary objective is to achieve the lowest possible price by all means. While cost is important for JIT, the most crucial part is achieving product quality and a reasonable price through long term relationships (ibid.).

For partial responsibility activities for purchasing it is evident that for JIT purchasing the buyer tries to reduce manual labour in terms of quality assurance, paperwork, goods receive. This is why there is such a emphasis on quality and why JIT can be open to pay a premium to receive higher quality goods (ibid.).

Lastly, inflation has been on the rise globally, and as a consequence of this central banks have hiked interest rates. Since holding cost in turn is dependent on opportunity cost - which is directly related to interest rates (Khakbaz et al., 2023). There is more reason today to keep less inventory than before due to increasing holding costs. This makes JIT purchasing even more relevant (Ansari and Modarress, 1990).

Table 3.5: Comparative analysis of JIT and Traditional Purchasing Practices (Ansari and Modarress, 1990)

<b>Purchasing Activity</b>	<b>JIT Purchasing</b>	<b>Traditional Purchasing</b>
<b>FULL RESPONSIBILITY</b>		
Establishing lot size	Purchase is in small lots with frequent deliveries	Purchases are made in large batches with less frequent deliveries
Selecting suppliers	A single source of supply is selected for a given part, in close geographical proximity; with long-term contract	Multiple sources of supply are selected for a given part, with short-term contracts
Evaluating suppliers	Product quality, delivery performance, and price are emphasized; no percentage of rejects from supplier is acceptable	Primary objective is to achieve the lowest possible price
<b>PARTIAL RESPONSIBILITY</b>		
Inspecting incoming parts	Consulting and inspecting of incoming parts is reduced and eventually eliminated	Buyer is responsible for receiving, counting, and inspecting all incoming parts
Determining mode of transportation	There is a concern for both inbound and outbound freight and on-time delivery. Delivery schedule is left up to buyer.	Buyer is responsible for receiving, counting, and inspecting all incoming parts
Setting product specifications	Buyer relies more on performance specs than on product design Supplier is encouraged to be innovative	Buyer relies more on design specs than on product performance Suppliers have little freedom in design specs
<b>RELATED ASPECTS</b>		
Paperwork	Less time is spent on formal paperwork. Delivery time and quantity level can be changed by telephone call	A great deal of formal paper work is required. Changes in delivery date and quantity require purchase order.
Packaging	Small standard containers are used to hold exact quantity and to specify the precise specs	Regular packaging is used for every part type and part number with no clear specs on product content

### 3.3.3 Collaboration vs efficiency

A typical industrial buyer spends more than half of sales on purchased products (De-graeve and Roodhooft, 1999). This makes procurement highly influential in impacting

a company's bottom line. This prompts the need for a company to look into how purchasing can increase shareholder value as well as measure its performance. Purchasing performance can be measured with numerous KPI's and is largely dependant on company strategy. One can make the distinction between effectiveness and efficiency for purchasing, when measuring purchasing performance. The main difference between them is that efficiency is more connected with tangibles such as price orientation and cost reduction. While effectiveness is more intangible and linked to improvement and value-orientation (Macbeth, 1994); (Valk, Wynstra, and Axelsson, 2005).

From an efficiency perspective the expectation of the buyer in a buyer-seller relationship seeks to minimize costs. This adds value to the company as costs are decreased and therefore earnings can go up. The downside with being entirely focused on financial measures such as cost is that you have much to lose in other areas such as: quality, responsiveness and flexibility. It also encourages short-terminism, meaning that necessary investments that can yield larger dividends in the future are seen as short term expenses (Neely, Gregory, and Platts, 1995). With an efficiency approach, competition among suppliers is promoted to stimulate lower prices. Supply can also become more reliable as the supply risk is diversified with numerous suppliers. Worth noting is that from a efficient purchasing perspective a buyer will not get direct access to the total resources of the supplier since the relationship is only transactional (Svahn and Westerlund, 2009).

To reach effectiveness, focus instead lies on supplier relations. One example of this is evening out the power between actors in a supply network, as opposed to efficiency where one actor often has more power. For effectiveness, suppliers and buyers can be seen as a dyadic relationship where both of them are development partners. The joint partnership should ultimately result in a win-win for both partners as opposed to one partner coming out on top (Janda and Seshadri, 2001).

Janda and Seshadri (ibid.) lists four purchasing strategies and how it relates purchasing performance in terms of efficiency and effectiveness. The four strategies are the result of extensive research studies within the area.

1. **Cooperative negotiation strategy** As the cooperative approach emphasizes creating a win-win scenario for both buyers and vendors, rather than adopting an adversarial strategy focused on maximizing individual gains through aggressive tactics, enhancing supplier loyalty. This, in turn, will contribute to improved supplier relations. By being adaptable to the buyer's requirements, suppliers will be incentivized to deliver higher-quality products promptly, ultimately reducing hidden costs for buyers in the long term. In summary, a cooperative negotiation approach is expected to result in both increased effectiveness and efficiency (ibid.).
2. **Supplier base strategy** Organizational buyers may opt to engage with one or multiple suppliers for a particular item. Opting for a single source of supply offers the advantage of heightened commitment through a long-term orientation. According to a survey of procurement professionals, 74 percent express a preference for single sourcing (Porter, 1999). The choice of single sourcing, along with associated supplier development activities, often entails unique investments by the buyer. These investments serve as incentives for the seller to enhance performance and demonstrate a higher level of commitment. Additionally, reducing the supplier base can lead to benefits such as price reductions and improved product quality. All this ultimately leads to efficiency being negatively affected (Janda and Seshadri, 2001).

3. **Collaborative interaction strategy** Literature suggests that incorporating suppliers into the value chain and offering crucial information and technical support enables buyers to establish networks that enhance the competitiveness of all participants (Dyer, 1996). Consequently, collaborative interaction will lead to both improved effectiveness and efficiency (Janda and Seshadri, 2001).
4. **Temporal relationship strategy** According to Turnbull and Wilson (1989) there are two ways of bonding between a buyer and a seller, namely structural bonding and social bonding. Structural bonding refers to investment specific to the buyer-seller relationship, for example investing in supplier's human capital. To then terminate the relationship would result in losses, giving more reason to maintain long term relationship. Social bonding refers to investments regarding to inter personal relationships between the buyer and seller. This relationship means bonding for both parties but are more easily terminated since financial burdens are not included. To conclude, long term relationship increases effectiveness (Janda and Seshadri, 2001).

### 3.3.4 Inventory management & EOQ

Inventory management is an important part of running an effective organization. It is essential to manage inventories efficiently so as to avoid the costs of changing production rates, overtime, sub-contracting, unnecessary cost of sales and back order penalties during periods of peak and dynamic demand. The primary goal of inventory management is to prevent excessive stockholding, as this drives costs. When stock is imbalanced, either too much of it or too little it can cause business failure. If a manufacturing cannot receive components at the right time, production is halted. Not having products stocked results in damaging the trust to customers, potentially resulting losing the customer. Losing a customer is detrimental for a business since, a customer often buys more products then just one. The conclusion one can make is that effective inventory management is essential for a company. It can be the difference between prosperity and catastrophe (Agarwal, 2014).

A company has to walk a fine line between keeping stock available for production while not having too much as it will tie down excess capital. Hence, effort must be made by management to reach an optimum level in inventory. Ford Whitman Harris presented in 1913 a total cost model for inventory management, see Equation 3.1. The total cost model is a fundamental concept in inventory management that helps organizations determine the most cost-effective way to manage their inventory levels. The goal of the total cost model is to find the optimal balance between ordering costs and carrying costs to minimize the overall cost associated with holding inventory. However, what Harris is most known for is his Economic Order Quantity **EOQ** formula, see Equation 3.2. The EOQ formula is based on the TC model. The EOQ formula is the quantity in which the TC model assumes its lowest value. By deriving 3.1 and setting it to zero, Q can be isolated and EOQ is reached. This represents the quantity that is needed for the lowest cost reached in the TC model (Erlenkotter, 1990).

$$TC(Q) = S \times \frac{D}{Q} + H \times \frac{Q}{2} \quad (3.1)$$

$$EOQ = \sqrt{\frac{2DS}{H}} \quad (3.2)$$



Where:

- $D$  = Demand
- $S$  = Ordering cost
- $H$  = Holding cost

There are many different definitions on EOQ but Agarwal (2014) has concluded through a literature review that the definition of EOQ is the following: *"the ordering quantity which minimizes the balance of cost between inventory holding cost and reorder costs"*. Although EOQ is a useful tool for inventory management calculating it requires the following assumptions. Worth mentioning is that there for example is formulas for EOQ that are non linear.

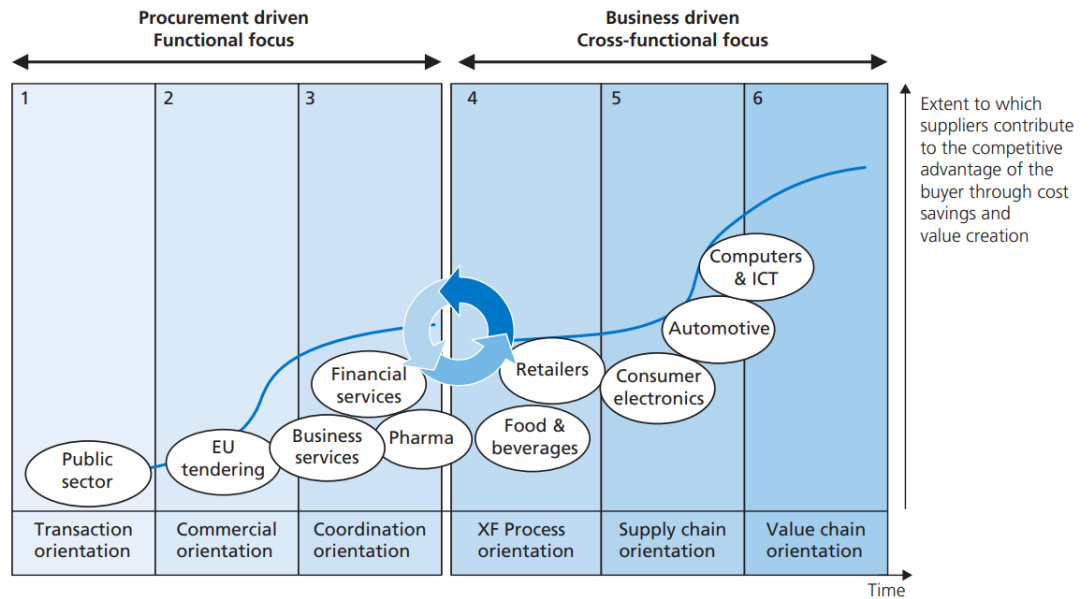
Assumptions:

- Demand is uniform, constant and continuous over time
- Lead time is constant
- There is no limit on order size
- Cost of placing an order is independent of size of order
- Holding cost is independent of quantity of the stock

The economic order quantity is, as discussed in the literature, not an absolute fact since the input numbers are not accurate. The inputs are approximations and estimates, and the inputs themselves are a subset of a more complex total cost. Looking at Equation 3.2, it is understood that lowering the ordering cost (which can also include the setup cost) would make the economic order quantity lower. This way of reducing ordering costs is a part of the JIT-principles, allowing for less tied-up capital and lowering the total cost as well.

### 3.3.5 The procurement organizations maturity

Many new strategic and organizational concepts have been developed for both purchasing and supply chain management (van Weele and Rozemeijer, 2022). The development of the purchasing organization has been analyzed from many different aspects and many authors have suggested conceptual models for this area. Often, the key characteristics of these models are, according to van Weele and Rozemeijer (ibid.), a step-by-step approach, with some kind of final stage of excellence to which all efforts should be directed. Many models mention that the purchasing organization often has a lower stance in the organizational hierarchy in the early stages of its development. They then become more proactive by developing suppliers and ultimately evolve into focusing on relationship management or partnerships.



Focus	Serve the factory / secure availability	Reduce price and/or product costs	Savings through procurement synergies	Total-cost-of-ownership reduction	Supply chain optimization	Total customer satisfaction
Activities	<ul style="list-style-type: none"> <li>Buying</li> <li>Clerical administrative tasks</li> <li>Order processing</li> </ul>	<ul style="list-style-type: none"> <li>Purchasing</li> <li>Commercial</li> <li>Tendering</li> <li>Negotiating</li> <li>Approved supplier lists</li> </ul>	<ul style="list-style-type: none"> <li>Procurement</li> <li>Commercial</li> <li>Contracting</li> <li>Global sourcing</li> </ul>	<ul style="list-style-type: none"> <li>Strategic sourcing</li> <li>Cross-functional teamwork</li> <li>Systems integration</li> <li>Manage key suppliers</li> </ul>	<ul style="list-style-type: none"> <li>Supplier relationship management (SRM)</li> <li>Outsourcing</li> <li>Cost models</li> <li>Digitalization</li> <li>Supplier development</li> </ul>	<ul style="list-style-type: none"> <li>Customer-driven SCM</li> <li>Contract manufacturing</li> <li>Co-innovation and joint business development</li> </ul>
Dilemmas	<ul style="list-style-type: none"> <li>Control of expenditure</li> <li>Operational fire-fighting</li> </ul>	<ul style="list-style-type: none"> <li>Supplier base management</li> <li>Performance measurement</li> </ul>	<ul style="list-style-type: none"> <li>Spend analysis</li> <li>Contract compliance</li> <li>Ethics</li> </ul>	<ul style="list-style-type: none"> <li>Communication</li> <li>Teamwork</li> <li>ICT Systems infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Social resistance</li> <li>Trust</li> <li>Collaboration</li> </ul>	<ul style="list-style-type: none"> <li>Mutual dependency</li> <li>Shared purpose</li> <li>Ecosystems</li> </ul>

Figure 3.6: The purchasing development model from van Weele and Rozemeijer (2022, p.67).

The first stage in Figure 3.6, the development model, is a transaction orientation. Here, the value added by the purchasing organization is mainly ensuring that the right raw material is available for the production. The feedback the purchasing organization gets is mostly complaint orientated, and therefore it indirectly becomes that no feedback means that the purchasing organization is doing its job (van Weele and Rozemeijer, 2022). A big part of the purchasing function is oriented towards operational and administrative tasks.

The second stage is the commercial orientation, where a proactive purchasing manager is recruited that can negotiate lower prices with suppliers. Although purchasing is now a department of its own, it still has a sharp focus on low prices. The negotiation culture is often playing hard in negotiation with suppliers, and the measured performance focuses on prices, cost savings, and delivery performance from suppliers (ibid.).

The third stage involves an expanded view on the procurement organizations function, where in addition to price and cost a focus is placed on the impact of the purchasing organizations on the quality of the purchased goods. The employees in the purchasing organization have a specific purchasing background and education. The training aims at analytical skills and communication.

At the fourth stage, internal integration becomes a point of interest, as well as the focus shifts from the unit costs and instead starts involving key suppliers as joint problem solvers. The procurement organizations focus start to involve non-production related spend categories such as IT etc. It is also common for a more process-oriented view of procurement and to integrate procurement processes with other business units and functional departments (van Weele and Rozemeijer, 2022).

In the fifth stage, there is a characteristic aim of collaborating with supply chain partners on areas such as product development, process improvement, sustainability, and business growth, for example production capacity. Instead of supplier management, it now becomes supplier relational management and a lot of investments are made to involve key suppliers in business processes. Instead of the previous focus on purchasing goods and services efficiently and effectively (ibid.).

The sixth and final stage of the development model has a value chain orientation. The procurement strategy now focuses on identifying and prioritizing what is most crucial to deliver value to the end customer. The company actively challenges suppliers to support the product and market strategy and to participate in business development. The goal of delivering the greatest value to the end customers is joint between the company and the suppliers. The company culture is entrepreneurial and innovative, and the systems are integrated throughout the value chain (ibid.).

### **3.4 Investigating framework**

The goal of the literature review is to present a theoretical foundation on which to build the rest of the thesis. The literature review is categorized into three parts; strategic alignment, functional strategies related to procurement and lastly organizational development. This is what together with the case study's purpose and research questions will guide the thesis in what interview questions are supposed to be asked. An overview of this can be seen in Figure 3.7.

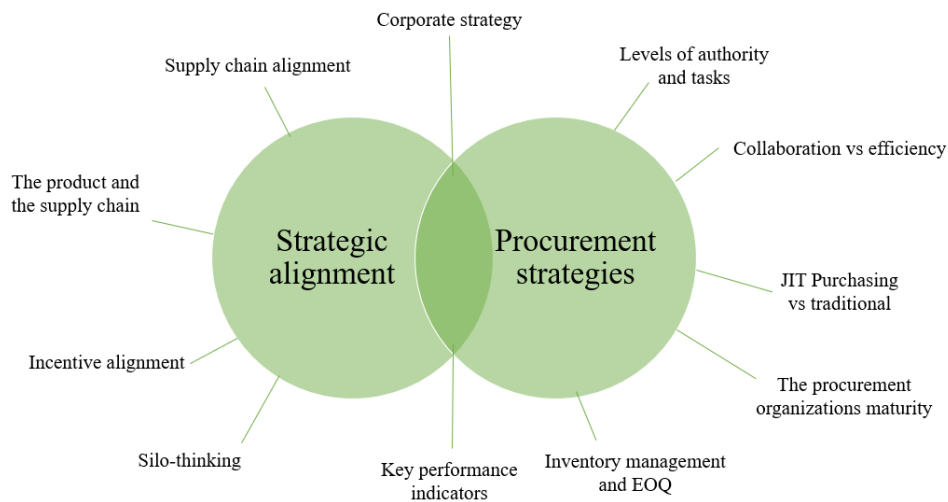


Figure 3.7: An illustration of the different part of the established frame of reference.

*Strategic alignment* is a wide topic that in this thesis begins with establishing the context that a company operates in and continues to explore suitability between e.g. uncertainty and supply chain focus such as being efficient or responsive. This sets the stage for the case study to being able to gather information about how the case company operates in a wider context such as the market. It continues, exploring supply chain alignment and exemplifies with a case of misalignment which makes it easier to understand what kind of outcome a misalignment can have. Further, it establishes the largest barriers, and enablers, for strategic alignment according to Swedish companies which can guide the interview questions in investigating what problems and/or possibilities there are for CEPA to align their operations. The literature review continues to explore incentive alignment and KPI's, what makes a measurement suitable and what makes it incompatible, in the context of alignment. This is a crucial part as top management often see their operations, and others, through these measurements. For this thesis to be able to give suggestions for the procurement organization at CEPA it's necessary to understand these measurements. Finally, the literature review delves into silo-thinking, which was established early on as one of the largest barriers for strategic alignment. Here nonalignment within the company and what a company can focus on, to tear these silos down, is examined.

*Procurement strategies* is a key component for the thesis since it maps potential procurement strategies that could be relevant for a purchasing organization. The section takes its starting point in the previous section by addressing what functional strategies are for a procurement organization. It then later specific what supply chain uncertainty is and ways of managing it. This sets the stage for different purchasing philosophies. Such as JIT purchasing vs traditional purchasing, and Collaboration vs Efficiency. This will help guide the data collection phase since questions related to purchasing strategy can be asked. One can try to map CEPA's current purchasing strategy from an academic standpoint. Terms such as "JIT vs traditional, Collaboration vs Efficiency" can be brought up to see how the company reflects on these and where they would like to place themselves on a scale. *Procurement strategies*

also provides insight into how the company could work in the future. If for example the company would like to implement JIT purchasing to a larger extent, tools from JIT literature can be used. Another key takeaway from this section of the literature review is Figure 3.6, and it can be used to investigate what might be the next steps for the organization.

# Chapter 4

## Empirical study

### 4.1 Strategic Alignment

#### 4.1.1 Market and corporate strategy

CEPA is part of Stockforsa Invest AB and is located in Höör, Skåne, Sweden, and is a OEM. Originally, the company had its background in Lund, Sweden but with the acquisition of Höörs Plåt 2014, it is now situated in Höör. It is a subcontractor and primarily provides sheet metal details to customers in the engIn the warehouse, the material is controlled under portfolio and started manufacturing furniture around 2018 which today represents about an eighth of CEPAs turnover (Plant manager, 2024). A focus area has been to try to get orders that fit CEPAs automatic machines, with products that be done by machines during evening and nights when the employees have stopped working. This is something that has a big impact on profit margins according to the Plant manager (2024).

The goal of the top management for the last couple of years is to improve the net margin, which has had negative effects on the company's liquidity (Plant manager, 2024). However, during the fourth fiscal quarter (**Q4**) 2023 and Q1 / Q2 for 2024, the main focus of top management is to increase cash liquidity. When customer orders are stopped and there is a discrepancy in payment terms between suppliers-CEPA-customers, cash liquidity becomes severely affected (Procurement manager, 2024) (Plant manager, 2024). This has created a focus on cash flow to increase liquidity, and improving payment terms to suppliers has been one activity to help achieve this goal. Another important goal has been to maintain the "order entry against budget", which is a KPI that CEPA works closely with (Plant manager, 2024).

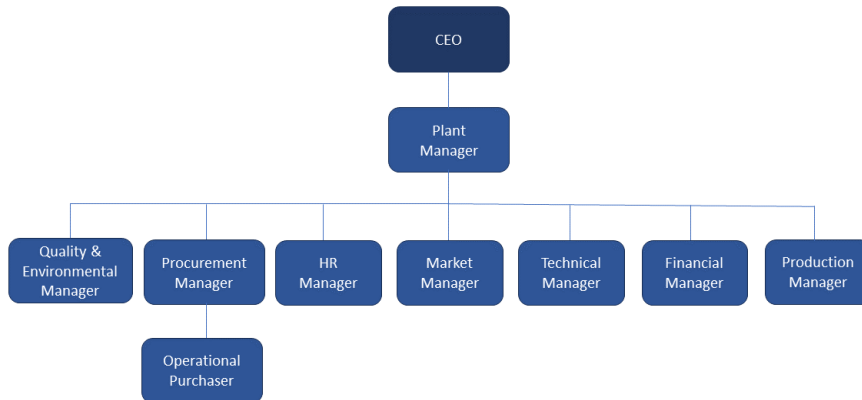


Figure 4.1: Chart over CEPA’s organization

The plant manager is directly responsible for CEPA as well as UBD cleantech, etc. The management team consists of the following positions seen in Figure 4.1. The procurement department is small, consisting of one procurement manager and one employee.

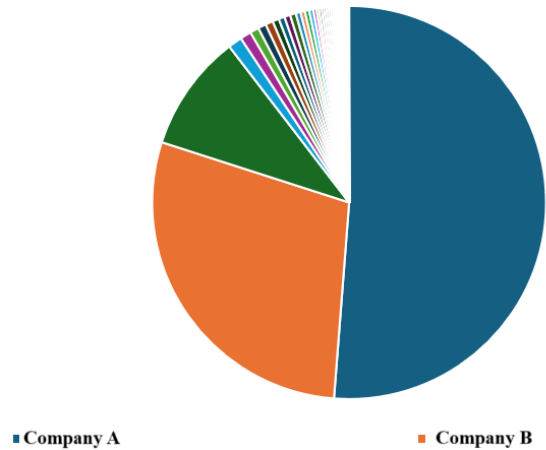


Figure 4.2: Chart over CEPA’s customers share of revenue on a group level

Overall CEPA has around 90 customers, but a minority of them represent a lion share, see Figure 4.2. CEPA’s largest customers are Customer A and Customer B. The company has a long history and a long relationship with these groups. The largest customer, Customer A is a leading industry company within heat transfer, separation, and fluid handling. The company has its headquarters in Lund, Sweden, approximately a half-hour drive from CEPA. CEPA delivers metal cabinets that later turn into heat exchangers as well as spare parts, to Customer A. The second largest customer, Customer B, is a technology leader in electrification and automation. The

part of Customer B representing the largest share of revenue is located in Sweden. To Customer B CEPA delivers metal cabinets that later come to be control cabinets for the company. The third largest customer is a more recent addition to CEPA and is a furniture company that operates within the "affordable luxury" segment (Market manager, 2024).

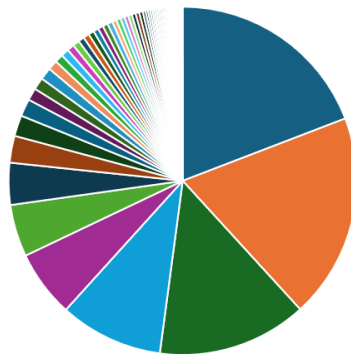


Figure 4.3: Chart over CEPA's customers share of revenue on a company level

CEPA aims to be described as a "one stop shop", meaning that they want to be able to handle more complex orders. This, as well as allowing customers to trust that CEPA is responsible for a larger part of the end product than previously as a subcontractor (Plant manager, 2024). The vision is to be one of the biggest players on the market for sheet metal, being able to deliver more complex products than the competition, on time and for a market competitive price. There is no outspoken methodology/strategy such as lean or six sigma, as the Plant manager (2024) says "We are not there yet".

The Production manager (2024) claims that what sets CEPA apart is their capacity and flexibility to produce different components, mainly within sheet metal. A big part of why CEPA does not reach their delivery on time goal, which is currently (March 2024) above 98% while their actual DOT is around 88% in March 2024, is because an incident where a storm caused part of the production buildings roof to fly off (Production manager, 2024). This affected the two first and most important operations in the production, as almost all productions go through it, the laser cutter and punch press.

CEPA has seen a problem with the amount of working capital that they have, it has become clear to them that they need to both reduce the amount of working capital that they have today and make sure to keep it from reaching as high levels as before (Plant manager, 2024).

CEPA are operating within the manufacturing industry. There are many companies that process metal sheet, besides CEPA. Their competitors are large companies as well as small. A larger competitor when it comes to delivering to Customer B is for example Hanza. Smaller competitors are RMP Landskrona, Plåtspecialisten Arlöv. CEPA's way of differentiating itself among competitors is that it aims to be a one stop shop. As an example CEPA currently has its own paint shop, while if jobs are outsourced to competitors, they in turn has to outsource a paintjob to another actor. Besides CEPA providing the customer a comprehensive package, one of CEPA's strengths is that their quick and clear communication In-house (Market manager,



2024) (Procurement manager, 2024).

When it comes to the market, CEPA is naturally dependant on Customer A's and Customer B's success since they stand for almost 80 % of sales. According to CEPA the demand for their customers products are stable given that they are apart of "future industries". However, they are also dependant on larger factors such as the economic cycle. Representatives from CEPA claim that they are thankful of their diversified customer portfolio since customers that decline can be outweighed by other customers that go up. Overall the demand from customers is seen as stable. Another benefit of their large international customers is that they have the financial resources to support CEPA in more difficult times (Market manager, 2024).

#### 4.1.2 The product and the supply chain

CEPA primarily sources its material from Sweden, from the metal sheet industry, which is the main material they procure. Because of this, CEPA is vulnerable to changes in metal sheet prices. There are two parts of the price for incoming metal sheets: alloy surcharge as well as base price. The alloy surcharge is an industry standard and the base price is what the suppliers themselves can influence. A good relationship with a supplier leads to better base prices and more favorable payment terms. In addition to Swedish suppliers, CEPA also has suppliers based in Denmark, which is relatively close to CEPA as well. There is also the American supplier Bozek Precision, see Figure 4.4. Many of CEPA's suppliers have been around for a long time. However, contracts are more short term oriented (Procurement manager, 2024).

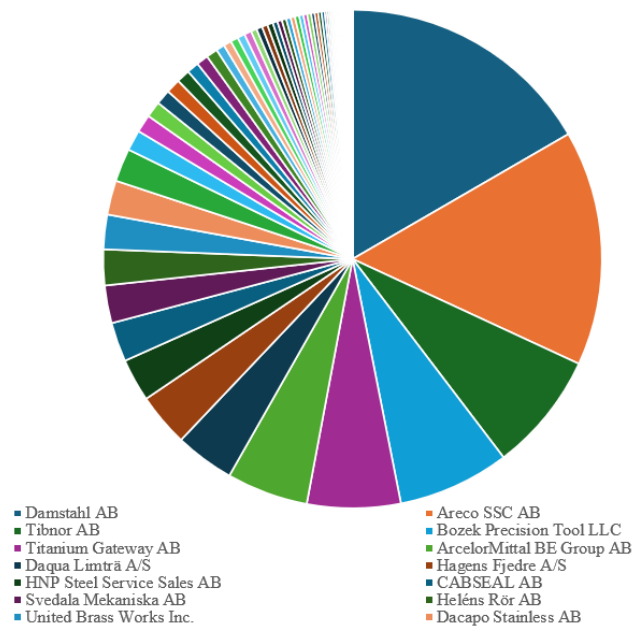


Figure 4.4: Chart over CEPA's suppliers 2023

In Figure 4.5 an example of the material flow at CEPA can be seen. The component being manufactured to Customer A is a valve, likely a part of a heat exchanger. To produce the valve, the following components are necessary: spring, pipe and metal

sheet. The spring is procured from Hagens Fjedre - a manufacturer based in Støvring, north Jutland. The pipe is procured from H. Butting - a manufacturer based in north Germany. The metal sheet is procured from Aston Carlsson AB - manufacturer based south of Stockholm. The raw material gets delivered to CEPA via trucks. At the warehouse the material gets controlled at arrival. This includes verifying correct documents and ensure the material is correct in quantity as well as intact. For some materials, a more rigorous quality control is conducted where a sample is taken out and examined further. The sheet metal is stored in a vertical storage. When a manufacturing order is started the raw materials are fetched from the storage and enters Work In Progress (**WIP**). The material is first cut in the laser machine, after this the product is manually controlled. The product is shaken under the process "shaking" to be prepared for the hydraulic press. After the press the product passes through the hydraulic press it gets washed to be prepared and is finished. The finished product, a valve in this case, is stored in the finished goods inventory before it is shipped to Customer A.

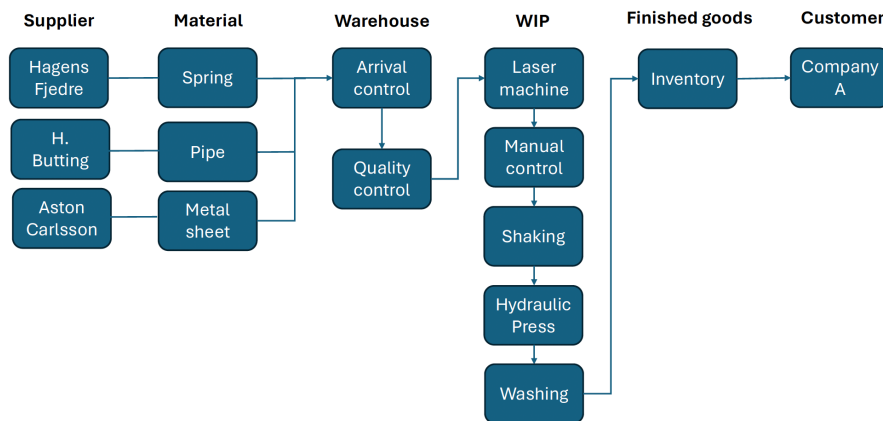


Figure 4.5: An example of an material flow at CEPA

Since Customer A and Customer B are such large customers they in turn have subsidiaries which CEPA deliver to. Thus CEPA's largest customers are mostly subsidiaries of these large groups. For example, although one group, Customer A has multiple different sites all the way from Japan to the USA. During 2023 CEPA delivered approximately 3000 to 3500 different articles to its customers. CEPA's multiple customers are a way of diversifying and the Market manager (2024) claims that this is beneficial since when one industry goes down other industries can compensate for that. When it comes to customer strategy, CEPA prefers recurring customers over temporary ones. This goes in line with the customer offering that CEPA brings which is collaboration and service to customers. This is also one of the reasons why CEPA has had such a long history with Customer A and Customer B (Market manager, 2024).

Factors such as quality, price, and lead time are important for all CEPA's customers. CEPA's goal is not to be the cheapest actor on the market, rather it is to offer a broader proposition to customers. Customer A has been a loyal customer since 1968,

Customer B since 1978 and since 2011 when the Market manager (2024) started working at CEPA all new customers acquired are still with CEPA to this day. The Market manager (2024) emphasizes that CEPA should be market competitive but not the cheapest actor. The Market manager (2024) communicates to customers that there are each individual actors who can deliver part of CEPAs processes cheaper. But there are very few competitors who can offer CEPA's complete package along experience and reputation (Market manager, 2024).

Customers answers through surveys, see Appendix C confirm that their products have a stable demand. Customers pretty satisfied with CEPA as a supplier, ranked 5 from a 1-7 scale. CEPA according to them stands for high quality products and CEPA's vision of "One stop shop" is fairly accurate. When it comes to CEPA's prices, they are seen as neither expensive nor cheap - in line with the Market manager (2024) "market competitive" prices. CEPA's customer has quality ranked highest among factors they consider when purchasing CEPA's products. When it comes to things CEPA can improve to customers, consensus is that they should improve their delivery on time.

### **4.1.3 Supply chain alignment**

One clear misalignment within the supply chain, as this thesis defines it, is one of payment terms according to the Plant manager (2024). One of the biggest customers, Customer B, whose share of total revenue can be seen in Figure 4.2, has payment terms of 90 days, added that they only pay the fourth of every month (Procurement manager, 2024); (Plant manager, 2024). This means that the payment term could be up to 120 days for one of the biggest customers, while the suppliers have payments term significantly lower. Customer A on the other hand, has 30 day payment terms (Plant manager, 2024). Although CEPA had problems with its liquidity during a time when inflation was high, Customer A paid as fast as in eight days to support CEPA during this time (Plant manager, 2024).

Currently (March 2024) one of the few customers that is giving an accurate forecast is Customer B in the form of an EDI - Electronic Data Interchange, the rest is a mail order says the Plant manager (2024). Customer B also has fewer different articles that CEPA delivers on a given year compared to Customer A. However, it is often more complex in the number of operations and sub-articles that it consists of. For 2023, CEPA delivered approximately 350 different articles to Customer B (Market manager, 2024).

For customer A, no forecasts are given to CEPA. The orders are mail orders, and the expected lead time is approximately 10-15 working days (Operational purchaser, 2024). The number of different articles delivered by CEPA to Customer A for 2023 was approximately 1,370. It is common for these to have fewer operations needed and therefore are less complex according to (Market manager, 2024).

### **Alignment within CEPA**

One misalignment according to the plant manager (2024), is that CEPA works to avoid the incentive for the market department to reach a "order entry against budget" without considering the time and, therefore, the cost, it takes for the engineering department to prepare and give a price to the customer. To avoid this, a weekly meeting is called in which both the market, the engineering department, quality, and purchasing to look at which jobs and job prospects are profitable and therefore

accepted (Plant manager, 2024). The accepted jobs that are in line with the company strategy is then moved over to another meeting where the engineering department together with production goes over the technical aspects of the work that is going to take place.

This touches on another misalignment or silo thinking that has occurred historically and which CEPA has worked to reduce by the meeting described above. That is, the engineering department can be seen to have an incentive to send a job as quickly as possible to production and not necessarily to ensure that it is fully prepared for production (Plant manager, 2024).

#### 4.1.4 Incentive alignment

In the current supply chain, it seems that the most common incentives are in place. When customer A was asked how strong the incentives are for CEPA to meet their requirements, the global purchaser from Customer A answered six on a scale of seven. When later asked in the survey, see Appendix C, to give examples of these incentives, they answered "Increase or loss of volume". This is a common incentive, but since Customer A represents such a significant share of the revenue, this is more noteworthy. There are many cases where incentives for higher volume purchases are given by suppliers in the form of significant volume discounts, normally flattening around 1000 kg. Another common incentive from suppliers is for purchases over a certain weight to have free transport. Both are in place to increase batch sizes and spend and to make it more efficient for suppliers to ship orders.

From interviews with the Operational purchaser (2024), it is established that the feedback loop is mainly based on when the production does not have the required materials. This is complaint-based feedback creating an incentive for higher inventory levels than might be necessary; just in case. For financial flow, some of the customers have a certain number of days + End of Month (**EOM**) payment terms. This creates an incentive to lower the delivery of their order early in the month, as it does not affect when the payment arrives.

#### 4.1.5 Key performance indicators

From the plant manager's (2024) viewpoint there are some KPI's that are especially important, these were the result EBIT - Earnings before interest and taxes and the gross margin, see Table 4.1. Also, the previously mentioned Order entry against budget is very important. This KPI serves an important function within the company from a management perspective since it e.g. is used to plan the number of employees etc. as the planning horizon is not far.

There are no clear incentives or rewards in place related to KPI's (Plant manager, 2024). The market department measures the DOT from the moment a shipment leaves CEPA and not necessarily from the moment a shipment arrives at the customer. It is also measured toward the date that CEPA confirms toward the customer, and not any agreed lead time (Market manager, 2024).

An example, that showcases the importance of the order entry against budget, was when it was lower than expected in September of 2023 and the company had to terminate some employees' employment. Each year in January the top management group sets the KPI's for the year, most remain the same, and changes the goals. A part of these meetings functions is to make sure that the KPI's reflect the business

performance and that there is a common thread. Another goal of the meetings are to make sure the KPI's don't create misalignment in the form of optimizing one KPI at the expense of the business as a whole. When it comes to KPI's and the amount of working capital there are three KPI's in use. There is the inventory turnover rate, which currently is a KPI for the financial department, to reduce the inventory costs of which the production department has ownership; see Table 4.1 and inventory analysis, which is a KPI for the purchasing department.

Table 4.1: Selection of KPI's representing different departments at CEPA

<b>KPI's</b>	<b>Definition</b>
<b>Financial Department</b>	
EBIT	Earnings before interest and taxes
Personnel cost/revenue (excluding scrap)	The aggregated personnel costs including the cost of temporary personnel related to the total revenue (excluding scrap).
Other expenses/revenue (excluding scrap)	Other expenses related to total revenue excluding scrap in the period and cumulatively
Gross margin (excluding hired personnel)	Gross profit (excluding the cost of hired personnel) related to revenue in the period and cumulatively.
Inventory turnover	The value of inventory related to the cost of goods sold accumulated (rolling 12 months)
Revenue vs. budget excluding scrap	Revenue excluding scrap and other income in relation to the budgeted revenue (excluding scrap and other income)
<b>Marketing Department</b>	
Customer Satisfaction	CEPA is graded on a scale 1-5 by customers in a survey and the average score becomes the KPI
Won Items from Quote to New Items (status)	Number of registered items in the quote status compared to the number of items in the new item status. This is to determine how many items we "win" (linked to customers)
Order Intake vs. Budget	Ensuring that the order intake aligns with the set budget or exceeds it.
<b>Procurement Department</b>	
Delivery precision	The ability of suppliers of purchased inventory-controlled material to meet agreed-upon delivery times.
Payment terms	Supplier payment terms weighted against the cost allocated to each supplier, excluding only service suppliers (Supplier type 6)
Inventory analysis of purchased material	Purchase costs divided by revenue for a period.
Percentage of rejects	The ability of suppliers to deliver agreed-upon quality.
<b>Production Department</b>	
Productivity	How much time is clocked as direct and non-order-bound out of the total clocked time.
Efficiency	Produced time through attendance time.
Delivery precision to customer	The percentage of the total delivered orders that were on time.
Reduce inventory costs	Inventory costs for purchased and manufactured items older than two years.

## 4.2 Procurement strategies

### 4.2.1 Strategic Level

The top management team has been focusing on the company's liquidity and cash flow, which has translated into a change in purchasing behavior for the procurement department where they have now started to purchase more to demand than earlier (Procurement manager, 2024). The aim is to use up the material within 30 days, for the time being. Another part of this is the increased importance of longer payment terms for the time being (during the spring of 2024), where it weighs more heavy than price (Procurement manager, 2024). This is expected to change in the next few months (around May/June in 2024) and then the supplier selection process will be more incline towards choosing suppliers based on price and quality. Since according to the Procurement manager (2024) lack in quality for raw material creates extra costs throughout the company with delays etc., which makes it a high priority. The lead time is also an important consideration, as it allows for lower inventory levels and therefore a lower degree of working capital, which is in line with the current business objectives.

#### Uncertainties

The purchasing manager describes the supply of materials as stable, as CEPA has mainly geographically close suppliers in Sweden (Procurement manager, 2024). Uncertainties occur mainly on the supply end when an order comes to CEPA for a product where the material quality standard is very high, which makes it harder to acquire since it's not as common on the market. This makes the minimum order quantity (**MOQ**) higher as the supplier does not sell as much of it, and CEPA approaches these problems by using a framework order. A framework order is an order that specifies how much CEPA will procure from the supplier in a period of time. They are bound to buy that much from the supplier but if relations are good, this can often be postponed (Procurement manager, 2024).

This is not the case with the Customer B, as they uses an EDI and gives CEPA a forecast where they've negotiated with CEPA's suppliers directly for their forecast amount over a year. From Customer B's perspective this is a way of reducing material costs as they negotiate for multiple smaller suppliers such as CEPA, and by negotiating higher quantities at once uses economics of scale in a way CEPA would not be able. For some of the largest suppliers the information of what they've got in stock, how much, and where it is located is available online. However, even though the demand is perceived as stable demand uncertainty can also be an issue. During Q3/Q4 for 2023 orders from Customer A & Customer B got postponed and as the procurement manager stated, "companies hit the brakes" (Plant manager, 2024); (Procurement manager, 2024).

### 4.2.2 Tactical Level

For the supplier selection process, the Procurement manager (2024) says that CEPA is not one to "cherry pick" among supplier offers but try to choose the best supplier based on the supplier as a whole. This since it allows for better communication and cooperation between suppliers and CEPA. One example of a supplier dilemma can be balancing payment terms against kickbacks. One example was when CEPA wanted to prolong a suppliers payment terms from 60 to 90 days, with the supplier instead offering compensation for CEPA receiving 3% kickback at the end of the year if they

accepted 75 days (Procurement manager, 2024). Another important aspect is that depending on company objectives, CEPA can value different properties for suppliers. As stated previously, improving liquidity is on the agenda for CEPA. This means that currently CEPA cherishes longer payment terms for suppliers rather than bulk discounts (Procurement manager, 2024). The Procurement manager (2024) decides which suppliers to choose from continuously. The decision is largely made on the monthly price updates sent out. The manager often has a primary supplier that the operative purchaser should buy from.

The supplier evaluation process is based in two distinct parts. One is an annual internal survey sent out within CEPA where employees get to report which suppliers they've been in touch with, and e.g. how they think that they performed in it's communication. This is a survey sent once a year (Procurement manager, 2024). The other evaluation takes place each month where the procurement departments KPI's are looked into for the suppliers, and the ones that perform the worst for a period is then contacted to understand why (Procurement manager, 2024). Examples of KPI:s are DOT, payment terms, rejects. It is also something that is communicated each time a supplier comes and visits. An example of an important KPI is delivery on time - DOT from suppliers. Currently DOT is 85-86% according to with the goal of reaching 98%, so as the Procurement manager (2024) points out "there is work to be done".

### 4.2.3 Operative Level

On a day-to-day basis at CEPA there are many procurement decisions made. These are in the operational level of purchasing organizations. The goals that the top management group has set together with the Plant manager (2024) regarding the company's liquidity have been communicated down in the organization, illustrated in Figure 4.1. The effect on operational procurement decisions being a lower order quantity, as well as allowing raw material inventory levels to drop lower than previously according to the Operational purchaser (2024). It should be noted that the operational purchasers work title is sales- and purchasing coordinator and that the responsibilities are not only for the procurement.

In an interview with the Operational purchaser (2024), data is collected about the daily work day routine. This routine involves emergencies as a rule rather than as an exception (Operational purchaser, 2024). The first task each morning is to read emails and prioritize the different urgency levels. An example of an emergency could be a machine breakdown at a supplier that causes them not to be able to deliver. This is most urgent since the next activity is to inform production and start to redo the planning to be able to deliver to the customer. If not possible within the requested lead time to the customer, they need to be informed as soon as possible, e.g., why this task is the first (Operational purchaser, 2024). This re-planning and information sharing is done together in a team. This cross-functional team consists of the operative purchaser, the production planner, and the sales manager (Operational purchaser, 2024).

After the most urgent matters are taken care of, the next activity is looking over to see if there are any late shipments from the suppliers. In that case, the ERP system needs to be updated and the production planner needs to be informed (Operational purchaser, 2024). There is also a need to sometimes remind suppliers to send an order confirmation. According to the Operational purchaser (2024) the fallout often becomes just-in-time, which in the context is that there is often a need for material to

arrive as soon as the day after an order is placed. This is according to the Operational purchaser (2024) since a lot of orders to the customer A have a lead time of 10-15 days, which creates a need for speed.

The other big customer, Customer B; which part of the revenue can be seen in Figure 4.3, sends CEPA's market department their forecast each Sunday. The normal procedure is that on Monday the sales manager at the market department uploads the forecast in the ERP-system and looks over the production order proposal in the system and approves them (Operational purchaser, 2024). When those go live, the system creates suggestions for the procurement organization, based on parameters set such as lead times from suppliers, and what CEPA refers to safety stock. There is currently no precise formula for the calculation for safety stock, but this is instead set by the procurement manager and the market manager, where they together decide the safety stock level based on available information (Procurement manager, 2024).

When the inventory level is predicted to fall below the level of safety stocks, or if there is no safety stock and the inventory level is predicted to drop below zero, a purchase suggestion is created (Operational purchaser, 2024). The normal planning horizon in this case is about a month, and the number of purchasing suggestions from the ERP system is around 400-500 in that time period. If external variables affect these parameters, such as when a customer wants their order delivered, then the procurement order is also shifted. If it is postponed, so is the procurement order, in order not to negatively affect the cash flow. If an order is preponed so is the procurement order, in order not to run out of inventory. The ordering usually occurs in two scenarios. The first is when the raw material is calculated to drop below the safety stock, which creates an order suggestion. The purchaser then orders based on the order suggestions, with a manual touch as they are not always trusted (Operational purchaser, 2024). The second case is when the "safety stock" is set to zero and the production planner plans a production order that triggers a raw material need that requires more raw material than is currently in stock. This also triggers a purchase suggestion, from which the purchaser then orders. The raw material is treated in the same way for Customer B and Customer A, without clear order quantities. The selected supplier is usually the one proposed by the procurement manager. An exception to this can be when the primary supplier does not currently have the component (Operational purchaser, 2024).

During the week, a lot of time is used at the operational level in the procurement organization to handle information when goods arrive without delivery notes (Operational purchaser, 2024). This leads to some investigation from the operative purchaser to track down and identify exactly which goods have arrived, this by calling suppliers. Orders are normally placed to arrive about five days before the material is needed in the production, this the Operational purchaser (2024) says is to allow both the goods reception time to process it as well as quality certificates.

### **Information flow**

The information flow for a new product can be seen in Figure 4.6. It all starts with a customer (often a recurring one), giving CEPA a request to manufacture a product. The request is then received by the marketing manager. The market manager then sends the customer request to both procurement manager as well as production manager. He then summons them for a meeting where he receives input from production whether the new request is within CEPA's technical competence as well as if procurement can source raw material for the product. Optimally, the procurement manager



has been in contact with suppliers and received a quotation from suppliers. If procurement cannot source raw material or if the request is outside CEPA's technical competence the the product is dismissed. Another factor that can potentially dismiss the request is if the financials are not lucrative enough. This meeting is also a way to eliminate organizational silos between departments. If procurement- and production manager supports the quotaton from customer and the financials are satisfactory, the marketing manager reaches out to the customer with a quotation.

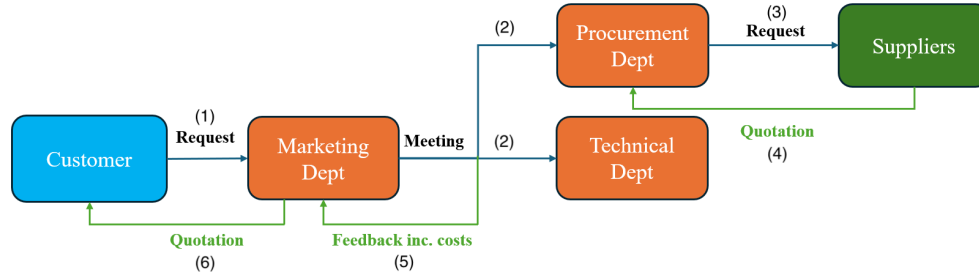


Figure 4.6: The information flow for a new product at CEPA

When it comes to an existing product the information flow is different. For Customer B, see 4.7, Customer B sends a forecast to CEPA in the form of a EDI each week. This EDI includes forecasted future demand. The marketing department then turns these demands into actual production orders. These production orders then trigger a raw material need from the procurement department. The forecast is at least 6 weeks in advance. This makes it so that marketing dept does not need to receive production order confirmation back due to it being so long into the future. Similarly, Procurement does not need to communicate whether material has to be sourced or not due to it being so long into the future. When Customer B sends the actual orders later, CEPA has ideally produced the products and can deliver them directly to Customer B and provide them with an order confirmation, at which point the products will be deducted from the forecast. If Customer B comes in with orders that differ from the previously communicated EDI, Marketing has to communicate manually with production and Procurement. If raw material is not available, procurement has to source it with suppliers. Suppliers then reach back with order confirmation, Procurement communicates to Production, production gives Production order confirmation back to marketing who then later gives order confirmation back to Customer B.

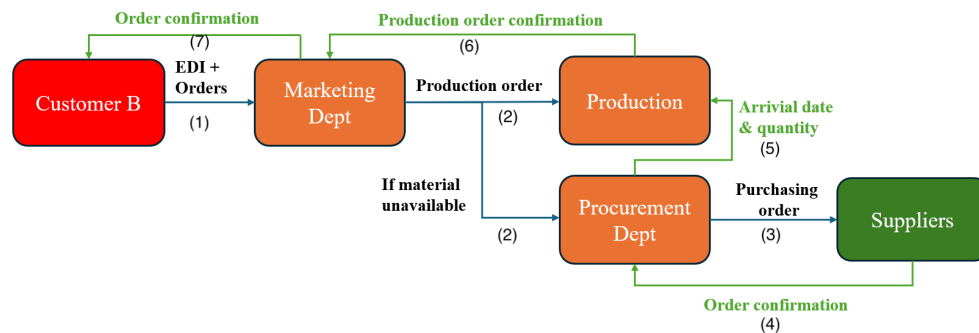


Figure 4.7: The information flow of existing products for Customer B at CEPA

When it comes to existing products Customer A differs from Customer B. Customer A has like previously mentioned no forecast. Therefore, CEPA has to produce make-to-order and to save time the order is directly given to CEPA's production department. If the product is not an existing one or matters needs to be rushed the order first has to go through the marketing dept. If raw material is available and production can manufacture the product in time they send an OC back to customer. If raw material is not available, procurement is contacted and they in turn has to source the raw material. When procurement receives order confirmation from suppliers, they inform production who in turn sends an OC back to Customer A.

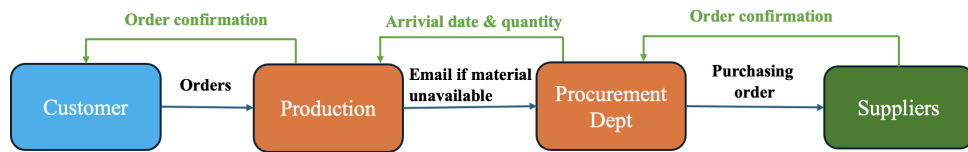


Figure 4.8: The information flow of existing products for Customer A at CEPA

### The production process

A part of reaching the company liquidity goal mentioned by the Plant manager (2024) has been to look over the order quantity in production. The set-up cost has been given a lower weight in batch sizes. An example of this being that previously if an customer placed an order of 100 pieces, and the economic order quantity was 400, then 400 was produced. Now with lower weight placed behind the set up cost, one instead produced to demand as much as possible. While the set-up costs are higher, it still has positive effects on the cash flow since not as much materials needs to be ordered says the Plant manager (2024).

The production department together with the quality department has started using methods to find quality problems earlier than before, such as parts of a root-cause-analysis (Production manager, 2024). The production and CEPA as a whole aims, as previously stated in the Market managers (2024) interview, to get more high volume orders that are less complex than what they have done previously. This is supported by the Production manager (2024) that explained that there have been investments in new machinery to be able to handle more automated jobs that can run without staff during evening and nights. As for the finished goods warehouse, it is currently (March, 2024) overstocked and a utilization rate more than 100% according to the Warehouse manager (2024).

## 4.3 Data retrieved from Archival Records

### 4.3.1 The financial flow

The current lack of liquidity within the company is mainly because customers that represent a large share of the revenue postponed their orders during Q4 in 2023, which still has some effect on liquidity, but it is decreasing (Plant manager, 2024). The gap in payment terms between CEPA customers is also a contributing factor that is more subtle than the closely monitored KPI "Order Intake vs. Budget", which is seen Table 4.1.

CEPA is currently using a KPI to monitor existing cash flow by looking at how much

cash is spent on suppliers with different payment terms, seen in Table 4.1. This KPI was developed by one of the authors of the thesis in the autumn of 2023 as an alternative to looking at the payment term average. Instead, the suppliers' share of total purchasing costs is weighted, as well as the payment terms. This can be seen in equation 4.1

$$\frac{\sum_{i=1}^n \text{PaymentTerms}[\text{Days}]_i \cdot \text{SupplierTiedCost}[\text{SEK}]_i}{\text{TotalCost}} \quad (4.1)$$

The same logic for suppliers can be applied to customers to analyze the role payment terms play on company cash flow. The alignment of the supply chain as a whole for the financial flow would be that all actors in the supply chain have the same payment terms in number of days. When analyzing supplier's payment terms the focus is on costs as it is the exit flow of cash, and a high number would mean that CEPA have more time before they have to pay. Instead, when looking at the inbound cash flow, the revenue each customer brings becomes the corresponding value, this is seen better in equation 4.2.

$$\frac{\sum_{i=1}^n \text{PaymentTerms}[\text{Days}]_i \cdot \text{CustomerTiedRevenue}[\text{SEK}]_i}{\text{TotalRevenue}} \quad (4.2)$$

### Cashflow and payment terms analysis during 2023

Looking at historical data is needed to put current affairs in perspective. First, a look at the total outbound cash flow is taken.

#### Suppliers

CEPA uses seven different categories to sort their supplier, seen in Table 4.2. An important note is that the supplier category "Transport" is not all transport as the transport costs for inbound shipments often are a part of the invoice from the supplier. As such, the transport costs for inbound shipments are included in the supplier type later in this analyze.

Table 4.2: Supplier categories used at CEPA

Supplier Type	Definition
1	Direct raw material
2	Direct refinement
3	Direct components
4	LEGO
5	Indirect
6	Services
7	Transport

1. All 396 suppliers that were invoiced during 2023 are listed from the ERP-system monitor. Suppliers who had invoices with different payment terms during 2023 appeared in multiple rows, with the cost associated with each unique payment term. In total there was 408 rows.

2. Of these 396 suppliers, 12 were not categorized as of 17 April 2024. These were categorized together with the purchasing manager to allow a more accurate analysis.
3. The assumptions and simplifications of the raw data, seen listed below, were implemented and the calculations was then done in excel using the modified data from the ERP-system.

There are four assumptions/simplifications that affect the result of the calculations. Both can be avoided, but the small effect it would have on the results is not deemed worth the time it would take to collect the exact data for the calculations.

1. Four suppliers had negative costs because of refunds, these where small costs with no great effect and therefore they were excluded all together from the analysis.
2. Some suppliers had the payment term EOM + X [Days], where a supplier might, as an example, have 30 days payment terms after the end of the month. To take this into account, an assumption was made that the average number of days left on the month when an invoice was sent was 15. This is because the average number of days in a month is about 30, and the distribution of delivered orders is assumed to have a continuous uniform distribution. This does not take into account that there is an incentive to send out these orders later in a given month and instead try to deliver orders that have a set number of days as a payment term. This is because payment will not arrive sooner if it is delivered the first day of a month or the last. In total, six rows and around 37 million SEK was affected.
3. The few suppliers which were paid in advance in 2023 was simplified to have a payment term of 0 days. This weighs down the weighted average since the total costs, the denominator in equation 4.1, increase while the numerator in equation does not. This is a simplification, as it should weigh down the average even more. But to exclude it would further misrepresent its value than the current assumption, especially since those rows represent around 30% of the total costs.
4. This analysis also excludes internal invoices in the company group.

The result is seen in Table 4.3.

Table 4.3: The result of the calculations for weighted average of supplier payment terms for year 2023

<b>Supplier Type</b>	<b>Result</b>
1 - Direct raw material	40,93
2 - Direct refinement	56,39
3 - Direct components	37,92
4 - LEGO	31,37
5 - Indirect	34,76
6 - Services	28,16
7 - Transport	24,55
1-3 Direct	49,09
All excluding services	44,39
1-7 All	40,93

## Customers

CEPA's customer stands for the inflow of cash in the company, and their payment terms become a reference point for the supplier payment terms. As it is the supplier's deviation from the customer's payment term that would contribute to a lack of liquidity. They could contribute to an improved liquidity if they, against what the data implies, such as the interviews with the Plant manager (2024), the Procurement manager (2024) and the Market manager (2024), were longer than for the customers. Similar assumptions will be made when looking at the cash flow from customers, mainly:

1. Of 91 rows with unique customer and payment terms, invoiced during 2023, two had negative revenue and were excluded without any significant implication on the result.
2. 89 rows remain, which contained 86 suppliers. This implies that some suppliers had multiple payment terms during 2023.
3. Some customers had the payment term EOM + X [Days], where a customer, as an example, might have 60-day payment terms after the end of the month. To take this into account, an assumption was made that the average number of days left on the month when an invoice was sent was 15. This is because the average number of days in a month is about 30, and the distribution of delivered orders is assumed to have a continuous uniform distribution.

Table 4.4: The result of the calculations for weighted average of customer payment terms for year 2023

Customer	Result [Days]
Customer B	75,71
Customer A	34,25
All customers	43,23

Since averages can sometimes obscure important details in the data, a more thorough analysis is necessary. The same formula, 4.2, was applied individually to each company within the Customer B group, as well as to Customer A, with the results presented in Table 4.4.

### 4.3.2 Supplier delivery precision

As seen in Table 4.1, there is one KPI connected to the supplier delivery precision. This KPI aims to measure how well a supplier is able to keep the delivery date they have given in the order confirmation, and for CEPA this represents how stable the supply from a supplier is. The KPI is calculated as shown in the formula 4.3, where the tolerance for a delivery is five working days before the confirmed delivery date or three days after the confirmed delivery date. Within this tolerance, a delivery is currently counted as delivered on time.

$$\text{Delivery Precision} = \frac{\text{The Number Of Deliveries Within The Tolerance}}{\text{The Total Number Of Deliveries}} \quad (4.3)$$

In the ERP system, each article has the option to have a lead time connected to it. This lead time is used by the operative purchaser to be able to plan when an order

should be placed to arrive in time for when it is needed in the production. Often with the previously mentioned five extra working days to make sure that there is time to, e.g. check certificates regarding quality, etc. (Operational purchaser, 2024). Currently, the lead times in CEPA's system are inaccurate for many articles. Of the 729 different sheet metal articles in the system, only 272 had a lead time for the current supplier in use. Of the 729 articles, 247 had a general lead time for the articles, some had both the specific supplier lead time and the article lead time.

In Table 4.5 an overview is seen for the 10 biggest suppliers for 2023, type 1-5 (as defined in Table 4.2). In-time delivery is, as previously mentioned, defined to be within the tolerance of three days before what is said on the order confirmation, and three days afterwards. As a KPI for delivery precision, this does not account for:

1. The lead time that a supplier said to be able to deliver on when the supplier was selected. This lead time is the one that should be in the system for both ERP-system calculations and for the purchaser to be able to place correct orders. Currently (April 2024) an article that was said to have a lead time of two working days by the supplier could be delivered in 20 days and still be registered as a in-time delivery as long as that is what is said on the order confirmation.
2. How late an order is. If a order is one day and another is one hundred days late, the current KPI values them the same.
3. That with the current tolerance, all orders could arrive three days after the confirmation and still be registered as a delivery in time, even if an urgent order was supposed to arrive tomorrow.
4. If an order is late or early. If an order is four days early or four days late it is valued equally, when most would agree that a late order is worse than an early one.

Table 4.5: Delivery Precision 2023 - Top 10 Suppliers in spend size (Type 1-5), 3-Day Tolerance

Supplier	Number of deliveries	Deliveries precision
Damstahl AB	374	95%
Areco Industry AB	234	96%
Tibnor AB	189	91%
Bozek Precision Tool LLC	108	99%
Titanium Gateway AB	85	84%
ArcelorMittal BE Group AB	83	93%
NOA MEKANISKA AB	116	57%
Daqua Limträ A/S	56	50%
Hagens Fjedre A/S	18	89%
Emaballage & Transport i Gembla AB	43	84%
All suppliers	4533	79%

The delivery precision for 2023 was 79% with the goal of 98%. This is a difference of 19 percentage points. The total number of deliveries that were out of bounds for the tolerance of three days early and three days late was 968 of the total of 4533 orders.

Of these, 482 of the orders were early and 485 were late. Only looking at late orders would bring the KPI, with a three working day tolerance for arrival, would bring the number to approximately 89% for the year 2023.

However, if the tolerance for late delivery of orders is decreased to zero and early deliveries are counted as in time, the numbers change to what is seen in Table 4.6. This way of measuring the delivery precision ensures that a supplier delivers within the time frame that they have confirmed to do. Even if early delivery in reference from order confirmation might be negative for cash flow. This is because the payment terms are counted from the day that a shipment arrives at CEPA. Generally, this impact is minor compared to the consequences of not receiving the necessary materials on time. Not only when looking at the damage it causes by effecting CEPA's ability to deliver on time, but also when looking at the amount of time (and therefor cost) for employees in the supply chain to re-plan the flow of material.

Table 4.6: Delivery Precision 2023 - Top 10 Suppliers (Type 1-5), 0-Day late Tolerance

<b>Supplier</b>	<b>Number of deliveries</b>	<b>Deliveries precision</b>
Damstahl AB	374	54%
Areco Industry AB	234	79%
Tibnor AB	189	69%
Bozek Precision Tool LLC	108	99%
Titanium Gateway AB	85	48%
ArcelorMittal BE Group AB	83	61%
NOA MEKANISKA AB	116	66%
Daqua Limträ A/S	56	13%
Hagens Fjedre A/S	18	89%
Emaballage & Transport i Gembla AB	43	86%
All suppliers	4533	62%

A comparison of Table 4.5 and Table 4.6 is shown in Table 4.7. It should be noted that not only is the tolerance of how late an order can be changed, but any restriction of how early it can be has been completely removed for the 0-day tolerance. Two parameters have been changed when showing the difference in Table 4.7. Most suppliers have a clear drop in delivery precision when measuring with a tolerance of 0 days while allowing unlimited early delivery. However, one of the top ten suppliers has a positive change in delivery precision. The supplier NOA MEKANISKA AB increases by nine percentage points (almost 16%). This means that the supplier has had a significant portion of the orders delivered earlier than the allowed 3 day tolerance. This, as previously stated, has significantly less impact on the bottom line of CEPA. It is also safe to assume that it is a simpler problem to solve than if the low delivery precision was caused exclusively by delays.

Table 4.7: Difference in Delivery Precision Between Tolerance Levels

<b>Supplier</b>	<b>Number of deliveries</b>	<b>Deliveries precision 3-Day Tolerance</b>	<b>Deliveries precision 0-Day Tolerance</b>	<b>Difference [% points]</b>
Damstahl AB	374	95%	54%	-41%
Areco Industry AB	234	96%	79%	-17%
Tibnor AB	189	91%	69%	-22%
Bozek Precision Tool LLC	108	99%	99%	0%
Titanium Gateway AB	85	84%	48%	-36%
ArcelorMittal BE Group AB	83	93%	61%	-32%
NOA MEKANISKA AB	116	57%	66%	9%
Daqua Limträ A/S	56	50%	13%	-37%
Hagens Fjedre A/S	18	89%	89%	0%
Emaballage & Transport i Gembla AB	43	84%	86%	-2%
All suppliers	4533	79%	62%	-17%



# Chapter 5

## Analysis

### 5.1 Strategic alignment - Literature comparison

#### 5.1.1 The company strategy

From Eccles (1991) it is clear that a corporate strategy should be derived from the needs of the customer. There has also been a clear transition from financial metrics to metrics that emphasize customer satisfaction. Different customer needs invite different supply chain management strategies Chopra and Meindl (2007). A customer who can provide an accurate forecast because they have stable demand would invite an efficient supply chain that focuses on meeting customer expectations while reducing costs by meticulous planning. A customer that has an uncertain demand and can not provide forecasts could instead invite for a more responsive supply chain as a way of managing it. This concept is illustrated in Figure 3.2, see page 18.

In the surveys sent out to the key customers, there is a question regarding if they think the description "one-stop-shop" is fitting for CEPA. This is relevant as many managers, such as the Plant manager (2024), the Procurement manager (2024) and the Market manager (2024), describe it as a part of the company strategy. As many customers seemed to think it was a rather fitting description, part of Eccles (1991) requirement for what constitutes a successful company strategy is fulfilled. The metrics, also referred to in this thesis as KPI's, are something that will be discussed in greater detail at a later stage of the Analysis. For now, it can be established that the top management, with a wide range of responsibilities including overseeing CEPA and other companies within Stockforsa Invest, focuses primarily on financial metrics in contrast to Eccles (ibid.). This is based on an interview with the Plant manager (2024), where the question of which KPI's are the most important was answered, being "order entry vs budget" and the net margin.

Through the interview process and the qualitative data collected, it is clear that there is a significant difference between Customer B and Customer A in terms of certainty. It is clear that there is a need for responsiveness for Customer A, looking from Chopra and Meindl (2007) arguments. This is because they do not have forecasts for CEPA and have relatively short lead times of usually 10-15 working days (Operational purchaser, 2024). The need of a supply chain strategy for Customer B would be an efficient one compared to Customer A, as CEPA is given an accurate forecast from Customer B and the operational purchaser is able to have a planning horizon of more

than two months in advance through the EDI-system which was discussed in the Empirical study.

### 5.1.2 The products and the supply chain

According to Fisher (1997), there are two types of products, functional and innovative products. These two different product groups have their own characteristics. The highlighted characteristic is that of predictable or unpredictable demand. But in short, a functional product satisfies a basic, unchanging need and has low margins, a long life cycle, and predictable demand (ibid.). Examples of this could be paper towels or light bulbs. For an innovative product, it is closer to the opposite. Having high variety, short life cycle, high profit margins, and unpredictable demand (ibid.). Using an efficient supply chain, as illustrated in Figure 3.3, for a functional product should aim to minimize production, transportation, and storage costs. Here, suppliers are chosen because of their cost and quality. If the products are innovative, the supply chain should be responsive to manage uncertainties (ibid.). A fast and flexible supply chain, investing aggressively in reducing the lead time to delivery and choosing suppliers for their speed, flexibility, and quality. Some of the characteristics of functional and innovative products are shown in Table 5.1.

Table 5.1: Functional and innovative products with their differences in demand according to Fisher (1997).

<b>Definition</b>	<b>Functional (Predictable Demand)</b>	<b>Innovative (Unpredictable Demand)</b>
Product life cycle	More than 2 years	3 months to 1 year
Contribution margin	5% to 20%	20% to 60%
Product variety	low (10 to 20 variants per category)	High (Could be millions)
Average error in forecast	10%	40% to 100%
Average stockout rate	1% to 2%	10% to 40%
Lead time required for made-to-order products	6 months to 1 year	1 day to 2 weeks

As CEPA is an OEM that deals with around 3000-3500 unique products each year (Market manager, 2024), it is hard to categorize them according to Fisher (ibid.) functional products or innovative products. A selection of the characteristics listed for the demands aspects for functional versus innovative products is selected from Fisher (ibid.) and seen in Table 5.1. One characteristic was excluded in this Table, which was the "average forced end of season markdown as percentage of full price" since most of CEPAs production is made to order, being an OEM that mainly takes their order by email. Therefore, the characteristic is not considered relevant.

A comparison of Customer B and Customer A as two categories to this list, mainly the two "lead time required for made-to-order products" and "average error in forecast", Customer A seems to be closer to the description that Fisher (ibid.) gives for innovative product. As the Operational purchaser (2024) said in an interview, Customer A often has orders that need to be delivered within 10-15 working days. And,

as previously shown in the information flow for Customer A, an email is sent directly as a production order goes live if there is no material available to the purchaser. This is done to ensure that the information flow is as fast as possible and to allow the shortest possible lead time from the supplier. Currently, there is no widespread forecast that CEPA has access to for Customer A's products, which means it is impossible to distinguish how accurate such a forecast would be, referring to Table 5.1.

For Customer B there is an accurate forecast for the coming months that allows the purchaser to plan and place orders months ahead of the order (Operational purchaser, 2024). The forecasts are accurate, according to the Operational purchaser (2024), and the lead times required for made-to-order products are long, which allows for more careful planning. This is the main characteristic, along with the predictable demand, that would strengthen that Customer B's products that CEPA works with are more functional than Innovative. And according to Fisher (1997), this would invite an efficient supply chain, while Customer A's products that appear to be more innovative than functional would invite a responsive supply chain strategy, as shown in Figure 3.3.

Table 3.2 in the Frame of reference, page 22, lists the focus points for the different supply chains. The findings are that customer A has a need for a market-responsive strategy, as expanded upon in this section previously. The primary purpose of being market-responsive is to be able to respond quickly to unpredictable demand to minimize stockouts, forced markdowns, and obsolete inventory (ibid.). For CEPA, being an OEM, markdowns are not possible.

From Table 3.2, page 22, this materializes for the procurement organization into key focus points for Customer A's supply chain. These are summarized in Table 5.2 for Customer A. For CEPA it is in most cases not relevant to deploy a buffer stock of finished goods as most parts are made to orders, but for products that are recurrent, this might be viable. The most viable option in regards to inventory strategy is to ensure that the raw material is available for Customer A's products by keeping inventory.

Table 5.2: Summarized findings for Customer A based on the theory presented by Fisher (1997, p.108).

	<b>Customer A - CEPA procurement focus</b>
Inventory strategy	Deploy significant buffer stocks of parts or finished goods
Lead-time focus	Invest aggressively in ways to reduce lead time
Approach to choosing supplier	Selected primarily for speed, flexibility, and quality

Related to inventory is investing aggressively in reducing lead times between CEPA and the suppliers selected for Customer A. This would allow CEPA to maintain lower inventory levels and still meet demand, allowing for less capital being tied, which is a goal CEPA has connected to the liquidity of the company. Expanding on this rationale, the more expensive the raw material or a component is, the more important the short lead times become, as higher inventory levels of expensive material obviously tie up more capital. Shorter lead times also allow for less stockouts for products in which raw materials are not kept in inventory, allowing CEPA to increase their DOT

and benefit from the higher volumes, instead of lowered volumes, that Customer A has named as incentives. From the interviews with the Procurement manager (2024) and the Operational purchaser (2024) it has been understood that there is a lot of outdated information in the system, which indicates a lack of processes to keep the system up to date.

For the approach to choosing suppliers for Customer A’s material and components, they need to match the demands explained in this section. This results in them being chosen primarily for speed, flexibility, and quality. This creates a more aligned supply chain from Customer A’s requirements, which has been explained in this section, and the suppliers that CEPA works with.

For customer B the need is for a for a physical efficient supply chain, and the main purpose is to supply the predictable demand efficiently at the lowest cost possible. The focus points for CEPA’s procurement organization to handle Customer B’s supply chain are summarized in Table 5.3.

Table 5.3: Summarized findings for Customer B based on the theory presented by Fisher (1997, p.108).

	<b>Customer B - CEPA procurement focus</b>
Inventory strategy	Generate high turns and minimize inventory throughout the chain
Lead-time focus	Shorten lead time as long as it doesn’t increase cost
Approach to choosing supplier	Select primarily for cost and quality

The accurate forecast in use that allows the Operational purchaser to place orders for delivery months in advance, allowing for low inventory levels due to the opportunity for planning and the certainty in demand. Customer B has an integrated supply chain and chooses their second-tier suppliers, this makes ordering to demand more challenging as CEPA does not have the same leverage they would have in negotiating MOQ or add-on fees for low-order batch sizes. However, this rationale from Fisher (1997) allows CEPA to keep inventory to a minimum for raw materials and components that are exclusive to Customer B. The focus on lead time is heavily reduced compared to what is recommended for Customer B’s responsive supply chain, as the forecast allows for much longer lead times. The main focus for supplier selection is on cost and quality, and as CEPA does not have autonomy to choose Customer B’s suppliers, this is not as relevant as the related inventory strategy. From the perspective of Customer B, being described as cost focused by the Plant manager, an alignment would be to have CEPA sharing the focus.

As for CEPA’s current (June, 2024) supply chain strategy, it seems that there is no clear distinction between the ways of handling these two different supply chains, based on the interviews conducted during Q1 and Q2 of 2024. This leaves CEPA without strategies for dealing with these two large customers with different supply chain needs.

### 5.1.3 Supply chain alignment

As previously quoted, Melnyk et al. (2010) argues that to succeed, supply chain managers must understand the need of key customers and align the design of the supply chain according to the wishes of its customers. Tamas (2000) explains that

poor business performance is caused by the failure to align internal processes with the company's strategic goals. Looking externally from the company, there are other parts of the supply chain that each tries to maximize only its own interest (Lee, 2004). This can make strategic alignment with multiple supply chain actors more difficult to achieve. According to Wong et al. (2012), there are multiple enablers for strategic alignment which can be divided into the six categories; Organizational structure, Internal relational behavior, Customer relational behavior, Top management support, Information sharing, Business performance measurement system.

The data collected do not definitively indicate whether CEPA employs different supply chain strategies for Customer B and Customer A. However, it is evident that their customer requirements differ significantly. In particular, Customer B uses a specific forecasting method, while Customer A requires a shorter lead time, necessitating faster order fulfillment by CEPA (Operational purchaser, 2024). This could be part of the reason why CEPA is struggling to reach its delivery on time goal of 98%, to be able to achieve 88%. As Tamas (2000) argues, this poor business performance is often caused by failing to align internal processes with the company's strategic goals. This is something that is hard to give an adequate answer to as there are too many processes for one thesis to explore in significant depth to be able to draw conclusions. The number of processes that are capable of helping to achieve the strategic goal stated by the Plant manager (2024) is high. The strategic goal of increasing liquidity seems to have created processes in line with this. Overlooking safety stock and reorder points for raw material, negotiating longer payment terms with suppliers as part of the financial flow. There has also been an effort to sell inventory that has not been used for more than two years and is thus written off. This can be argued to be in line with the strategic goals, but there are many more process owners, and this can therefore not be said to be a definite answer to the alignment of processes to the strategic goals.

The gap between the Customer B's payment terms, which was 75 days + EOM, and the payment terms that CEPA has towards their suppliers, which are much lower, could be argued to fit the Lee (2004) explanation where each member of the supply chain only tries to maximize its own interest. If the misalignment in financial flow serves Customer B short-term more than the possible development long-term CEPA would be able to achieve with a more balanced financial flow is hard to tell, and on the edge of this thesis scope. It is enough to draw a comparison between this situation and Wong et al. (2012) strategic enabler category "Customer relational behavior". This is an extract from Table 3.3 shown in the Frame of Reference. The ones concerning Customer Relational Behavior are shown in Table 5.4.

Table 5.4: Strategic alignment enablers - Customer relational behavior according to Wong et al. (2012).

Customer relational behavior	Goal sharing Cost sharing Profit sharing Joint problem solving Joint planning
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Using Table 5.4, one can compare the two units of analysis, Customer B and Customer A. It is not as simple as giving clear yes or no answers, as the data collected are not pointing as obvious towards one definite answer for each listed activity. Customer A

seems to be a much more involved customer, with an interest in developing CEPA as a supplier, based on the collective interviews carried out. Both Customer B and Customer A are huge companies compared to CEPA, and both can be argued to be more or less involved in each of the listed activities to various degrees. It should be noted that Customer A is currently (April 2024) trying to implement forecasts for CEPA, another example of joint problem solving. The key difference is in:

- Joint planning, where Customer B is able to provide accurate forecasts.
- Profit sharing, where Customer A is able to allow short payment terms.
- Goal sharing, where Customer A is very involved to further develop CEPA.

The missing data on whether there are clear supply chain strategies in place also points to a conclusion. As the data do not definitively show two different supply chain strategies for Customer B and Customer A, it is likely that there are no unique strategies at all. Similar to survivorship bias, where important information might be overlooked because the focus is on what is clearly visible without considering what is missing. Continuing from the assumption that there are no two distinct strategies in place, the focus now shifts to the reasons. As Norrman and Näslund (2013) explains in their paper, the most common self-reported reason for this is the lack of time and functional silo thinking. As silo thinking is something that will be explained further for CEPA in Section 5.1.6. It is enough for now to say that for CEPA there might be a combination of lack of time based directly on the data collected from the interviews, and lack of competence based on the missing data.

#### 5.1.4 Incentive alignment

With incentive alignment in this context, it is normal to focus on incentives for parts of a supply chain to be strategically aligned. This by increasing the performance of the supply chain as a whole, by sharing costs, distributing risk, and sharing benefits between members of the supply chain (Simatupang and Sridharan, 2005). An example of this is pay-for-performance, whereby linking payment and performance to motivate individual supply chain members.

Some of CEPA's customers such as Customer B have, as previously shown in the Empirical study, the payment terms that include; a certain number of days + End of Month. This is an example of an incentive, intentional or not, for their suppliers such as CEPA to deliver later in the month. Delivering an order early in the month does not speed up the payment compared to delivering it later. For Customer A, there is no such system in place. In the survey which Customer A answered, there was a question about what incentives there are in place for CEPA to meet the requirements that are placed on them as a supplier and how strong these are. On a scale of one to seven, Customer A answered six and answered that the incentive was a gain or loss of volume to exemplify this. This could be argued to be the case for most supplier-customer relations. But with the scale of Customer A compared to CEPA, and as previously shown in Figure 4.3 where Customer A's significant size of CEPA's revenue is shown, this incentive is much stronger than most cases.

Between CEPA and their suppliers, there are different kinds of incentives. One of the most significant is the volume discount that is commonplace in the industry when purchasing sheet metal. This is not the case for all suppliers, but is very common. From the suppliers point of view it helps reducing order processing costs, and would reduce the amount of working capital the supplier has partially by increasing the

inventory turnover rate. For CEPA as the customer, it discourages buying smaller batches, as the discount is a quite large fraction of the total cost of the purchase. This will be discussed further in the analysis of the procurement strategy, economic order cost.

There is more than only external alignment, and it is not necessarily only financial incentives that have an impact. From the interview with the Operational purchaser (2024), it is to be understood that there is mainly one type of feedback loop for the purchaser. That is, the feedback from the production department when material is missing. This is a negative feedback loop that creates the incentive to make sure that raw material is available for production. There is nothing wrong from a company performance point of view of this incentive, but rather the lack of balance. As there is no direct feedback loop as the one mentioned, to hinder the purchaser to buy in larger batches than necessary, an effect that is sometimes referred to as Just-in-case purchasing.

### 5.1.5 Key performance indicators

Nobody wants a metric that they don't score 95 on.

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*Hammer (2007, p.80)*

As Kaplan and Norton (2001) emphasizes in their paper, there needs to be a clear link between measurements and strategy in a company. As measuring things without having the measurements connected to action have been common. This is something Neely, Gregory, and Platts (1995) refers to as "the ultimate sin" when it comes to metrics. Measurements should, as previously shown in the frame of reference, be used to:

- Find gaps, issues and improvement areas
- To see if the strategy is followed
- To determine if a process is effective and/or efficient
- To create a standard and to provide feedback on process performance
- To take necessary corrective action
- For incentives and rewards

The data collected on the use of KPI's by CEPA seem to be on track somewhat according to the literature mentioned above. As the Plant manager (2024) mentioned, each year there is a top management meeting where the KPI's are set for the year, to ensure that the KPI's reflect the company objectives. There are, however, no clear incentives or rewards in place connected to the KPI's. It is hard to give a direct answer as to how well the rest of the points listed above are followed as well as on how well these activities and processes are done. It is also interesting that a metric such as "Inventory turnover" is placed as a financial metric, as there is nothing in the data collected to show that the financial department is the ones having an effect on the metric itself. This could be an exception from the literature and might exemplify a detachment between measurement and action, as Neely, Gregory, and Platts (ibid.) discussed. This can also be communicated between departments in an unambiguous way, which is connected with corrective action.

Further, KPI's need to reflect the reality of a situation and not be constructed in such a way that it instead makes the company look good. According to Hammer (2007), a common mistake is that companies often measure their delivery accuracy / delivery on time as the last date that they themselves have promised, rather than measuring it from what the customer requests. In practice, this means that a company could have a delivery on time of 100% while the customer measures it as much lower. This creates the illusion that a company is performing better than it is and exemplifies two of Hammer (ibid.) seven deadly sins, Vanity and Narcissism. Having a metric that both makes the company look better than reality would indicate, while measuring from the internal perspective instead of the customers.

There seems to be a clear and definite match between some of the common mistakes mentioned by Hammer (ibid.). As CEPA is currently measuring their own delivery on time metric towards customers based on the date they have confirmed, and not from their customer request (Market manager, 2024). This is similar for the procurement organization, where the delivery precision of the suppliers is measured based on the date they confirm in the order confirmation. Furthermore, there is also a three-day tolerance for deliveries, previously discussed in the Empirical Study's "Supplier delivery precision" section. It should be highlighted that out of the 4533 orders for year 2023, 986 orders were out of tolerance (a delivery on time corresponding to 79%). Of those, 482 were too early.

Measurements in a supply chain are rarely managed as systems, but instead of several smaller systems according to Holmberg (2000). This is another part that makes supply chain alignment harder to achieve and might reduce supply chain performance. Oliver, Webber, et al. (1982) argues that integrated measurements between supply chain actors, instead of simply interfacing, are a fundamental component of the supply chain. In addition, a study of Swedish companies (Norrman and Näslund, 2013) claims that it is common to have a functional focus instead of a process-oriented one when it comes to measurements.

CEPA has a subset of measurements of the supply chain as a whole, where the measurements are mostly interfacing. As an example, CEPA measures their delivery on time towards Customer A as on time when it leaves CEPA in time. This, according to the theory presented by Hammer (2007) is a sin, as it does not look at the metric from the customer's perspective. As when Customer A looks at CEPAs Delivery on Time, they are interested in if it arrives in time and not when it was sent. It is also an example of the lack of Oliver, Webber, et al. (1982) interfacing systems, and the same problem applies to suppliers. Looking at the KPI's presented in the Empirical study, there seems to be a clear functional focus instead of a process-oriented one that the theory suggests (Norrman and Näslund, 2013).

Table 5.5: Individual performance measures considerations according to Neely, Gregory, and Platts (1995).

Individual performance measures	What performance measures are used? What they are used for? How much do they cost? What benefit do they provide?
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Looking at individual performance measures and considerations, presented in Table 5.5, one could look over the connection between the KPI's and the corresponding



actions for improvement at CEPA. The performance measures are presented in the Empirical study, and none of them costs more than the time it took to set up the Excel files. The remaining questions for this level are: What are they used for? And; what benefit do they provide? These two questions are harder to answer because the data are not as uniform in these respects. Similar questions have been looked into earlier in this subsection, in conjunction with the listing of what measurements should be used to. Currently, there is no prioritization of metrics using the analytical hierarchy process as Wang, Huang, and Dismukes (2005) suggests.

### **5.1.6 Silo-thinking**

The importance of integrated measurements is true not only between companies within the supply chain, but also within a company and between its departments (Oliver, Webber, et al., 1982). It is not unusual for a department or managers to start viewing their own KPI's as the most important metric, instead of a part of the whole, leading to the formation of functional silos (Stone, 2004). These functional silos can lead to lower company performance and communication becoming more difficult. From Shapiro (1977) there is an example that is very common, where the market department and the production department clash. The example being that the market department wonders why the costs are so high that they are not competitive. While the production is thinking that they cannot possibly be cost-efficient with such a broad variety, fast delivery, and rapid response to change with high quality at low costs.

The KPI's in use are not process-oriented as previously stated, but instead divided up functional, and therefore it is harder to view them as integrated. Since they do not follow a clear structure that follows the material flow or the flow of processes. It is challenging to gather data on whether a manager thinks their metrics are more important than the bigger picture, as if this is the case, the manager would most likely be reluctant to say so in an interview. From the interviews, it has been understood that the company is more focused on financial metrics than the literature would recommend. However, the convenient flow of information compared to larger organizations has been mentioned as a strength in many interviews.

### **5.1.7 Findings**

From Section 5.1.1 the conclusions are that there is a focus on financial metrics instead of non-financial ones such as customer satisfaction, innovation, market share, which Eccles (1991) argue represents the company's economic conditions and growth prospects better.

From Section 5.1.2 the findings of the need for two separate strategies are presented. An responsive strategy for Customer A and an efficient strategy for Customer B, based in the classification of Customer A's products being innovative and Customer B's products being functional. This has been mostly based on the product variety of the two, and the lead time towards them, where Customer B is using a forecast allowing the purchasing organization to plan orders months in advance. Currently, there is no clear distinction in the strategy for handling these. Further summarized findings for CEPA's procurement organization to focus on are shown in Table 5.2 on page 64, and Table 5.3 on page 65.

In Section 5.1.3 looks into the alignment of the supply chain, comparing the two units of analysis. It is concluded that Customer A is a more cooperative customer through the Customer relational behavior, both allowing shorter payment terms to help CEPA

with their liquidity and being an involved customer to further develop CEPA as their supplier. However, Customer B's use of a forecast is an enabler for alignment through joint planning, allowing CEPA to better align them self to an efficient strategy.

From Section 5.1.4 the findings show that the incentives that have the most significant impact on the supply chain are the incentives from suppliers with additional costs for purchases in low volumes, often for purchases less than 1000 kg. This is a key takeaway for lot-sizing decisions and supplier negotiations. The increase or decrease in volume that Customer A named as an incentive to meet the requirements placed on CEPA is also of great importance due to the share of the total revenue they represent. Within CEPA there is an incentive for just-in-case purchasing as there is no clear feedback to the Operational purchaser on inventory levels, but are instead mostly complaint based from when inventory is missing.

In Section 5.1.5 some key findings are that there is a routine in place to ensure the relevance of the KPI's to the company's changing business objectives and challenges. Another finding is that the DOT is interfacing instead of integrated towards customers, as well for the KPI Delivery precision from suppliers. This can cause CEPA to get different measurements on performance than their customers or suppliers have. Delivery precision measures the delivery from the confirmed date a supplier gives, and allows for a three day tolerance, meaning that an order can arrive three days after the confirmed date and still be measured as in time.

For Section 5.1.6, many of the interviewees has named the easy communication within the company as a strength, and when asked about silo-thinking has given few indications of that being the case. This is a challenge to measure directly through interviews, and when instead looking at the KPI's they are not process-orientated but instead divided up between the different functions. It is concluded that silo-thinking is not a problem area for CEPA.

## 5.2 Procurement Strategies - Literature comparison

In a supply chain context, a functional strategy focuses on optimizing specific functions like procurement, production, or distribution to meet operational goals. It aims to enhance performance within departments by improving processes. According to Chopra and Meindl (2007), functional strategies define what each process or function will excel at. Aligning these departments effectively within a supply chain is crucial, as discussed earlier under strategic alignment. Different functional strategies exist within procurement organizations to meet supply chain demands. There's no universal right or wrong strategy; the most suitable one depends on the organization's specific circumstances. CEPA does not have an outspoken functional strategy for procurement.

Supply chain uncertainty is an issue that every manager in the supply chain deals with. Davis (1993) divides supply chain uncertainty into three parts: demand-, manufacturing process- and supply uncertainty. Of these uncertainties demand uncertainty is regarded as the most hazardous. Further, Simangunsong, Hendry, and Stevenson (2012) writes that uncertainty can be addressed by two strategies: either by reducing uncertainty or by coping with uncertainty. According to the Procurement manager (2024) no particular category stands out as extra uncertain. One way CEPA reduces uncertainty related to demand is with Customer B's forecast. This gives CEPA more visibility for what's to come from Customer B. For Customer A, CEPA have less visibility and are more vulnerable. An example related to supply uncertainty can be a machine breakdown at a supplier or damaged goods during freight. An example

of production can be machine breakdown or when last year the roof got blown off. An example of demand uncertainty was in Q3 and Q4 for 2023 when orders from Customer A and Customer B got halted. This put CEPA in a precarious situation in terms of liquidity.

### 5.2.1 Just In Time Purchasing

Although traditional purchasing often tries to reduce costs through larger batches, JIT purchasing often tries to reduce it by reducing inventory by working with lead time reduction and reducing order processing costs (Ansari and Modarress, 1990). Traditional purchasing has the risk that inventory will be bought too early and binds capital sooner than it needs to be. JIT purchasing has the risk of higher material costs as quantity discounts are not as common and order processing costs such as transport become higher.

CEPA's procurement department does not have an outspoken functional strategy, as the literature would define it. There are many different suppliers for similar raw materials, and the order quantities vary based on the supplier's terms and conditions and how long the materials are expected to be in inventory. CEPA currently treats raw material for Customer B and Customer A similarly, without clear distinctions in order quantity.

Supplier selection is an activity with significant effects on strategy and company performance. In traditional purchasing, there are often many suppliers for any given part, with short-term contracts. In JIT purchasing, there is a focus on single-sourcing for a given part, with a supplier in close geographical proximity and long-term contracts (ibid.).

When it comes to supplier selection, CEPA often has multiple suppliers for a given part. The procurement manager decides on the main supplier for a certain type of sheet metal for a period of approximately one month. Currently, attractive payment terms are preferred (Procurement manager, 2024). The operational purchaser then usually buys from that supplier. An exception in which another supplier is selected is when the primary supplier does not have the component needed. Then the operational purchaser has to source that component from another supplier. Contracts with suppliers can be described as short-term. However, some suppliers have been around for a long time, showing that partnerships are more long-term but are not necessarily formalized on paper. Compared to Ansari and Modarress (ibid.), CEPA is more like traditional purchasing in supplier selection, as TP emphasizes multiple sources of supply and short-term contracts.

Supplier evaluation is another activity in which traditional purchasing and JIT purchasing differ. In traditional purchasing, the primary objective is to obtain the lowest possible price. For JIT purchasing, the focus is not as singular. It includes product quality, delivery performance, and price is emphasized. Notably there is no percentage of rejects acceptable from the supplier (ibid.).

When it comes to evaluating suppliers, the CEPA evaluates them on factors such as rejections, DOT, and payment terms. In contrast to Ansari and Modarress (ibid.), the CEPA evaluates suppliers based on more factors than just price. Quality for them is important, as their customers have higher quality standards than what is common (Procurement manager, 2024). It is clear from the "Supplier delivery precision" in the Empirical study that CEPA does not have a JIT approach in this regard. The supplier evaluation is not as singular as only focusing on price, but with delivery KPI's

that allow for deliveries three days after the confirmed date it is clear that it is not in line with what Ansari and Modarress (1990) describes as JIT. However, there is a low percentage of rejects according to the Procurement manager (2024), below 1%. The difference between Customer A and Customer B in this regard is that Customer B has a more integrated supply chain and negotiates directly with the CEPA's suppliers for the raw material needed. This is because they have more negotiation power because of the economics of scale. They negotiate for many of their suppliers at the same time, leading to higher volumes than CEPA could negotiate for. This is not the case for Customer A.

The partial responsibilities of the procurement organization are according to Ansari and Modarress (*ibid.*), inspecting incoming parts, and determining mode of transportation. In traditional purchasing, the view of these responsibilities differs from that of JIT purchasing. The traditional view is that the buyer is responsible for receiving, counting, and inspecting all incoming parts. For JIT purchasing, the inspection of incoming parts is reduced, with the goal of being eliminated. The delivery schedule is left to the buyer, with a concern for on-time delivery.

When it comes to less critical issues such as inspection, mode of transportation, and paperwork, it is more difficult to determine whether CEPA leans toward JIT- or TP. For inspection, CEPA inspects and counts all incoming parts. For delivery, CEPA and the suppliers come to an agreement on the days of the week when deliveries are made. When it comes to paperwork and manual tasks, the interview with the Operational purchaser (2024) shows that quite a bit of time is spent on manual corrections. An example of this is when the goods reception calls the procurement department to ask for help tracking down what order has arrived, since it arrived without a delivery note. The operative purchaser then needs to spend time tracking down the order. This could take up to an hour and is a frequent occurrence according to the Operational purchaser (2024). This is not in line with JIT purchasing where paperwork and these kinds of manual tasks should be held to an absolute minimum.

### **5.2.2 Procurement performance Effectiveness vs Efficiency**

When covering procurement performance, Janda and Seshadri (2001) makes the distinction between a procurement department that focuses on being effective or efficient. The main difference between them is that efficiency is connected to tangibles such as price orientation and cost reduction. While, Effectiveness is more intangible and linked to improvement and value-orientation. To be an efficient buyer in a buyer-seller relationship, one seeks to minimize costs. The upside with this is direct financial gain. The downside can be too much emphasis put on cutting prices so that one instead loses in other areas such as quality, responsiveness and flexibility. To reach effectiveness, value is achieved through supplier relations. In effective partnerships suppliers and buyers form a relationship where both of them are development partners, this aligns their incentives and both strive towards the same goal.

CEPA has not explicitly said whether they strive towards effectiveness vs efficiency. It is evident that their supply chains differ depending on whether it is Customer A or Customer B. Customer B is very price-oriented and negotiates on behalf of CEPA when CEPA looks for suppliers that in turn should go to Customer B. Customer B is also efficient in their view on payment terms where they have long payment terms with CEPA (Procurement manager, 2024). Customer B also gives CEPA a forecast, this makes it easier to be efficient since they can order larger batches for longer time frames. At the same time quality cannot be compromised since Customer B have high

standards for quality. Customer A does not give out a forecast to CEPA, this gives the procurement department less time to source raw material. This forces CEPA to be more responsive and flexible to Customer A's orders. As for CEPA's suppliers, CEPA has not specified whether they aim for effectiveness or efficiency. The procurement manager focuses on tangibles such as payment terms, cost and quality. Generally the supplier is chosen on a basis of these tangibles - in line with efficient procurement. However, based on the surveys, suppliers to CEPA are generally satisfied with their partnership - an important part of effectiveness.

Janda and Seshadri (2001) then proposes four strategies for a procurement department to increase effectiveness or efficiency: cooperative negotiation strategy, supplier base strategy, collaborative interaction strategy, temporal relationship strategy. Data has not been gathered whether CEPA has employed a cooperative negotiation strategy or a competitive strategy. Based on the surveys, Suppliers are generally happy with CEPA as a customer and satisfied with how the partnership is going. Suppliers deem communication is clear and that CEPA's priorities are well expressed. This is indicative of a cooperative negotiation strategy, as opposed to a competitive where the supplier would likely be dissatisfied with the customer. As for suppliers base strategy, CEPA has multi-sourcing for some of their products. Due to their high quality requirements from Customer B and Customer A, the supplier base is still limited. The Operational purchaser (2024) describes that if one suppliers does not have the specified raw material one can go and source it from other suppliers. For collaborative interaction strategy, CEPA has not explicitly mentioned how they interact with suppliers other than a transactional relationship. CEPA's suppliers generally believe that CEPA's demand is stable on their products and it has not been concluded whether CEPA forwards Customer B's forecast to their supplier. For temporal relationship strategy, CEPA has not specified whether work with structural bonding, social bonding, or no bonding strategy at all. Data has not been concluded whether CEPA has invested in their supplier's human capital. However, a financial burden that could become a stressor is if CEPA has promised to buy a certain amount of quantity over a time period buy fails to do so. If the relationship with a supplier is good, this can be something they can bear with, but if the relationship is terminated CEPA will have to compensate the supplier. Worth noting is that many of CEPA's suppliers have been their suppliers long-term, which indicate functional suppliers relational management .

### 5.2.3 Level of authority and tasks

From van Weele and Rozemeijer (2022) one learns that the position of procurement within an organization is highly determined by the perception of its role by management. If management sees procurement as an operational function of the company, it will likely be less prioritized in the organization. In contrast, if management sees procurement as an important part of driving strategic value and for the company to be competitive, it will be classified as more key. van Weele and Rozemeijer (ibid.) then assigns three factors that influence management's view of procurement: share of procurement in end cost price, financial health of the company, dependency on supply market.

For CEPA's case, procurement is part of the management team seen in Figure 4.1, see page 37. As for the financial health of the company, it is evident in the empiric chapter that CEPA is under financial stress now. This has not explicitly affected management's perspective on the procurement department. As for the supply market,

CEPA is dependent on it, but if one supplier does not have an article, it can often be sourced from other suppliers. As for the share of procurement in end-cost price, this has not been specified. However, since CEPA is an OEM that adds value to their products through processes, this share is less than, for example, an average wholesaler.

van Weele and Rozemeijer (2022) then continues to divide procurement tasks, responsibility, authority into three descending levels: strategic-, tactical-, operational level. The strategic level refers to those activities and decisions that influence the market position of the company long term. Examples of strategic activities are: choices regarding category sourcing strategies, creating long term contracts with preferred or key suppliers, Decisions to engage suppliers as collaborative partners, Assessments regarding backward integration, Large investment decisions

The procurement department consists of only two people. This makes it impossible to designate separate individuals for the strategic, tactical, and operational purchaser roles. For strategic activities such as category sourcing, Purchasing manager is the one who decides whether they should have single versus multiple sourcing. CEPA often has one preferred supplier for a raw material but there are often alternative suppliers. As for long-term contracts it has not been stated in interviews whether CEPA has long term contracts with their key suppliers. According to the Procurement manager (2024) he has short-term and medium-term contracts with his suppliers as they are constantly being re-evaluated with monthly price updates. Regarding the other strategic activities, data have not been collected whether the procurement department engages in such activities or if these are at even higher level.

Tactical activities according to van Weele and Rozemeijer (ibid.) are more medium-term than strategic's long-term. This level includes what needs to be procured, supplier selection and contract negotiation. Tactical purchasing also emphasizes cross functional collaboration with other departments at the company. Examples activities at this level are: negotiating supplier framework agreements, developing value analysis programs, implementing cross-functional category sourcing structures in-house, establishing supplier audits, collaboration to reach sustainability targets, supplier selection.

Working cross-functionally is very much in line for CEPA's procurement manager. An example of this is the weekly meeting with marketing-, technical department to determine whether to pursue certain orders or not. The Procurement manager (2024) also emphasizes that this is one of CEPA's strengths, that communication is clear and fast throughout the company. Negotiating with suppliers is one of the Procurement manager (2024) responsibilities, currently (May 2024) payment terms is something that is negotiated with suppliers. Cross-functional category sourcing has not explicitly been mentioned in interviews, but weekly meetings can be equivalent to this. As for supplier audits, this process is continuous and the procurement manager visits suppliers who are not performing in line with what has been promised. When it comes to supplier selection it is the operative purchaser that selects which supplier to buy from daily. However, it is her manager who provides the list of possible suppliers. For other aspects such as sustainability goals and value analysis programs, this has not been discussed in the interviews.

Operational activities are according to van Weele and Rozemeijer (ibid.) tasks concerning ordering and expediting functions. These are more routine based activities such as ordering raw material, overseeing deliveries, handling payments to suppliers. Examples of these are: releasing orders, expediting activities related to released

orders, troubleshooting, handling invoices, assessing supplier quality and delivery performance.

All of these activities are part of the operational purchaser at CEPA's daily responsibilities except supplier quality and delivery performance and paying suppliers. The Operational purchaser (2024) is the one who releases orders, handles invoices and expediting activities such as communicating with suppliers and monitoring order status. Troubleshooting is part of the Operational purchaser (2024) job - example of this being when raw material is received without a delivery note. Another example is when the supplier's machine gets a breakdown, where the Operational purchaser (2024) then has to communicate that internally to CEPA as well as working to find, if possible, a new supplier. Evaluating supplier quality and delivery performance is not part of the operational purchaser's duties but rather the manager.

#### 5.2.4 Inventory management & EOQ

Inventory management is an important part of running a manufacturing company. It touches on many different costs, be it the costs of missed sales, the costs of tied-up capital, the opportunity cost, etc., there are costs to overstocking and there are costs of understocking. Inventory management can be the difference between success and failure for a company (Agarwal, 2014).

For CEPA, inventory management has not been a focus point within the company. In the merger between CEPA and Höörs plåt in 2015 new facilities became available for CEPA, which meant that room for inventory was not a problem. During the last few years, the amount of inventory has become a problem, at least for finished goods according to the Warehouse manager (2024). The data is not clear how, or if, inventory management differs for the Customer B and Customer A's supply chains through CEPA.

The Wilson formula shown in Equation 3.2, is based on assumptions. Such as a uniform and constant demand that is continuous over time, that the order cost is independent of quantity, and that the price per unit is independent of quantity. It aims to minimize the total cost, which it simplifies is based on the reorder cost and the holding cost, by deciding the order quantity that minimizes these two. For further explanation and to see a more detailed view of assumptions and simplifications, see Subsection 3.3.4 page 31.

In CEPA's case, there are some contradictions to the simplifications that the Wilson formula uses. The demand is not uniform and constant; however, it can be estimated fairly accurately based on the forecasts that Customer B provides according to the Operational purchaser (2024). For Customer A products, the demand is harder to estimate. However, the price is not independent of quantity as many suppliers have incentives in form of higher price per kilo, as well as free transport over a certain quantity. The formula presented by Winston can, however, be reshaped to take this into consideration by remodeling the total cost formula, as these costs are still based on the order quantity.

From the interview with the operational purchaser it is understood that there are economic order quantities in use for some of the material. These are decided by the procurement manager and are currently not calculated using any systematic approach. Instead, what is taken into account is the approximated demand for the year, mostly based on what it was the year before. Transportation costs are taken into account in

combination with the suppliers' terms and conditions, which often offers free transportation when ordering 1000 kg or more (Procurement manager, 2024). An example is given that if a material is estimated to have a demand of 12,000 kg. And since 1000 kg is the quantity where there are no additional costs for small orders. Then the EOQ would currently be 1000 kg according to the Procurement manager (2024). In the cases where demand is much lower, the example given being 300 kilograms, then it is ordered to demand.

From the description of how the economic order quantity is set above, it is understood that neither the order quantity nor the method that decides does not differ for the Customer A or Customer B materials.

### 5.2.5 The procurement organization's maturity

The development model from van Weele and Rozemeijer (2022), shown in Figure 3.6, pinpoints some typical key focuses, activities, and dilemmas at each stage of the development of a procurement organization. Focusing on the three orientations that van Weele and Rozemeijer (*ibid.*) calls; Procurement driven, or Functional focus. The first of three is a transaction orientation, and at this stage the value added by the procurement department is mainly to ensure that raw material is available for the production department. Feedback for the procurement organization is based on complaints, indirectly indicating that no feedback means that the department is doing its job (van Weele, 2014). At this stage, a considerable part of the procurement function is geared towards operational and administrative tasks, and operational firefighting is a dilemma (van Weele and Rozemeijer, 2022). Purchasers often have few professional qualifications to do their job for departments at this stage.

Comparing this description of the first stage from van Weele and Rozemeijer (*ibid.*), there are some similarities. From the interview with the operational purchaser it has been established that feedback exists mainly in the form of complaints. In addition to this, operational firefighting is a significant part of daily life with missing delivery notes, late shipments, reminding suppliers of order confirmations, etc. It differs that the organization is not a sub-department that reports to an operations manager. Instead, they are part of top management. The operational purchaser also has professional qualifications with extensive operational purchasing experience working at CEPA with purchasing for over 20 years. In addition, some tactical experience as exemplified with supplier selection from van Weele and Rozemeijer (*ibid.*) definition of tactical.

The second stage of the development model has a commercial orientation. It is described as being typical that a procurement manager is recruited at this stage, who can negotiate credibly with the suppliers for the lowest prices. The focus often is on the lowest unit cost, and the department now reports to a senior executive or similar. The interest of the senior executive is the savings that the organization can add to the bottom line. The focus in negotiations is on getting 'good deals' and the idea of how to achieve this is to play hard negotiations. Performance measures, or KPI's, focus mainly on the price versus budget, cost saving, and the delivery performance of the suppliers. The procurement organization typically consists of tactical and operational buyers with hands-on experience (*ibid.*). There is also a common to have an approved supplier list.

There are similarities between literature and theory at this stage as well. There is a procurement manager at CEPA that negotiates with suppliers. The focus is on low



prices, but not as exclusive as van Weele and Rozemeijer (2022) seems to characterize it for the stage. There is also a significant focus on liquidity through payment terms at CEPA, with the goal of achieving low unit prices of sufficient quality. In addition, the data do not clearly indicate whether negotiations could be characterized as hard. However, the performance metrics are in line with what the literature describes. One of the four KPI's shown in Table 4.1 for the procurement organization is defined by "Purchase costs divided by revenue for a period". The variance in this corresponds to a price versus a budget, as van Weele and Rozemeijer (ibid.) mentions. There is no metric on the cost savings that is common for this level. However, there are metrics for the performance of the suppliers' delivery, which are discussed in detail in the empirical study and in the analysis of strategic alignment, KPI's 5.1.5. CEPA also has an approved supplier list, as the literature explains, which is common for this stage.

The third stage has a coordination orientation. van Weele and Rozemeijer (ibid.) explains that it is common for organizations to formulate a strategy for the first time, with the aim of gaining from internal coordination and synergy. The procurement function is now seen to have an important influence on the quality of the procured goods, and the importance of non-production buying becomes apparent. Spend analysis becomes an activity, procurement staff have a specific procurement background, and training is available to develop analytical-, negotiation- and communication skills. Some of the activities typically in focus for this stage are contracting and global sourcing. Common dilemmas are contract compliance and ethics.

There are some similarities between this stage and CEPA, even if they are not as striking as the previous stages. There is no clear formulation of a procurement strategy aiming to benefit from internal coordination and synergy, made clear by the lack of indications of this in the data. As CEPA is an OEM the procurement departments' effect on which quality is bought is limited. Customers require certain quality certifications that the procurement organization must comply with. The procurement organization instead affects quality through the selection of the supplier, making sure that the supplier has a low degree of return. This is a KPI seen in Table 4.1 for the procurement department. Non-production buying can not be described as a focus for the procurement organization based on that exclusion of service suppliers in the KPI defined as "Purchase costs divided by revenue for a period".

CEPA has also taken steps to begin using SPEND analysis tools. The procurement manager has a specific procurement background, while operational purchasing is not a role on its own. Instead, the role which involves the operational procurement is called "Sales- and purchase coordinator". The procurement manager has a specific background within procurement, while the role is not only purchasing-specific. Keeping in mind that CEPA is not an especially large company, there is no training available for the above-mentioned skills. There is no indication from the data that contracting is a focused activity. Neither contract compliance nor ethics are dilemmas for the organization. Another aspect where CEPA has some similarity with the third stage is global sourcing, CEPA currently has examples of suppliers located in the US. However, most suppliers are located nearby in Sweden or Denmark.

There are three remaining stages that van Weele and Rozemeijer (ibid.) have chosen to categorize as business-driven with cross-functional focus. One common element for all three of these stages is that the degree to which suppliers contribute to competitive advantage is greater than that of the previous three stages. The data collected do not show that CEPAs' procurement organization exemplifies any of the common

characteristics of an organization at any of these stages, with the exception of cross-functional teamwork. This occurs in cross-functional meetings where a selection of customer orders is made.

In figure 5.1 one can see where CEPA is oriented in van Weele and Rozemeijer (2022) maturity model. CEPA's main focuses is to serve the factory and secure availability as well as reduce procurement costs. Therefore, they are placed at stage 2 from van Weele and Rozemeijer (ibid.)'s model. As stated previously CEPA has some activities on higher levels such the third stage. These include, global sourcing on a smaller scale as well as the procurement leader coming from a purchasing background. According to van Weele and Rozemeijer (ibid.) every purchasing organization can move towards the last stage in order to "professionalize procurement", but it is not necessary for every purchasing organisation. For CEPA's case, the resources given to the procurement department is limited since they are only two people.

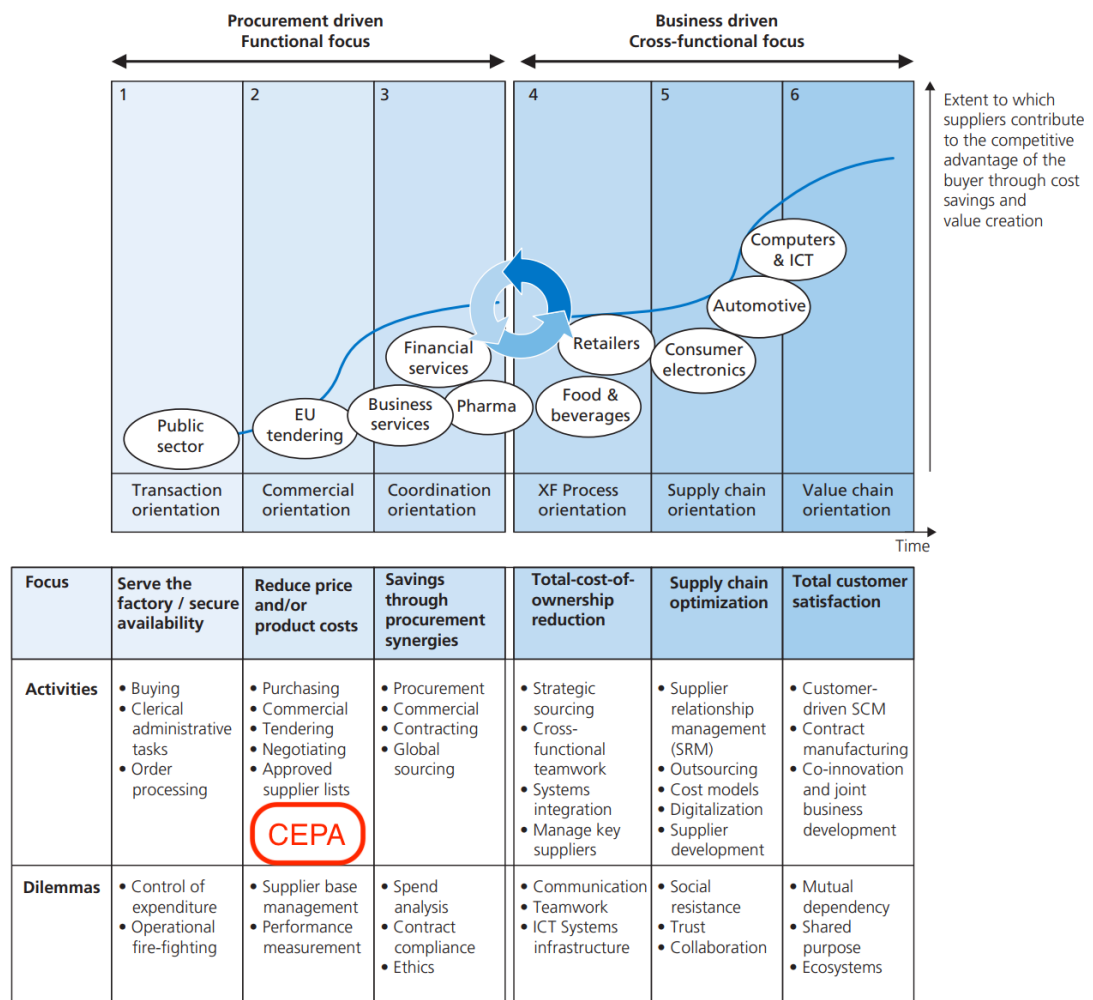


Figure 5.1: CEPA's position in the purchasing development model from van Weele and Rozemeijer (2022, p.67).

## 5.2.6 Findings

In Section 5.2 it is concluded that CEPA does not currently have an outspoken procurement strategy. It also establishes that CEPA is vulnerable from demand uncertainty from Customer A.

For Section 5.2.1 CEPA is deemed to be more in line with what is described in Ansari and Modarress (1990) as traditional purchasing, and does not currently work with JIT or similar approaches. There is also problems in regards to paper work for the Operational purchaser, which is not in line with JIT.

In Section 5.2.3 it is concluded that CEPA does not work strategically in procurement, and instead work mostly on a tactical and operational level. On an tactical level there seems to be missing activities such as an established routine involving supplier audits, working against being reactive and moving towards being proactive. The current KPI's are mostly focused on suppliers, and used to evaluate them. These include percentage of rejections, delivery precision, and payment terms.

From Section 5.2.4 the surface of inventory management is scratched, and looks into the EOQ formula being a tool in the context CEPA operates in. Currently CEPA does not use a systematic way to determine lot-sizes, and there is no clear difference between lot-sizing for Customer A and B. The EOQ formula can be modified to include the add-on costs for suppliers that incorporate these, which is common use in CEPA's market. The analysis comes to no clear conclusion in regards to when the EOQ should be used, and this is a subject for future research in Section 7.3.

In Section 5.2.5 CEPA is placed in stage two in van Weele and Rozemeijer (2022) development models six stages. This is clear though e.g. the focus on reduce price and/or products costs being the case for CEPA, the use of an approved supplier list as well as negotiating being in practice. There are however still activities from stage one that are troubling for CEPA, such as operational firefighting.

## Chapter 6

# Discussion and recommendations

### 6.1 Discussion

Based on the data presented in Empiric and the analysis chapter, it is evident that CEPA's procurement organization can be improved compared to its current state. To begin with, CEPA's procurement organization could be more aligned with its major customers, Customer A and Customer B. There is more certainty related to Customer B's supply chain in terms of forecast given and product variety being smaller. This puts an emphasis on efficient purchasing rather than being responsive. Customer B is already efficiency-focused, as motivated in Section 5.1.2, page 61. Customer B determines from which supplier CEPA should procure from, and what is within CEPA's procurement organization to mandate is then how much to order and when to order. For strategic alignment purposes, it is therefore reasonable to expect CEPA follow Customer B's strategy. The forecast given to CEPA by Customer B makes it possible for CEPA to produce products beforehand, giving Customer B a short lead time, without the need to keep inventory of finished goods, raw materials, or components unique for Customer B.

Customer A meanwhile is not as efficiency driven as Customer B. They have a wider product portfolio coming from CEPA and have no forecast. The demand for Customer A is more uncertain since CEPA cannot produce products in advance to a forecast. Customer A also requires a short lead time. This emphasizes responsiveness and smaller batch sizes since they require more diverse raw material than Customer B. Based on the interview in Empirics it is evident that CEPA does not have a functional strategy when it comes to procurement. As an example, supplier selection tends to be more intuitive rather than systematically formalized into an official strategy. Currently, the company's liquidity issues has had a great impact on purchasing. Considering this to be an extraordinary event and that things normalize sooner, it would be beneficial for CEPA's procurement to formulate an official strategy.

It is important to measure the correct thing, in relation to a strategy for a supply chain. From the Empirical study and the calculations regarding Supplier delivery precision, Section 4.3.2 page 54, it is shown that the current way of measuring delivery precision includes a 3-day tolerance. An important part of having KPI's is that they

reflect the underlying information it is trying to gather. If not, it can be difficult to get an accurate view of how the function is performing. When measuring this KPI with 0-Day late tolerance the gap between the goal of 98% and their actual state is even larger. The importance of measuring lead times, in the correct way, increases when there is underlying strategic significance in being market-responsive, and also for using JIT-principles as a strategy.

Another problem related to procurement, KPI's and strategic alignment is the complaint based feedback the operative purchaser receives when materials are not available. When negative feedback is only communicated, the receiver only works to mitigate negative feedback resulting in creating problems elsewhere. Satisfactory communication within an organization should concern both negative and positive feedback. When an operative purchaser only receives feedback that raw material is not available for production this creates an incentive for the purchaser to order more. At the same time the operative purchaser has orders above to order less and keep down capital tied up. This creates a misalignment within an organization. Potential solutions for this misalignment can be solved by better communication and by tracking and providing feedback on the inventory levels of the material purchased.

The analysis chapter finishes off by placing CEPA's procurement department ranked on a maturity model. It can be concluded that is situated on the lower scale on Van Weele's maturity model. With only two employees in procurement, there is likely a limit as to how far the organization can be evolved. One of CEPA's strengths according to it's employees is it's clear and quick communication between one another. However, this way of handling communication can also have its drawbacks. There can be a possibility that problems are only solved at the surface level and no root cause analysis is being performed since it is easy and convenient to ask one another. An example of this is that the operative purchaser has to troubleshoot which material gets goods received when the supplier fails to give a delivery note with the shipment.

It is problematic for CEPA to have two significant larger customers with fundamentally different supply chain needs, which was expanded in Section 5.1.2, page 59. The different needs of the two large customers invite two fundamentally different ways of working, which can leave CEPA stuck in the middle and without a clear strategy. Customer A has as previously mentioned answered the customer survey, shown in Appendix C, that they are using a forecast for their own products. And, as told by the Operational Purchaser (2024), there are currently ongoing tests to see if a forecast can be implemented for Customer A's products. If this is successful, CEPA would benefit greatly from greater certainty in demand and a longer planning horizon, creating the opportunity for an efficient strategy approach. This would align CEPA towards the key customers with a solid strategy for the key customers, instead of being stuck without a supply chain strategy.

It should also be noted that having two separate supply chain strategies increases complexity for a small company, making it more difficult to manage. In addition, this approach requires more time and places greater demands on the competence of management and employees.

## 6.2 Recommendations

It is evident from the analysis that there is an inconsistency between the case and the literature. The two units of analysis, Customer B and Customer A, are two significant CEPA customers that represent around 80% of the revenue generated for

the year 2023. There are no indications in the data collected through the interview for any significant change in this division of turnover. The operational purchaser describes the different planning horizons for procuring materials for Customer B and Customer A. In this case, orders for Customer B material are ordered months ahead, while Customer A's material needs to be ordered as fast as possible. It is evident that Customer A requires a more responsive supply chain from CEPA than Customer B. Although efforts are made to reduce uncertainties in the demand fluctuation from Customer A, there are no data implying that demand would be certain within the near future.

### **6.2.1 Procurement strategy**

#### **Implement a Procurement strategy for Customer A**

The first recommendation is therefore that CEPAs procurement department create two distinct strategies, one for the handling of Customer A and another for Customer B, based on the unique conditions each customer presents.

For Customer A, there is a need for a market-responsive strategy to be able to meet the short lead times from CEPA to the customer. For customer A, it would be wise to keep an inventory of raw materials and components to ensure that production can begin as soon as possible. There is also an immense need for increasing the lead time focus for suppliers of the materials of Customer A. This is because lower lead times allow CEPA to be more responsive to fluctuations in demand, leading to meeting Customer A's lead time without building excessive inventory. This responsiveness could lead to better cash flow by delivering to customers more quickly and, therefore, receiving payment sooner. This focus on lead time should also be reflected in the approach to choosing suppliers for Customer A, focusing on speed, flexibility, and quality.

The current KPI's in use do not reflect this strategic approach, as there is currently no KPI that measures how well a supplier can keep the agreed upon lead time. Currently, the KPI in use for suppliers and deliveries is Delivery precision which measures how well a supplier is able to deliver within a three-day tolerance of the confirmed date they give on the order confirmation. This does not reflect the need for a market-responsive strategy, and it is suggested that they implement a new KPI. Perfect order rate (%), measuring how well a supplier can deliver an order within the lead time they have confirmed that a part should have. This would allow CEPA to measure and compare how suppliers perform with respect to the speed of their deliveries. As suppliers currently could give a low lead time in negotiations and then not keep it, simply keeping their order confirmation date, and CEPA has no way of measuring it. Implementing this KPI would allow CEPA to compare and develop suppliers for Customer A's materials, thereby more aligning the KPI's with the overall strategic objectives.

The Operational purchaser mentions in the first interview conducted that the purchasing orders are usually ordered to arrive five days before an production order is scheduled. With the current three-day tolerance for delivery precision from suppliers, as well as the suppliers across the board low delivery precision, this is understood as an effort to ensure the supply of materials arrive in time. However, this process makes the KPI's less anchored in the strategy as the requested arrival date which suppliers tries to confirm is not necessarily the date in which is best suitable for arrival. Provided that the goods reception can receive it and the quality certifications

can be checked in time, it would be advisable to place orders close to the production date to not tie-up capital sooner than necessary. As there is currently a high level of uncertainty from suppliers in their deliveries, the process of ordering five days before the material is needed could be formalized with a lead time offset of inventory in a set number of days for either different suppliers or different materials. When the uncertainty is reduced for a supplier or a material, the number of days for the lead time offset inventory could be lowered. The system currently contains outdated information, which indicates a lack of proper processes to keep it up to date, which CEPA recommended to implement to be able to make decisions based on current and correct data.

The current supplier evaluation process is based in part on an internal survey at CEPA and is based in part on a follow-up of the suppliers that perform the lowest on current KPI's. The follow-up of the KPI's is a reactive action instead of a proactive action, and it is suggested that it is formalized with planned meetings following up more suppliers than those who do not perform well. The focus should be on the metrics that are most relevant for the strategy in use; in the case of Customer A's suppliers, it is speed, flexibility, and quality. One way of handling different types of supplier is discussed in Section 7.3, for future research.

The current ongoing test of implementing a forecast for Customer A is encouraged, as this would allow for a more similar strategic approach for the largest customers that generate almost 80% of the revenue for the company. This would decrease the complexity of the purchasing organization, allowing a more standardized approach for most processes. It would also simplify the planning process, allowing CEPA to meet Customer A's requirement such as DOT. Allowing CEPA to reap the benefit of the incentive from Customer A in the response from the Customer survey, being an increase of volume instead of a decrease. The efficient strategic approach has a greater ability to be cost-efficient, giving CEPA the opportunity to provide lower prices, as Customer A reports in the customer survey, shown in Appendix C, to have higher prices than the competition.

For raw material inventory management, it was previously suggested to keep generally higher levels to deal with fluctuations and uncertainty in demand for Customer A, as well as the short lead times required by the customer. However, there might be specific materials that are used by many different articles, creating a more stable demand and higher volumes. Materials with high volumes and high certainty; JIT might be suitable as an inventory management approach. Because the specific material would be more similar to what Fisher (1997) describes as a functional product, where the supply chain does not need to keep inventory due to the certainty in demand. This thesis did not perform an inventory analysis beyond looking at the EOQ formula as a tool, where no clear conclusions were made. An approach for future research on inventory analysis is suggested in Section 7.3.

### **Implement a Procurement strategy for Customer B**

For Customer B, there is a need for a physical-efficient strategy as Customer B provides an accurate forecast, as well as having a lower product variety than Customer A. For customer B it would therefore be wise to minimize inventory of raw materials and components, as well as finished goods, as the forecast provides the opportunity for better planning. There is no need for the same lead time focus as the market-responsive strategy requires, because of the ability to better plan procurement orders. Lead times can instead be shortened, as long as it does not increase cost. As for the

approach to selecting suppliers, Customer B has an integrated supply chain and negotiates and chooses the suppliers for CEPA. If this were to cease to be the case, they should be selected primarily on the basis of cost and quality.

Having a physical-efficient strategy allows for better planning of processes to ensure meeting customer demands at a lower cost. As there is not the same need for speed for the suppliers that are in use for Customer B's material, the KPI's are not as lacking. The typical focus area of procurement, cost, is the correct one in this instance and would align with the suggested strategic approach. CEPA's procurement organization could prioritize the percentage of reject KPI, along with cost, as it directly reflects product quality in line with the strategy.

Customer B's products have been classified as more functional products in this thesis, this is explained in Section 5.1.2, page 62. The variety of products is considered small. Customer B represents 30% of the revenue with only 350 articles out of CEPA's total of 3000-3500 articles in 2023. For products with higher volumes matched with lower uncertainties, inviting a JIT approach and creating a smooth flow with minimum inventory through the chain could be a way to be efficient. This topic of inventory analysis is discussed in future research in Section 7.3.

The low uncertainty in demand for Customer B caused by the use of an accurate forecast allows for purchase to order. CEPA currently has a more traditional purchasing approach in their current procurement practices. For CEPA to successfully lower the inventory levels for Customer B's supply chain, improving the company's liquidity long term, it is suggested that they work with lowering order-specific costs such as transport. This is because it would lower the impact on the net margin as order-specific costs increase as more orders are made.



# Chapter 7

## Conclusions

### 7.1 Answers to research questions

CEPA has been studied with the purpose of providing recommendations for CEPA's procurement organization by improving alignment with key customers. Customer B and Customer A are the two key customers that have been the units of analysis in this study. Each research question asked in the Introduction will be answered in this section.

The two customer groups Customer B and Customer A accounted for 80% of CEPA's revenue in 2023. There are different conditions for both these customer groups, as Customer B provides an accurate forecast, which would allow CEPA's procurement department to plan more effectively and manage inventory with greater precision. Customer B also has an integrated supply chain, where they negotiate directly with their second-tier suppliers to push down prices using economics of scale, as they negotiate for many suppliers. The downside of this is that CEPA's procurement department cannot choose suppliers, which makes negotiations that might better suit their needs harder.

For Customer A, there is no established forecast, and the lead times from CEPA to them are often around 10 to 15 days. This is a higher degree of uncertainty than for Customer B and invites two different strategies to manage these key customers.

#### 7.1.1 Research question one

The first research questions purpose is to gain insight into the supply chain before evaluating the procurement organization.

***RQ1: How does the present procurement organization perform with respect to strategic alignment to the rest of the supply chain?***

It is evident that CEPA's customers have two different supply chains with different needs. The procurement organization performs suboptimally in terms of aligning their processes based on their customer's needs. CEPA currently handles the processes for these two supply chains in much the same way. There is a need for two strategies, one that is responsive to Customer A and one that is efficient to handle Customer B. Internally, CEPA's procurement is relatively aligned with the rest of the company given it's cross functional communication and meetings.

For delivery precision from suppliers, there have been problems during year 2023. These have improved greatly during the first quarter of 2024 says the Procurement manager (2024). This thesis sees no reason for the current tolerance, where deliveries that arrive three days after an confirmed date count as in time. There is also a lack of focus on the lead times of the suppliers, which is part of what creates higher levels of tied capital for the raw materials. The outdated data in the system described by the Procurement manager (2024) and the Operational purchaser (2024), indicates a lack of proper processes to keep the system up-to-date.

From the development model presented by van Weele and Rozemeijer (2022), CEPA is placed at the second level, indicating lower performance. Some of the examples in the procurement development model placement were the lower participation of suppliers in the value creation process. Another example from the lowest stage is the complaint-based feedback for the operational purchaser, creating an unchecked incentive to buy just in case. This in combination of the "firefighting" that is a part of the daily tasks and is described more as a norm than the exception results in this assessment.

### 7.1.2 Research question two

***RQ2: How can relevant procurement methods, principles, and tools contribute to enhancing the performance of CEPA's procurement organization?***

The two problems that CEPA mentioned, presented in the Introduction, were a low inventory turnover rate and a high degree of tied-up capital. As the answer to RQ1 states, there is a need for a responsive strategy and an efficient strategy, to handle the two significant larger customers' supply chains that has different needs . For an efficient strategy, JIT principles can be implemented, such as smaller lot size by purchasing to demand. Inventory can be removed from the chain as the uncertainty in demand is low, and actions should be taken to lower order-specific costs such as transport to incorporate this approach. The close geographical proximity that CEPA has to many suppliers is an enabler to achieve this.

Both the EOQ-formula modified to suit the add-on cost for lower quantities, or purchasing toward demand, could be suitable for deciding lot-size, and the use of these tools should be decided on an inventory level. It is suggested that an ABC-XYZ analysis is used as a tool to decide this for different materials. For the segmentation of suppliers the Kraljic matrix can be used to help with how to work with them in terms of strategy. Both an ABC-XYZ analysis and the Kraljic matrix are suggested as future research in Section 7.3.

### 7.1.3 Research question three

***RQ3: How should CEPA strategically evolve its procurement practices to address current challenges and align with broader organizational objectives?***

It is suggested that CEPA's procurement organization start using the suggestions that are recommended in this thesis that are aimed at implementing a responsive strategy for Customer A and an efficient strategy for Customer B. It is also suggested that they segment their remaining customers to match them with the suitable strategic approach, as was expanded upon in the analysis in Section 5.1.2. This strategic approach

would give CEPA a much more clear way of working with appropriate processes and goals. An example of this would be to know where an KPI such as inventory turnover rate, mentioned as a problem that CEPA is facing in the introduction, is important. The inventory turnover rate is, for example, not as important for a responsive strategy as it is for an efficient strategy. This segmentation of customers, based on customer needs and given conditions, would help guide CEPA's future efforts, which are expanded upon in Section 7.3. In addition, improving CEPA's understanding of which KPIs are important for which strategy.

For the procurement organization, it is recommended that the definition of the current for supplier delivery precision be changed to have a zero-day tolerance of late arrivals after the confirmed date instead of the current three. It is also suggested that a new KPI, or metric, is introduced when evaluating suppliers. That is, how well a supplier is able to deliver within the lead time they have committed. These two metrics would better represent how well a supplier is performing. Without this change a supplier can give pessimistic order confirmations without it being seen in the metrics. Having an increased focus on lead times from suppliers with the ability to follow up and evaluate their performance to help them improve would increase responsiveness for CEPA towards Customer A. Building inventory for raw materials would allow for even more responsiveness, as the lead time is now reduced to zero, and it is suggested that a more thorough inventory analysis is conducted to help with decision-making for which materials to keep in inventory. For now it can be said that there should be a goal to keep minimum inventory for all of Customer B's materials, as the forecast allows for better planning.

The current KPI, delivery precision, measures how well a supplier is able to deliver from what they have said in the order confirmation. The new KPI the thesis suggests measures how well a supplier can deliver within a lead time the supplier has committed to be able to deliver within. Both of these KPI's are important as measurements for delivery accuracy from suppliers, but it is important to understand that there is a need for short lead times for an responsive strategy and not only for accurate deliveries. However, the suggested KPI that is referred to as Perfect order rate can be used to compare and develop suppliers performance in their own responsiveness. As with the current KPI that measures delivery precision based on the confirmed date, giving no indications if the agreed upon lead time is met, it is harder to identify suppliers that fail to meet the need for short lead times that CEPA needs for their responsive strategy. Implementing the use of Perfect order rate as a KPI would help CEPA in this regard, measuring how well suppliers meet the negotiated lead time.

There is also a need to evolve the procurement organization in some respects from what was explored in the development model that van Weele and Rozemeijer (2022) presented. The clearest example of this is feedback based on complaints for the operative purchaser. The operative buyer needs to receive more convenient feedback on inventory levels. As currently, the strongest form of feedback is when the production does not have material available. This creates the incentive to procure materials "just in case", building inventory levels to what might be higher than necessary. An example could be improving the access to inventory turnover rate for the efficient supply chain that is suggested for Customer B and similar customers with longer lead times and low uncertainty in demand. Using inventory turnover rate for both efficient and responsive supply chains could also cause an incentive to decrease inventory for responsive customers. This could cause a reduced DOT for customers who need a responsive supply chain, as well as negatively impacting the cash flow as the lead times to customers could increase.

It is also suggested that a routine is developed with respect to missing delivery notes, etc., as it is something that has been described to be a time-consuming activity for the operative purchaser. The routine could involve collecting data that is then to be used to identify the suppliers where this problem is the most widespread and then to follow this up to decrease the frequency where this happens. This would allow the procurement organization to focus more on cost-reducing activities such as handling the increased order frequency that JIT would create.

## **7.2 The contribution to theory and practice**

This thesis has contributed to theory and practice by analyzing strategic alignment in a supply chain with the procurement organization in focus. At the time of writing the thesis, there was a lack of literature related to misalignment for an OEM from a procurement perspective. This thesis aims to complement the literature on how misalignment can be solved with procurement practices for an OEM - a vital part of a supply chain. The thesis investigated how responsiveness translates into a procurement organization where poor liquidity is a problem. It has looked into how JIT principles can be applied to combat problems such as a high degree of tied up capital and low inventory turn-over rate from a procurement point of view.

In addition, it contributes to practice by suggesting recommendations for an OEM. The recommendation is to segment one's procurement strategy according to customer properties. In addition, it contributes further to practice by suggesting a new KPI and areas on which to focus to successfully implement the JIT principles. The thesis shows the need for customized procurement strategies for different customer groups, for an OEM. These contributions help improve both the theory and practical methods used in procurement and supply chain management.

## **7.3 Discussion of limitations and future research**

The primary focus of this thesis was to investigate CEPA's procurement organization. During the time at the case company the authors naturally came across more suitable areas of research but due to time constraints and limitations all could not be addressed. The main takeaway from the thesis is the need for a segmented procurement strategy for key customers dependent on their different levels of uncertainty. The thesis has been more adapted to customers as opposed to suppliers, in retrospect it would be interesting to see a more detailed analysis of CEPA's suppliers. This is a great starting point for future research. As seen in Figure 4.4 on page 43, CEPA has a variety of suppliers: both domestic and international inviting for research. It would be interesting to segment these suppliers using, for example the Kraljic matrix. This segmentation would provide a clearer understanding of how different supplier categories impact CEPA's procurement strategy and it could also reveal opportunities for more strategic sourcing and risk management. By categorizing suppliers based on their Business impact and supply risk, CEPA could develop more targeted and effective approaches for supplier management, potentially improving overall procurement efficiency and resilience. This would require new data in the form of supplier data, but it is still an interesting area for future research.

Another matter the thesis has not focused on is CEPA's products. One reason for this was simply how large CEPA's product portfolio is with over 3000 products. An ABC-XYZ analysis would be suitable for this purpose. ABC-XYZ combines two

classification systems based on their volume and demand variability. This could help CEPA in prioritizing inventory management efforts in the extensive product portfolio. This would be of great interest both academically and to the company as it would provide an overview of their products and different ways of working towards each category. This could also help CEPA develop tailored procurement strategies after each category in the matrix, improving inventory management and reducing costs. It can also help CEPA by eliminating low value items and focus more on high value items. Note that it could be difficult to perform an ABC-XYZ analysis due to the fact that CEPA is an OEM and that the products change depending on customer requests. Nonetheless, making it interesting for future research to do an ABC-XYZ analysis on an OEM.

Future research could also begin where this thesis concludes. Namely, continuing with how to manage two different strategies. Because as stated in the discussion 6.1 see page 78, there can be difficulties with employing two different procurement strategies.

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# Appendix A

## The Case Study Protocol

### A. Overview of the Case Study

#### 1. Research purpose

The purpose of this thesis is to present recommendations for CEPA's procurement organization to better facilitate operational performance and future growth.

#### 2. Case study questions and propositions

- How does the present procurement organization perform, with specific attention to operational efficiency and its strategic alignment to the rest of the supply chain? Here the proposition is that it is sub optimal.
- How can relevant procurement methods, principles, and tools contribute to enhancing the performance of CEPA's procurement organization?
- How should CEPA strategically evolve its procurement practices to address current challenges, optimize operational performance, and align with broader organizational objectives?

#### 3. The theoretical framework

The framework is seen in chapter 3 and is summarized in subsection 3.4. Key readings include van Weele (2014), Shapiro (1977), Ansari and Modarress (1990), and Fisher (1997).

#### 4. Role of protocol in guiding the case study researcher

The case study protocol is taken from Yin (2017) and bridges the gap between the literature review and data collection. Preparation for the protocol also forces the researcher to plan what the rest of the case study will be like, reducing the risk of mismatches in the long run. One example being that the researcher maps which the interviewees will be so that requests to interview them can be done in advance to avoid unnecessary waiting.

## B. Data Collection Procedures

### 1. Names of contact persons for doing fieldwork

This will be communicated to every interviewee if they have complementary questions or if they wish to edit their response. Names, phone numbers and emails will be given to each interviewee.

- Björn Lindgren: +46707661268, bjorn.lindgreen@gmail.com
- Jonatan Andersson: +46761694505, jo7781an-s@student.lu.se

### 2. Original data collection plan

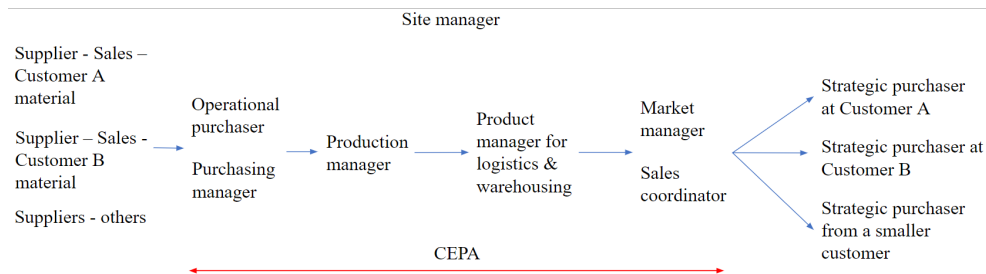


Figure 7.1: The roles of the interviewees and where in the case supply chain they are.

The interviewed and their rolls are seen in figure 7.1, which show both the internal departments and the external actors to be interviewed. The interviews will be mapping the material flow, and the strategies in place for the supply chain as set by the limitations of this case study. Complementary there will also be observations made for the procurement organizations processes. An as-is analysis will be made with data from the case company's ERP-system based on the interviews and observations.

### 3. Expected preparation prior to fieldwork

The researchers will have pen and paper to take notes during the interviews. If possible and in consent with the interview, the interview will be recorded. Besides notes, the interviews will be try to be transcribed by software. A prerequisite for carrying out the interviews is that they should take place in a environment that is quiet and where the interviewee is comfortable.

# Appendix B

## Example of interview guide

Interview with the plant manager

### **Market and customer segment**

Could you describe CEPA's operations?

What is your role in this operations?

How would you describe the market that CEPA operates in? (Stable demand, highly fluctuating, is there any specific direction in the manufacturing industry?)

Does CEPA target any specific customer segment in the market?

Describe your customers: Customer A, Customer B, "Other"?

Of the three areas: demand, manufacturing, and supplier uncertainty, which one is perceived as the most uncertain? (Highest variation)

How clearly do you perceive that you know what the customers' priorities are when it comes to the offering that CEPA delivers? (Is it speed, reactivity, delivery that is important, or is it cost?)

### **Vision and corporate strategy**

"What is CEPA's business idea/purpose? (IKEA's is 'to offer a wide range of home furnishing products at such low prices that as many people as possible can afford them.')

What is CEPA's vision/mission?

What do you think are CEPA's key strategic areas at present? (For example, areas the management team is actively working on.)

In your opinion, what are the most important strategic activities currently? (Those that link the company's business idea, vision, and daily operational execution; e.g., reducing capital tie-up through...)

Do you use any established corporate strategy, or parts of such a strategy, for manufacturing, etc.? (For example, lean, JIT, agile, or similar.)

What are CEPA's main goals going forward? (Cash liquidity, growth figures, etc.)"

### **KPI's**

Do you think there are any KPIs that you consider particularly important?

Do you feel that the KPIs you currently use accurately reflect the operations and their performance?

Is there any risk that you see of KPIs creating conflicts of interest between departments

### **Alignment (internal and external)**

Do you think there are conflicts of interest between departments that are problematic? ("Silos")

How do you work to avoid such conflicts of interest?

Are there any internal incentives for departments and their personnel to collaborate? (Shared KPIs, reward systems, etc.)

On a scale of 1-7, how aligned do you perceive the supply chain to be? (Where 7 means total transparency, all incentives align, and the risk as well as the reward is shared throughout the supply chain. Conversely, 1 means there is total deafness towards other actors, and each individual actor wants to exclusively maximize their own interests without cooperation across company borders - for everyone's benefit



# Appendix C

## Survey results from customers

<b>Customer survey</b>	
Quantitative	Median, from 1-7
How well do you think you, as a customer, have communicated your priorities to CEPA?	6
How well do you think CEPA understands your priorities as a customer?	5.5
How stable do you perceive the demand for the products you purchase from CEPA?	5
How strong do you perceive the incentives for CEPA to meet the requirements placed on them?	6
How much do you and CEPA agree on how CEPA performs as a supplier?	5.5
How satisfied are you with CEPA as a supplier?	5
How would you rate the quality of CEPA's products?	5.5
How well do you think CEPA manages to meet their lead times towards you	4
How does CEPA's pricing compare to that of its competitors?	4
How do you think the collaboration with CEPA is working?	5.5
How well do you think CEPA embodies a 'One stop shop'?	5.5
How good is CEPA at communicating with you?	5
How well do you think you communicate with CEPA?	6
<b>Question</b>	<b>Consensus</b>
Does CEPA receive a forecast from you? If yes, what is the process for developing the forecast?	Generally no
Do you have your own forecast related to the products where CEPA is a subcontractor?	Generally yes
Which KPIs do you use when evaluating your suppliers?	DOT, Quality, Price, CO2 Impact, supplier relationship, lead time
How are these KPI:s defined?	On-time deliveries are measured against the supplier's order confirmation. Quality is measured against the value of returns relative to the total purchased value in percentage
Compared to your other suppliers, is there anything that distinguishes CEPA as a supplier?	Flexibility, Quality, low DOT, higher price
What do you primarily think CEPA can improve?	DOT, information
Is there anything you as customers can improve in relation to CEPA	Communication, Forecast
if there are clear incentives for CEPA to meet the requirements set by you, please provide examples here	Increased volume



# Appendix D

## Survey results from suppliers

<b>Supplier survey</b>	
Quantitative	Median, from 1-7
How well CEPA communicates their priorities as a customer	6
How stable the demand for the products that CEPA purchases	5
How strong the incentives to meet the requirements set by CEPA are	6
How much you and CEPA agree on how you perform as a supplier	7
How happy they are with CEPA as a customer	6
How good quality products shipped to CEPA are	7
How well do you are able to meet your lead time to CEPA?	6
How do you perceive your pricing in relation to your competitors?	6
How do you think the collaboration with CEPA is working?	7
How good is CEPA at communicating with you?	6
How well do you asses your ability to communicate with CEPA?	6
How well do you think your operations are aligned with CEPA's strategy?	6
<b>Question</b>	<b>Consensus</b>
Does CEPA give you a forecast?	Generally no
Do you use any KPIs to CEPA?	Delivery precision, volume, rejects, some state none.
Do you feel you have insight into how you are evaluated as a supplier by CEPA?	Mixed response between yes and no
Compared to your other customers, is there anything that distinguishes CEPA as a customer?	High demands on quality
What do you primarily think CEPA could improve	Forecast and forward planning
Is there anything you as a supplier can improve upon for CEPA	Lead time