

How to Make Promotions Work in a Cost-efficient Context

A Case Study at Lantmännen Cerealia

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Abstract

Keywords - Promotions, Promotion Planning, Cross-functional Processes, Supply Chain Configuration, Strategy Alignment, Customer Service Level (CSL), Key Performance Indicators (KPI), Sales and Operations Planning (S&OP), Master Scheduling (MS), Cost-efficiency, Market Responsiveness

Problem - Promotions are the main reason for a majority of stock out situations and increases the amount of waste for perishable items, and strong competition within grocery retail has led to a significant increase in frequency and depth of promotions since the late 20th century. Lantmännen Cerealia has identified problems with low customer service levels (CSL) during promotions and lack of long term planning in general. This has thus lead to the conclusion of the need for looking further into the problem regarding how Cerealia can handle promotions better.

Purpose - The purpose is to help Lantmännen Cerealia achieve and secure a better match between demand and supply for promotions through increased understanding for promotional causes and effects as well as better planning processes.

Research Questions

1. What are the causes within Cerealia for low CSL during promotions?
2. What can Cerealia do, and how can the Sales and Supply Planning units work together, to improve the promotion planning process?

Method - This study is based on a single case study with the unit of analysis being promotions. Further, the method for gathering information to the *Frame of Reference* and *Empirics* chapters are mainly qualitative, with occasional quantifications, further implying a more inductive approach. Trustworthiness and credibility is mainly ensured through gathering information from many different sources, both within written theory and qualitative interviews, implying a high construct validity. The project execution follows the two research questions:

1. Understand causes for low CSL during promotions in Cerealia
 - a. Identify root causes through Five Why and Ishikawa analyses
 - b. Choose a path to pursue
2. How to improve the promotion planning process - Gap Analysis
 - a. Identify current state of promotional planning process
 - b. Derive an optimal future state from theory and empirics
 - i. Develop a tool for collaborative promotion planning
 - ii. Develop process routines and procedures for the use of this tool and to ensure better planning of promotions
 - c. Develop a road-map to reach the future state

Conclusion - To summarize the findings of this study, the main issue with Cerealia today, in the context of their promotion planning, is their lack of cross-functional integration as a result of unclear strategies and lack of optimal supply chain configuration. To combat this issue, the analysis yielded four general steps to follow:

1. Remove functional strategies and communicate firm category strategies throughout the organization.
2. Decide on promotion strategy within each category and set up supply chains accordingly.
3. Secure a long term promotion planning process by including capacity constraints for promotion volume planning and long term promotion information in the S&OP process.
4. Facilitate mix planning on the MS level with the help of a promotion planning tool and appurtenant process routines

In other words, this study concludes that promotional products, with a lower contribution margin, should be separated from the baseline products, with a higher contribution margin and cost-efficient supply chain, through a market responsive supply chain. This study aims to enhance the challenges with promotions in general, and the necessity of a clear supply chain strategy, as well as the many hardships of providing to the Swedish grocery retail market.

Preface

This thesis concludes the authors' Masters of Science at the Lund University Faculty of Engineering (LTH). Specializing in Supply Chain Management, Helena Nyman studies the program Mechanical Engineering and Caroline Vitasp Industrial Engineering and Management. The thesis is built on a case study performed at Lantmännen Cerealia in Sweden.

We would like to take the opportunity to thank our supervisor at Lantmännen Cerealia Charlotte Berg for her patience, support, rational reasoning and logical explanations. Without you we would have had a much harder time to find the information needed. Also, we would like to thank all of the employees at Cerealia that we have met during our time here. We have always felt welcome and part of the group. We would like to direct a specific thanks to Joakim Hammarberg at Cerealia, for his time and interest in our study. The report would not have been the same without your continuous and elaborate answers.

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Glossary

B2B	BUSINESS TO BUSINESS
B2C	BUSINESS TO CUSTOMER
BOM	BILL OF MATERIAL
CLT	CUMULATIVE LEAD TIME
CSL	CUSTOMER SERVICE LEVEL
ERP	ENTERPRISE RESOURCE PLANNING
FMCG	FAST MOVING CONSUMER GOODS
KAM	KEY ACCOUNT MANAGER
KPI	KEY PERFORMANCE INDICATOR
MPS	MASTER PRODUCTION SCHEDULE
MS	MASTER SCHEDULING
MTS	MAKE TO STOCK
MTO	MAKE TO ORDER
OHB	ON HAND BALANCE
OTIF	ON TIME IN FULL (ORDERS DELIVERED)
PLT	PROMOTION LEAD TIME
PTF	PLANNING TIME FENCE
S&OP	SALES AND OPERATIONS PLANNING
SC	SUPPLY CHAIN
SCM	SUPPLY CHAIN MANAGEMENT
VSM	VALUE STREAM MAPPING

1 Introduction

This section aims to introduce the reader to the background of the study, the company that the paper aims to aid and the research purpose and questions.

1.1 Background

According to multiple sources, such as Smith (2008), globalization and increased uncertainties in customer demand are making it harder to match supply and demand in manufacturing industries. Adding the phenomenon of promotions in cost-efficient companies adds another dimension of complexity to the problem, as promotions are the main reason for a majority of stock out situations and the amount of waste for perishable items (Gruen et al., 2002). In addition to this, strong competition within the category of fast moving consumer goods (FMCG) and grocery retail has led to a significant increase in frequency and depth of promotions since the late 20th century, indicating a trend in increased promotions (Srinivasan et al., 2004).

Lantmännen Cerealia has identified that the market competition is toughening, much due to the price competition from their customers' private label products. Furthermore, they have identified problems in their internal supply chain, specifically regarding campaigns. This has thus led to the conclusion of the need for looking further into the problem regarding how Cerealia can handle promotions better.

1.2 Company Presentation

Lantmännen Cerealia (Cerealia) is one of two corporations within the Foods division in the Lantmännen Group; a large group owned entirely by the farmers producing goods to the group. Cerealia produces and sells Fast Moving Consumer Goods (FMCG) such as grains, beans, pasta, müsli and ready to eat products. In Sweden, Cerealia owns brands such as START!, AXA, Kungsörnen, Gooh! and GoGreen. The foods can be divided into five different categories: Baking, Cooking, Breakfast, Crisp and Traded goods. These goods are then sold either to business customers that are not the end consumer (B2B and Foodservice), or to retail customers through which the end consumer takes part of the finished product from Cerealia (B2C). Cerealia's headquarters are situated in Stockholm, but operates within all Nordic countries except Iceland, and also in Ukraine.

The organization underwent an extensive organizational restructuring starting in 2014. The purpose of this restructuring was mainly to gather and centralize the previously local, site specific planning functions in Norway, Denmark and Sweden to the office in Malmö Sweden. As this is written, the process is almost completely implemented, but still requires the centralization of certain locations. In other words, the new organization is very new and the potential benefits of the restructuring are not yet fully visible.

This project is facilitated from the Malmö office, where the Supply Planning department is located, but visits to the Stockholm head office and production site Järna were made in order to meet all relevant functions and roles. The authors are also employed at Cerealia during the study, working part time with call-off at the Supply Planning division.

1.3 Problem Description

Lantmännen Cerealia has identified problems with low customer service levels (CSL) during promotions and lack of long term planning in general. To address these problems Cerealia has initiated a new S&OP process, but admits that the organization has more to do to achieve a more stable and balanced supply chain when it comes to promotions. As one of Cerealia's main strategic objectives is to provide high CSLs, this is a major issue that has received the attention of the executive board and needs to be investigated.

When a request for a promotion is received, the whole organization makes an effort to make it work with everything else, even when the request is not within the standard information lead time. Since the production is make-to-stock (MTS) and orders are supplied from this stock, the internal supply chain relies heavily on correct forecasts. The results of the short notice for promotion confirmations are thus volatile forecasts leading to shifted plans in production, implying higher costs and increased risks of shortages on both raw and packaging materials, to name a few. In other words, the short information lead times for promotion can have serious implications on the CSLs of both regular and promotion-priced products.

To understand the complex process with promotions, an initial broad, investigative approach is chosen, with the aim to derive the root causes to low CSL during promotions. This results in a number of different root causes or trails, where the aspect of internal cross-functional integration and supply chain configuration is chosen to pursue further with regards to the time constraint, interest and as the other aspects were identified as outside the scope for Cerealia or not possible to affect through a single case investigation.

In other words, the problem with low CSLs during promotions at Cerealia is approached through two steps, the first aiming to analyze and explain the underlying problems to low CSLs, and the second at analyzing and solving one of the underlying problems, specifically the process-related and strategic root cause. Promotions in this study refers from now on to all activities leading to increased sales volume to the point where it requires to be inputted to the forecast.

1.4 Research Purpose and Questions

The purpose is to help Lantmännen Cerealia achieve and secure a better match between demand and supply for promotions through increased understanding for promotional causes and effects as well as better planning processes.

The research questions are thus:

Research Question 1:

What are the causes within Cerealia for low CSL during promotions?

Research Question 2:

What can Cerealia do, and how can the Sales and Supply Planning units work together, to improve the promotion planning process?

1.5 Objective

This master thesis aims to first investigate and highlight causes of low CSLs during promotions in Cerealia. Thereafter, it aims to identify improvements to the current state of the promotion planning process, mainly including the optimization of supply chain strategy and improved cross-functional integration between Sales and Supply Planning by developing a tool for collaborative promotion planning. The last step includes the validation of input data to the tool in terms of lead times as well as the development of process routines and procedures for the use of the tool, to ensure better planning of promotions. The aim is further to provide Cerealia with both short and long term solutions, in order to create the most value possible.

1.6 Focus and Delimitations

The focus of this study is to identify the different causes for low CSLs during promotions, suggest a better suited supply chain strategy and to develop a promotional planning tool that can be a basis for cross-functional integration between the Sales and Supply Planning units. Due to the time constraint, the business area B2C is chosen, as this business area is subject to a lot of promotions and have acknowledged problems with promotional CSLs. Furthermore, the focus is on the category Breakfast, as this category includes many different raw materials with long lead times, and only on goods sold in Sweden, as this was identified as easiest in regards to language, relatability and the time constraint. Furthermore, this study does not cover the aspect of promotions on new products or promotions that occur directly after new product launches. This study disregards any default risks or external factors that affect CSL, for example global lack of raw material or sick leave in production.

1.7 Target Group

This thesis is directed to the executive board of Lantmännen Cerealia as it aims to aid them with both strategic recommendations as well as a cross-functional process that regards both the Sales and Supply Chain organizations, and that operates on both strategic, tactical and operational levels. It is also directed to the Faculty of Engineering at Lund University, specifically the department of Industrial Management and Logistics, as the purpose of this paper also is to finalize the authors' engineering studies.

1.8 Contribution

In this section, the contributions to the organization, at which the project is performed, and to academia are presented.

1.8.1 Contribution to the Organization

This master thesis aims to improve the internal promotion process at Cerealia through process and supply chain strategy oriented measures and recommendations. This is done by investigating and recommending changes to the promotion process in order to better match supply with demand, which can lead to significant increases in sales and revenue, thereby helping the company.

1.8.2 Contribution to Research

This study is later revealed to be based, to a large extent, on theory of supply chain configuration and the empirics of the Swedish grocery retail market, where promotions are an inevitable aspect, bringing up the question of how to optimize a business with a cost-efficient supply chain. The hope is to contribute to research by investigating whether there are more or less optimal solutions if theory is adjusted to reality, on a general, conceptual level.

1.8.3 Contribution to Society

A better match between supply and demand, and specifically in a promotional context, might hopefully imply more streamlined operations, meaning lower amounts of stock or capital on hand. As the products are perishables, even with relatively “long” shelf lives, this can imply less waste, more resource efficiency and in the long run less stress on the environment.

1.8.4 Contribution to the Individuals

This research will give the authors a more profound knowledge in the studied fields, which can be useful in future projects in both academia and industry.

2 Methodology

The research purpose and questions are two of the determining factors in order to choose a suitable methodology for the study (Yin, 2009). In this chapter, different research strategies, methods and approaches are presented according to case study theory, in accordance to the character of the research question, and in each section the selected approach is presented. Following this, the method for execution of the project is proposed in detail.

2.1 Research Strategy

This section aims to present the different research strategies according to Yin (2009) as well as explaining certain terms before selecting a chosen approach.

2.1.1 Research Strategies

Five commonly used research strategies are experiments, surveys, archival analyses, historical studies and case studies, and they all have different advantages and disadvantages. Therefore, it is important to identify the differences in order to find the most suitable strategy for the chosen study (Yin, 2009). According to Yin (2009) there are three conditions to evaluate when choosing research strategy, presented in Table 2.1 related to each research strategy.

Table 2.1 - Relevant situations for different research methods (Yin, 2009)

Method Strategy	Form of Research Question	Requires Control of Behavioral Events?	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 *who*, *where*, *how many* and *how much* are possible to quantify and measure and thereby the research question can be answered by statistics, which is easiest accomplished by surveys or archival analyses. For explanatory questions such as

how and *why* it is recommended to use either experiments, history strategy or case studies, as these questions concern problems that need to be investigated more thorough and over time rather than through the collection of statistics. The research question *what* can be divided into two different types. One form of *what* is more exploratory type where all strategies are applicable, and hence not shown in Table 2.1. The other type is in the sense of *how many* or *how much*, for which archival analyses or surveys are more relevant, as shown in Table 2.1 (Yin, 2009). Only experiments require control of behavioral events, and all methods focus on contemporary events, except history and in some cases archival analysis, meaning events occurring now and not historically.

The methodology for a study depends on the research question and purpose of the study, which in turn yields the type of strategy that should be applied. The different purposes can be descriptive, explanatory, exploratory or problem solving (Höst et al., 2006), as shown in Table 2.2. Case studies can be based on any combination of qualitative or quantitative information, and should thus not be confused with “qualitative research” (Yin, 2009). Depending on the chosen strategy Table 2.2 shows if qualitative or quantitative methodology should be applied for the collection of primary data (Höst et al., 2006).

Table 2.2 - Compilation of research strategies and their main purpose, data and design (Höst et al., 2006)

Method Strategy	Main Purpose	Primary data	Design
Survey	Descriptive	Quantitative	Fix
Case study	Explanatory	Qualitative	Flexible
Experiment	Exploratory	Quantitative	Fix
Action research	Problem solving	Qualitative	Flexible

2.1.2 Unit of Analysis

The unit of analysis is essential for the chosen research strategy and is identified from the research question. If the study contains only one unit of analysis the study is called holistic and with more than one unit of analysis the approach is embedded. Yin (2009) describes the different types of case designs as compiled in Table 2.3. The single case study provides a great depth of the study but on other hand it also limits the generalizability of the conclusions.

Table 2.3 - Basic types of design for case studies (Yin, 2009)

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

2.1.3 The Selected Research Strategy

For the chosen research question, a single case study is appropriate since the first research question regards only the phenomenon promotions within Cerealia. However, the further analysis related to research question number two can be argued to be embedded, since it contains both supply chain configuration and process-related units of analysis, however this is within the scope for promotions. The research is solely done at Lantmännen Cerealia, and the approach is thus single case and mainly holistic, in other words Type 1 according to Table 2.3. The strategy of case studies is chosen, as the objective is to answer questions *how* and the exploratory form of *what*, and as the research phenomenon appears in a real-life context and is contemporary.

The choice of case study strategy is also justified by the advantages described by Meredith (pp.443-444, 1998), which all are relevant for this thesis:

- “The phenomenon can be studied in its natural setting and meaningful, relevant theory is generated from the understanding gained through observing actual practice.
- The case method allows the questions of *why*, *what* and *how* to be answered with a relatively full understanding of the nature and complexity of the complete phenomenon.
- The case method lends itself to early, exploratory investigations where the variables are still unknown and the phenomenon not fully understood.”

2.2 Qualitative and Quantitative Data Collection Method

To collect data in studies, one can choose between two main methods; qualitative or quantitative method. Quantitative data is mainly possible to quantify and classify such as quantity, proportion or color. Analyzing and processing quantitative data requires statistical analysis. Qualitative data consists of words rather than numbers and more often describes and explains problems and situations. Qualitative data can however also be analyzed, for example by sorting data into groups and identifying patterns. The choice of qualitative or quantitative data collection method depends on the research purpose and question. The link between research strategy, purpose and method is

presented in Table 2.2. However, a combination of both quantitative and qualitative method it is suggested when studying complex problems involving humans and their interactions (Höst et al., 2006).

2.2.1 The Selected Methodology

The selected methodology is a combination of the two methods with mainly qualitative characteristics, as the discussion of what drives promotional problems implies a general, systemic overview of the problem. However, the classification regarding lead times for products have a touch of quantitative aspects, but this is also on a qualitative, general level of discussion, implying a combined but mainly qualitative method.

2.3 The Inductive, Deductive and Balanced Approaches

This section aims to present the inductive and deductive project approaches as according to Kotzab et al. (2005). As for all choices of method, the characteristics of the research question affects the choice of a quantitative or qualitative path for the program of the study, or a choice for both.

2.3.1 Inductive

According to Kotzab et al. (2005), the inductive approach is mainly a qualitative path, with the aim to understand and describe a phenomenon at hand. This implies the following three steps, as shown in Figure 2.1 as well.

1. Collection of data
2. Description of the phenomenon
3. Construction of a substantive theory of the phenomenon

In the data collection phase, the researcher aims to see, learn and understand the phenomenon as close to the source as possible. This implies sources such as observations, interviews and documents. Literature on the topic can be consulted, but the substantive theory is mainly derived from the data. The description phase aims to include and explore all the dimensions of the phenomenon, and can be determined along the process as the data collection proceeds. Commonly used methods are open questions and comparing multiple data sources. Lastly, the building of theory is the phase that occurs late in the process, and for SCM often results in a process model illustrating the relationships of variables. This is mostly done by analyzing detailed data to generate structured, generalized variables, dimensions or categories (Kotzab et al., 2005).

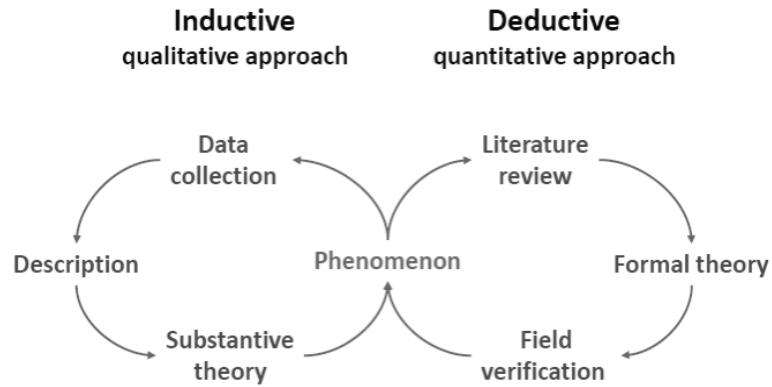


Figure 2.1 - Inductive and Deductive Approach. (Woodruff R (2003) referred to in Olhager (2016))

2.3.2 Deductive

The deductive approach is mainly quantitative and aims to add on to existing knowledge to formulate a theory that both explains and, unlike the qualitative approach, predicts or controls the phenomenon (Kotzab et al., 2005). This approach has previously been the most common in SCM and logistics situations, and the three steps of the deductive approach are shown in Figure 2.1 and as follows:

1. Research existing literature
2. Build a formal theory on literature review
3. Collect data to confirm theory

The literature review phase may contain field verifications to for example clarify variables and their relationships, but does not do so as much as the first step in the qualitative path. Then, the researcher states hypotheses, or answers to research questions, to be confirmed in the field in the third and last step. The field verifications may include surveys or experiments, and results must be measured thoroughly (Kotzab et al., 2005).

When it comes to research methodologies specific for SCM studies, Kotzab et al.(2005) presents “The Balanced Approach”, as initially presented by Woodruff (2003). Kotzab et al.(2005) argues that it is common in the research of logistics or SCM to study a certain phenomenon, but that there is also a need to back up the analysis with data quantifications. The Balanced Approach is an example of the latter, and is a combination of the inductive (mainly qualitative) and deductive (mainly quantitative) paths that the researcher can take iteratively throughout the research process.

2.3.3 The Selected Methodology

The selected methodology for this thesis is mainly based on the inductive, qualitative approach as the main issue is to understand the phenomenon of promotions and low CSLs at Cerealia. As the research questions are posed without a hypothesis or answer to prove, this further motivates the inductive approach. However, with the aspect of lead

times some quantifications are made, but this is within the frame of a more inductive approach.

2.4 Analysis Method

Typically in case studies, there are five types of analytic techniques, according to Yin (2009), that can be used for analyzing the collected data:

- *Pattern matching* - This technique is based on a comparison of an empirically based pattern with a pattern studied in literature. Similarities and differences are highlighted and described in order to draw conclusions.
- *Explanation building* - This technique can be described as special type of pattern matching. The goal is to get an understanding for and build an explanation of the case by analyzing the data. This technique is most common for exploratory case studies.
- *Time-series* - The time series technique is often easier to manage since it can regard a single, dependent or independent, variable to analyze. The technique is conducted by matching the empirical pattern with either a theory pattern or a previously observed rival pattern.
- *Logic models* - This technique is similar to pattern matching but the difference lies in the structuration of events over a period of time. Events are organized in sequences and can be the basis of a cause-effect identification.
- *Cross-case synthesis* - Only applicable in multiple-case studies where the analysis of each case is compared and conclusions can be drawn.

2.4.1 The Selected Methodology

The chosen method is initially concerned with explanation building, as the aim is to explain causes for low CSL during promotions at Cerealia. The Five Why and Ishikawa analyses could also be argued to be a form of logic model. However, the development of a current and future state is performed by pattern matching using empirics and relevant theory, as well as the development of a promotion process.

2.5 Trustworthiness and Credibility

It is of highest importance to ensure credibility in a research since it is a way to measure the quality in a case study (Yin, 2009). High credibility means that the conclusions of the research are supported and that the research yielded general results (Höst et al., 2006). Yin (2009) presents four tests to ensure credibility of a research; construct validity, internal validity, external validity and reliability. These tests are presented in this section as well as this study's approach to achieve high credibility.

2.5.1 Construct Validity

The test of construct validity can be described as how well the method captures information about the phenomenon observed. It is important to consider whether the chosen method and measures are the most suitable for answering the proposed

research question. Ensuring that the correct operational measures are established is one way to control that correct data is collected and that it is collected in the right way. Construct validity tests if the study uses multiple sources of evidence, establishes a chain of evidence and has key informants review a draft of the case study report (Yin, 2009).

Construct validity of a study can be increased by triangulation, which is achieved by considering the problem from different viewpoints and collecting data from several sources in order to understand the problem fully and make objective comparisons. Examples of triangulations are method triangulation, theory triangulation or data triangulation (Höst et al., 2006). For this study, construct validity is achieved by interviewing several different persons at Cerealia, implying the usage of multiple sources of evidence and further an establishment of a chain of evidence.

2.5.2 Internal Validity

Internal validity is a test for how well causal relations have been identified and established in order to consider all perspectives of the study and eliminate the risk for false conclusions. Internal validity only concerns explanatory and causal studies and not exploratory and descriptive studies, since the goal of the two latter is not to establish causal relationships (Yin 2009). To increase the internal validity of a study, the analysis methods pattern matching, explanation building (addressing rival explanations) and/or logic model can be used. Internal validity in this study is accomplished by explanation building and pattern matching, performed sequentially and in order in the analysis.

2.5.3 External Validity

External validity can be described as to what extent the research's results can be generalized for other cases (Yin, 2009). In general, case studies are not generalizable (Höst et al., 2006) and Yin (2009) agrees that there is a low level of possible generalization in single case studies. According to Yin (2009) the most important factor to consider in single case studies is the usage of theory in order to achieve external validity, which is applied in this study through the chapter *Frame of Reference*.

2.5.4 Reliability

According to Yin (2009), the main objective when ensuring reliability is to reduce errors and biases. Reliability also aims to make the case study possible to replicate by another investigator and through this receive the same results. One fundamental condition for others to follow the same procedure is extensive documentation of how the study has been conducted, such as protocols for interviews and clear description of the method (Yin 2009).

To increase the reliability in a study it is important to use case study protocols and to develop a case study database (Yin, 2009). Höst et al. (2006) also suggests having an external person read the data collection and analysis, in order to identify possible weaknesses. In this study, a summary of each interview is established and all interviews are recorded and compiled to be saved in a case study database. Also, the gathered

empirics is reviewed by the interviewees, and both collected data and analysis is reviewed by supervisors at LTH and Cerealia, in order to ensure high reliability.

2.6 Project Execution

The project is executed according to a two-step model with the research questions as basis, comprising of an initial investigative and explanatory part discussing and analyzing the causes for low CSL during promotions. This is followed by a gap-analysis in the second part, aiming to set better processes for the promotion planning process at Cerealia, where the current state is first identified, followed by the optimal future state. In the future state, a promotion planning tool is developed, as well as process routines for how to use the tool cross-functionally. The steps in the project execution, and the line of thought in the analysis, are described more in detail in this section and briefly as follows:

1. Understand causes for low CSL during promotions in Cerealia
 - a. Identify root causes through Five Why and Ishikawa analyses
 - b. Choose a path to pursue
2. How to improve the promotion planning process - Gap Analysis
 - a. Identify current state of promotional planning process
 - b. Derive an optimal future state from theory and empirics
 - i. Develop a tool for collaborative promotion planning
 - ii. Develop process routines and procedures for the use of this tool and to ensure better planning of promotions
 - c. Develop a roadmap to reach the future state

The specificity of the study as a function of the time, divided by these steps, can be depicted as in Figure 2.2, and operates on all business levels (strategic, tactical and operational).

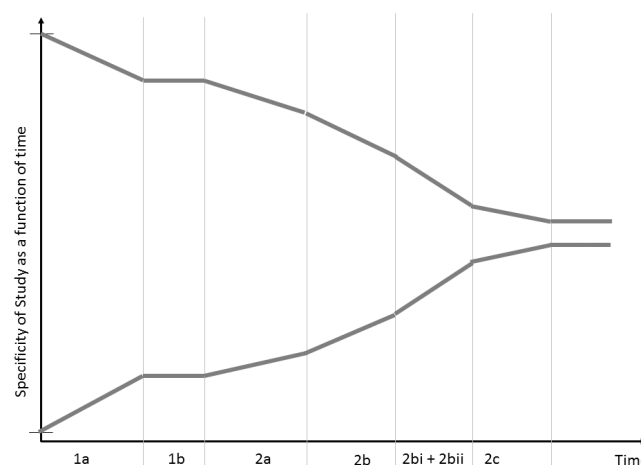


Figure 2.2 - The specificity of this study as a function of time

2.6.1 Part One

Part one of this project revolves around gathering information and understanding the causes to the main effect of low CSLs during promotions within Cerealia. More specifically, a Five Why analysis and an Ishikawa (or Fishbone) diagram are used to find root causes, followed by the choice of a path to pursue. Based on the data collected and the chosen path in Part one, a current state, future state and road map is later established in Part two.

Data Collection and Empirics

The data collection in this part consists mainly of qualitative methods such as interviews, observations and data collected through experience coming from operational work within the organization outside of the study.

Literature and Frame of Reference

The substantive literature in this part revolves around Five Why and Ishikawa, Swedish grocery retail industry and its planning environment, as well as price promotions. This literature is sought to a large extent through academic channels such as databases and libraries, including sources such as academic articles and books, implying a high level of credibility through construct validity.

Analysis

The theory on Five Why and Ishikawa is the basis for the analysis in Part one. The actual execution of the analysis requires empirics, but also theoretical knowledge on the Swedish grocery retail industry and price promotions. Employees at Cerealia have contributed to this through both information and input. Following the Five Why and Ishikawa analyses, Part one continues by investigating and choosing a path to pursue, before Part two, developing a current and future state for the promotional planning process, proceeds.

2.6.2 Part Two

Part two first aims to summarize the data and empirics collected, and initially analyzed with theory, in Part one, into a current state for Cerealia. This is basically a summary of the empirics and thus does not require separate data collection and frame of reference steps. However, some analysis is performed here, bringing up the increased importance of supply chain configuration and strategy alignment, mostly performed by the authors with some additional input and validation from certain employees.

Part two is later concerned with further addressing a certain part of the problem mapped in Part one, namely the low level of cross-functional integration between Sales and Supply Planning and unaligned supply chain configuration. This is verified through the initial step, and since it is found that this is a root cause to the problem with low CSL during promotions, a road map to the future state is developed. This includes a tool with lead times that can be used in the communication between Sales and Supply Planning.

To ensure the cross-functional implementation of this tool, a process and communication routines are developed as well.

Data Collection and Empirics

The data collection in Part two is a combination of the empirics and theory collected in Part one and additional theory on for example supply chain configuration and strategy that was not anticipated before the execution of the Five Why and Ishikawa analyses. Regarding the development of the tool, a Microsoft Excel spreadsheet, the product and lead time data is collected quantitatively through the ERP system at Cerealia.

Literature and Frame of Reference

The main part of the literature is used to in Part two, and it regards theory on SCM and configuration, functional and innovative products, CSLs, lead times, process management, master planning or master production scheduling, S&OP and process mapping. This is also mainly sought through databases, implying an extensive amount of academic articles and books, and the sources are viewed as credible and trustworthy.

Analysis

The analysis in Part two identifies the current and optimal future state for the promotion planning process, and is broken down into the theoretical necessities for cross-functional integration. Here, the promotion planning tool is developed later. The construction of the tool required data extraction and validation, as well as programming in an Excel file. Thereafter, a categorization of the products with regards to lead times is made, followed by the development of a communications framework for how and how often the tool should be used. These routines are derived from the theory on process management and empirics on the organizational structure, gathered in Part one.

3 Frame of Reference

The frame of reference for this project aims to fully exhaust the phenomenon of promotions within the scope of SCM, as well as theory on Swedish retail chains for groceries, process management and supply chain configuration. The sections in this chapter are structured by logical order, rather than chronological order of usage in the thesis, with the aim to gradually build up the reader's knowledge.

3.1 Supply Chains and Supply Chain Management

In order to fully understand the frame of reference and this specific case, there is a need to define the broad terms “supply chains” and “supply chain management”. Mentzer et al. (2001) wrote in their article “Defining Supply Chain Management” that there seems to be a fairly unison definition of supply chains, being “...a set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer” (Mentzer et al., 2001, p.4). This can be shown in Figure 3.1, as Mentzer et al. (2001) further defines the differences between direct, extended and ultimate supply chains.

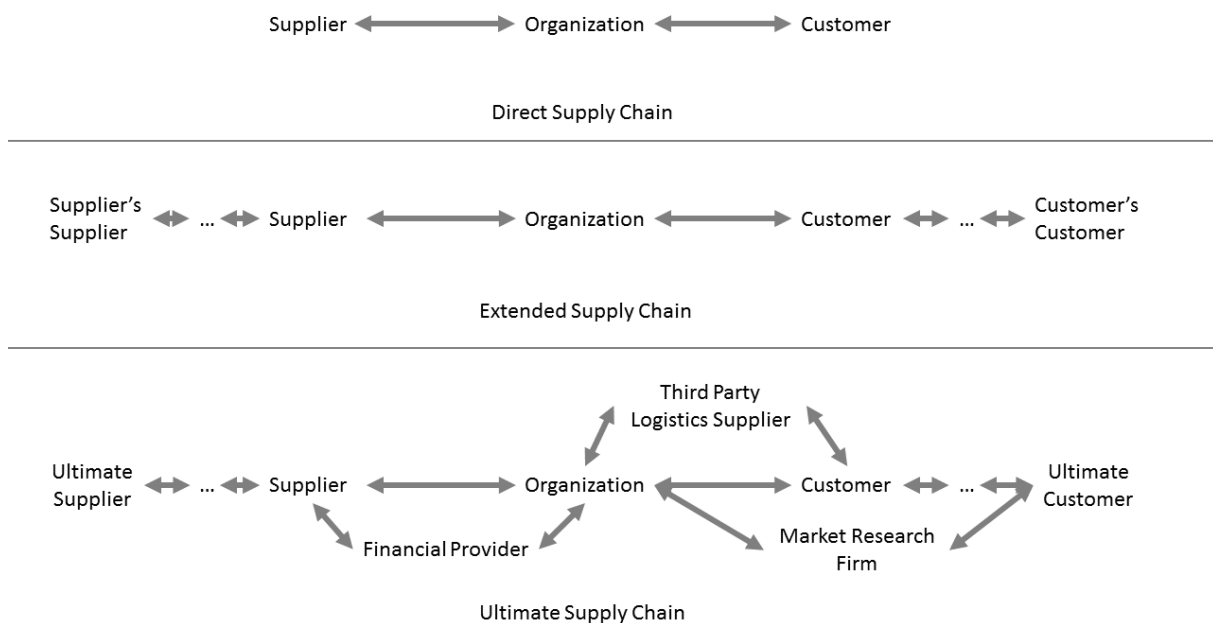


Figure 3.1 - Types of Channel Relationships. (Mentzer et al., 2001, p.5)

However, there are many definitions to date regarding the management of supply chains. Mentzer et al.(2001) discuss many of the definitions to a great extent, including the definition by Cooper et al.(1997) stating that SCM is “...an integrative philosophy to manage the total flow of a distribution channel from supplier to the ultimate user” (Mentzer et al., 2001, p.7). The authors finally conclude that SCM can be described as:

“the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole” (Mentzer et al., 2001, p.18).

This implies that SCM requires a double perspective of both inter- and intra-company alignment, meaning that companies not only should aim to integrate with the others, but also integrate within themselves. The relationship between these can be shown by the model by Mentzer et al. (2001) as in Figure 3.2. To elaborate further, the inter-company collaboration requires a great deal of so called “supply chain management antecedents”, such as trust, commitment, interdependence, vision, key processes, a leader and top management support (Mentzer et al., 2001).

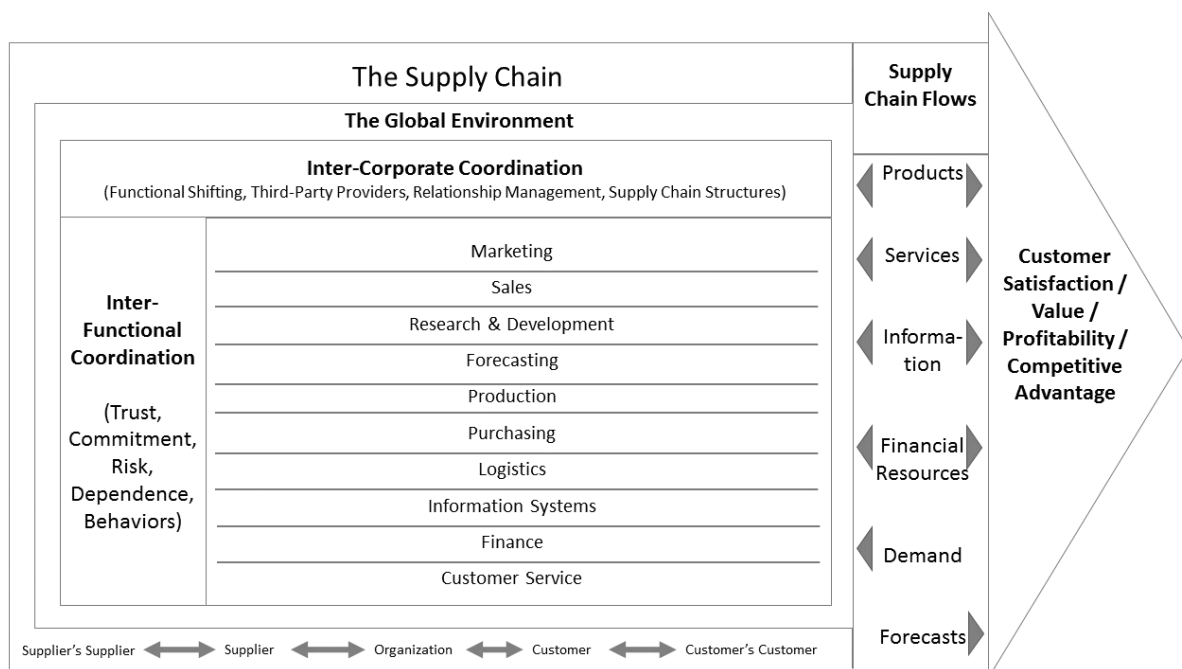


Figure 3.2 - A Model of Supply Chain Management. (Mentzer et al., 2001, p.19)

3.1.1 Customer Service

Mentzer et al. (2001) discuss the many objectives of SCM from previous literature in their chapter on consequences of SCM, and one of the main terms used is customer service. One way of measuring customer service in manufacturing companies is by customer service levels (CSL). This can be measured as the amount of orders that can be delivered directly from stock on time, in full (OTIF). More specifically, customer service levels are often described mathematically in two different ways. Service level type 1 is often described as “the probability that all customer orders arriving within a given time interval can be completely delivered from stock on hand without delay”. Service level type 2 can be described as “the proportion of total demand within a reference period which is delivered without delay from stock on hand” (Axsäter, 2006).

Regarding customer service and its role in the SC, Mentzer et al. (2001) state some key objectives that are recurring in previous literature. One is to lower the cost needed to retain a certain level of customer service, another is to improve customer service through increased availability in stock, and another is to create individualized customer service through innovative solutions and synchronizing flows of products, services and information (Mentzer et al., 2001). The authors conclude by stating “Thus, it is proposed that the implementation of SCM enhances customer value and satisfaction, which in turn leads to enhanced competitive advantage for the supply chain, as well as each member firm” (Mentzer et al., 2001, p.15), implying that customer service is part of the strategic balance through which the involved companies can achieve profitability.

Wallace and Stahl (2003) state that there are four fundamentals that manufacturing enterprises need to consider in their internal supply chain, namely demand, supply, volume and mix. In consideration to demand and supply, they highlight the problems with having both more demand than one can supply, implying lower customer service levels than required, but also with having more supply than one has a demand for, implying higher customer service levels than required. More specifically, the authors state that when demand exceeds supply, customer service and quality decrease and lead times and costs increase. Conversely, when supply exceeds demand, profit margins and production rates decrease as inventory costs and risks increase. This implies that having too much finished goods in stock (at MTS companies) is just as bad as having too little, and that the balance between demand and supply is of the essence in order to minimize costs while still meeting customer requirements (Wallace and Stahl, 2003).

3.1.2 Supply Chain Strategy & Configuration

Fisher (1997) presents a framework for functional and innovative products in order for managers to configure the supply chain for their specific products in the most optimal way. A product’s demand pattern depends on several different factors and when classifying them after these factors, Fisher (1997) found that the products with appurtenant characteristics are either innovative or functional. These two types of products require different kinds of supply chains and, according to Fisher (1997), a common problem is that companies lack understanding for what type of products they produce and what kind of supply chain their products require.

Functional products are recommended to have a cost-efficient supply chain, which implies long, but stable, lead times and at the same time high customer service levels, minimum 98 percent, as well as low forecast errors, max 10 percent. Innovative products should, according to Fisher (1997), have a responsive supply chain characterized by being able to quickly respond to unpredictable demand. An innovative product generally has a lower requirement on customer service level and a shorter product life cycle than functional products. For these products, large investments are justifiable in order to decrease lead times. Table 3.1 maps the dimension of functional

versus innovative products to the dimension of a cost-efficient or market responsive supply chain.

Table 3.1 - Overview functional and innovative products with corresponding supply chain (Fisher, 1997)

<p>Functional product</p> <ul style="list-style-type: none"> ○ Predictable demand ○ Product lifecycle more than 2 years ○ Contribution margin 5-20 percent ○ Product variety low ○ Average margin of error in forecast is 10 percent ○ Average stock out rate is 1 percent to 2 percent ○ Average forces end-of-season markdown as percent of full price is 0 percent ○ Lead time for made-to-order products is 6 month to 1 year 	<p>Cost efficient supply chain</p> <ul style="list-style-type: none"> ○ Supply predictable demand at the lowest possible cost ○ Manufacturing focus should be to maintain high average utilization rate ○ Inventory strategy is to minimize inventory throughout the supply chain ○ Shorten lead times as much as possible without increasing costs ○ Suppliers are primarily chosen for cost and quality
<p>Innovative product</p> <ul style="list-style-type: none"> ○ Unpredictable demand ○ Product lifecycle is 3 month to 1 year ○ Contribution margin 20 percent to 60percent ○ Product variety high ○ Average margin of error in forecast is 40 to 100 percent ○ Average stock out rate is 10 percent to 40 percent ○ Average forces end-of-season markdown as percent of full price is 10-25percent ○ Lead time for made-to-order products is 1 day to 2 weeks 	<p>Market responsive supply chain</p> <ul style="list-style-type: none"> ○ Respond quickly to unpredictable demand ○ Manufacturing focus should be to deploy excess buffer capacity ○ Inventory strategy is to deploy significant buffer stocks to parts or finished goods ○ Invest aggressively in ways to reduce lead times ○ Suppliers are primarily chosen for speed, flexibility and quality

In other words, Fisher (1997) argues that the middle ground between functional and innovative products, as well as having a supply chain in the middle ground between cost-efficient and market responsive, is not optimal and should be avoided, as seen in Figure 3.3, which is a graphical depiction of Table 3.1.

	Functional products	Innovative products
Efficient Supply Chain	Match	Mismatch
Responsive Supply Chain	Mismatch	Match

Figure 3.3 - Matching Supply Chain with Products. (Fisher, 1997, p.109)

This is also discussed by Chopra and Meindl (2013), depicted as the Zone of Strategic Fit and the Efficient Frontier, presented in Figure 3.4 and 3.5 respectively. The Zone of Strategic Fit can also be extended to include the aspect of low versus high shelf life. This shows that a too responsive supply chain for the corresponding demand uncertainty type is not optimal, and vice versa. Chopra and Meindl (2013) further depict responsiveness to cost-efficiency, or effectiveness to efficiency, deriving the efficient frontier as the optimal boundary that companies should move towards and keep in mind during strategic SC decision-making. However, these indicate that a middle ground is acceptable, which contradicts Fisher's theory, as well as Porter's theory on two types of competitive advantage, cost-leadership and differentiation (Mentzer et al., 2001).

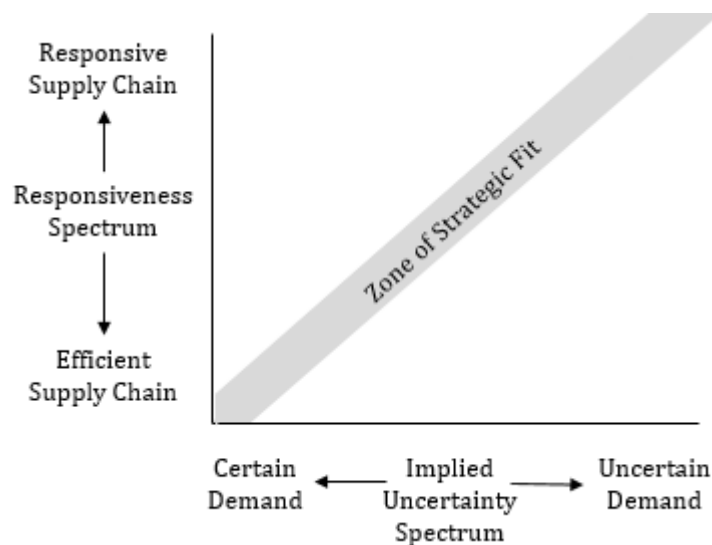


Figure 3.4 - Finding the Zone of Strategic Fit (Chopra and Meindl, 2013, p.40)

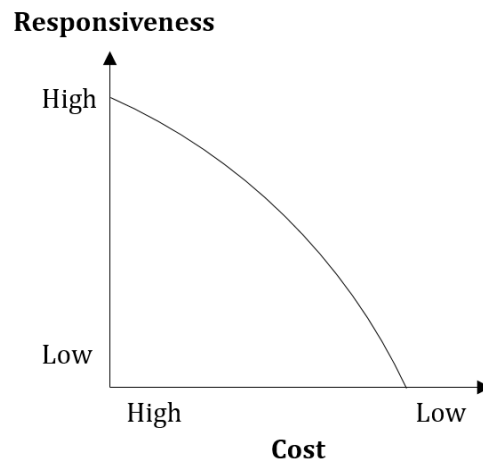


Figure 3.5 - Cost-Responsiveness Efficient Frontier (Chopra and Meindl, 2013, p.38)

The concept of lead times and their correlation to inventory levels, demand forecasting, service levels, productivity and supply chain performance have been widely discussed in many papers to date. In its most basic form, the concept of time has since long been identified as a competitive advantage, especially in the traditional manufacturing sector (Stalk, 1989). Generally speaking, lead times can be viewed as any time between two actions or events, and more specifically as the time interval between the customer's request for an order and the time at which the goods are received at the customer (Liang and Zhang, 2010). As in this case, the customer can be Cerealia, but also Cerealia's customers, implying that lead times affect both upstream and downstream from Cerealia, as to be expected in a supply chain.

In other words, lead times can be seen as a measurement of speed. However, Christopher (2000) straightens out the different definitions of speed and agility. He argues that speed, or leanness, is more focused on meeting customers' demand by shortening lead times whereas agility, as the previously mentioned and many additional authors such as de Treville et al. (2004) and Gligor (2014) have discussed, is more concerned with flexibility and being responsive to changes in customers' demand in all parts of the supply chain. This distinction is also identified by Stalk (1989). He argues that traditional manufacturing companies, in need of long lead times in order to share internal resources, need to plan based on inevitably wrong long-term forecasts. This leads to declining forecast accuracy, which drives up inventories and safety stock and implies more unscheduled jobs kicking out the scheduled ones.

Stalk (1989) further states that the most common reaction to being stuck in this so called "Planning loop" unfortunately is to request better forecasts and longer lead times, treating the symptoms rather than the root cause, and causing the problem to worsen. As a solution to this, Stalk (1989) states that "The only way to break the planning loop is to reduce the consumption of time throughout the system; that will, in turn, cut the need for lead time, for estimates, for safety stocks and all the rest." (Stalk, 1989, p. 38-39). The

concept of long lead times is not problematic per se, as long as the forecasts are accurate for the longest lead time. However that is seldom the case.

In relation to this is the concept of the Bullwhip Effect, also referred to as the Distortion of Delay by Stalk (1989). This is the effect of over- and underestimating customer demand trends, ramping up production by too much when a small increase in demand is noted and vice versa, due to the time it takes for the information from the market to reach the factory. To reduce this, Stalk (1989) argues that the new way, as opposed to the traditional way of producing blindly to forecast, is to reduce both the time it takes to receive the information and the time the product requires in the supply chain.

3.1.3 Product Classification and Pareto Analysis

When it comes to products and product portfolios in companies, the amount of products and the portfolio's mix affects the supply chain and business at large (Jonsson and Mattson, 2011). Most often, the products are put in relation to profit, as there are usually products that are more profitable than others. Jonsson and Mattsson (2011) argue that there is often a steady flow of new products introduced, and that it is important not to forget to remove products at the same rate. Here, a product classification can be useful.

A usual way to visualize which products are more or less profitable is by performing an ABC-analysis, ABC-classification or Pareto-analysis. In this classification, the products are sorted by, for example, their profit contribution and then assigned classes depending on the accumulated profit share (Jonsson and Mattson, 2011). Typically, these classes are chosen so that approximately 20% of the products account for 80% of the contribution margin. This is in other words a good way to reveal what products are contributing most to revenue, and can therefore be useful for decision-making regarding the product portfolio.

As classifications are good in revealing information that affects the supply chain, other parameters than profit can be used, such as turnover in units in the warehouse (revealing so called fast or slow movers) or any other KPI that might be considered critical or a bottleneck (Jonsson and Mattson, 2011).

3.2 The Swedish Grocery Retail Market

The Swedish grocery retail market is characterized by the domination of three large actors, ICA, Coop and Axfood, who hold over 85 percent of the total market. ICA is the main actor with over 50 percent market share, as shown in Figure 3.6 (HUI, 2015). In the beginning of the 21st century, low price retailer Lidl and Netto were introduced to the Swedish market with the aim to challenge the more established retailer and compete with consistently low prices (Gullstrand and Jørgensen, 2012). Total sales for the Swedish grocery retail market increased with 2.3 percent during 2014 to 238 billion SEK (HUI, 2015) and is predicted to increase with about the same rate per year until 2019 according to Marketline's yearly report (Marketline, 2015).

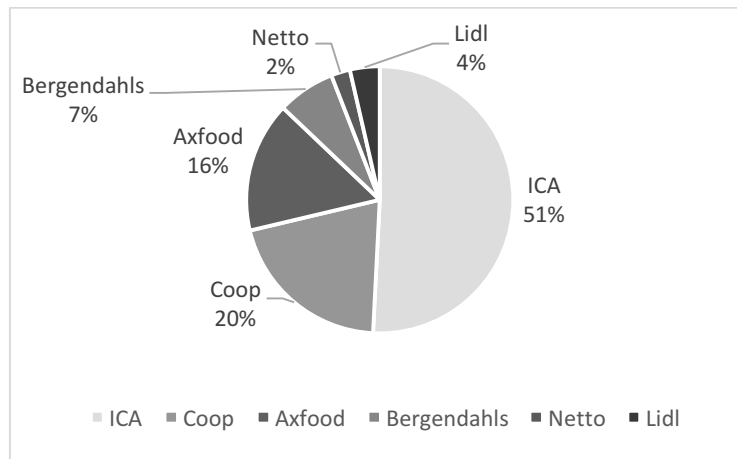


Figure 3.6 - The Swedish Grocery Retail Market (HUI, 2015)

A growing trend within grocery retail is private label products, which refers to products sold with retailer's brand as an alternative for brand label products and often to a cheaper price than corresponding brand label. Private label products are commonly produced by a manufacturer who also produces and sells its own brand (Baltas and Argouslidis 2007). Retailers' amount of private label products are increasing and it is a global phenomenon. In 2013, 25 percent of total value of sold products in Sweden were private label, which is an increase with 3 percent since 2009. Private label products have the strongest position in commodity-driven categories with frequent purchase rate and in categories where consumers perceive low degree of differentiation between products (Nielsen, 2014).

A market with few actors, described by the literature as an oligopoly (Baltas and Argouslidis 2007), in combination with increased amount of private label products, implies a unique position for the retailers. The retailers also have a great amount of information about the customers' buying behavior and are increasingly acting in the role of a seller of their own products than only a buyer of suppliers' products. The retailers have clearly gained more power (Johansson, 2001). The Swedish Competition Authority concludes that the grocery retailers in Sweden to some extent have taken advantage of this oligopolistic situation in a questionable way. The main problems noted in the report are that retailers push all of their risks at manufacturers and suppliers, claim money for marketing without performing any marketing actions and also sell private label products, which enhances their strong position against manufacturers and suppliers (Konkurrensverket, 2012). This further indicates the strong position for the retailers and the difficult environment that manufacturers have to deal with.

3.3 Price Promotions

Price promotions (in this study referred to as promotions) is in the literature described as a tool for retailers to encourage sales and attract customers to the store in order to increase sales of regular priced items (Mulhern and Padgett, 1995). The foundation for retailer's promotions are offers from manufacturers who have several incentives for

promotions, further described in section *Manufacturer's Objective*. The competition within the grocery market is huge and margins are low. Therefore it is in the manufacturers' interest to keep up with competition and defend market shares by having promotions regularly. Nijs et al. (2001) conclude that the promotion effectiveness is highest in the category perishable goods and also that it is high in industries with few actors such as the Swedish grocery market.

3.3.1 Retailers' Objective

Retailers' objective for initiating promotions are numerous. One objective is as previously mentioned to increase sales and thus profit. However, in some promotions with very low prices the objective is not to make profit on the promotion products, but to increase the flow of customers to the store and thus increase sales of regular prices items (Walters, 1991). Also, retailers' advertisement in TV and flyers are often financed by manufacturers as it is in their interest to market their brand. This is an incentive for retailers, as this presents an opportunity to have their advertisement paid for (van Selm, 2000). According to Walters (1991) both researchers and retailers agree that the main objective for promotions is to increase retailers' sales and as a result improve their profit.

3.3.2 Manufacturer's Objective

Van Selm (2000) studied the European Retail Industry Survey from PWC (2000) and found that the primary objectives for manufacturers when initiating promotions are to increase sales and defend market shares, see Figure 3.7. In a category of similar products the interchangeability is high and therefore promotions can be a tool for brand switching, especially for consumers who only look for the best price (Shields and Leskiw 1996). Promotions also imply better placement for a product in the stores such as gondola ends or separate shelves, which is extremely important as competition for shelf-space is tough. Even after the promotion is over, products may keep a better placement in the stores and thus increase sales even more (Mohr and Low 1993).

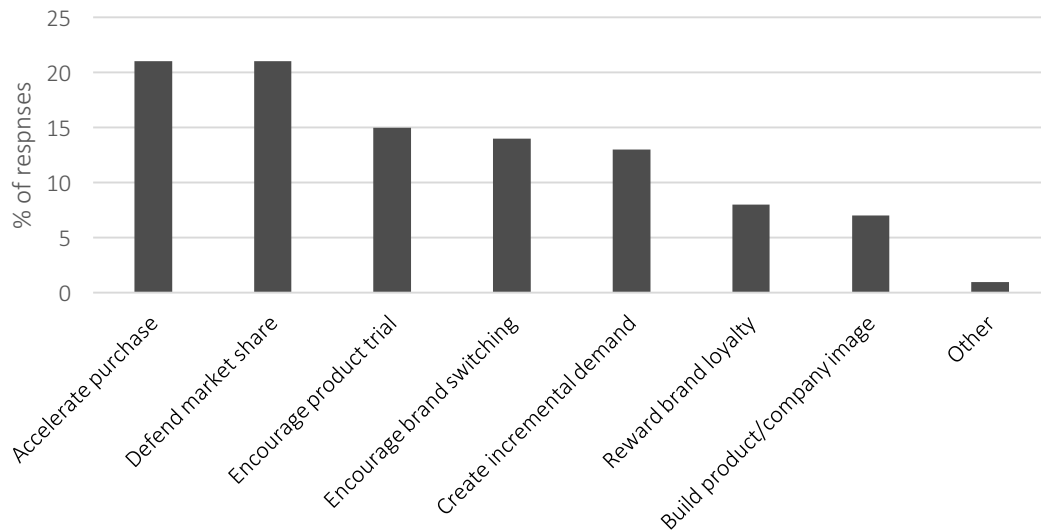


Figure 3.7 - Manufacturers objectives for promotion (PWC European Retail Industry Survey (2000) according to van Selm (2000))

3.3.3 Promotions' Effect on the Supply Chain

The effects of promotions are however not only positive. Promotions increase the demand risk, since promotions yield unexpected sales patterns and hence are more difficult to forecast. The reason for this is primarily that promotional activities are affected by many demand factors such as price, type of promotion, frequency of similar promotions, type of advertisement, weather, placement in store, duration of promotion and holidays (Ali et al. 2009, Ramanathan and Muyltermans 2010). This is a complex problem with many impacting factors, according to several findings in the literature (Ali et al., 2009, Ettouzani et al. 2012 and Fisher et al. 1994). Increased demand risks can result in stock outs, if selling more than expected, which leads to missed revenue and unsatisfied customers. In other cases this can imply excess stock after the promotion, if not selling as much as expected, which is unwanted with respect to accumulation of capital and waste (Breiter and Huchzermeier, 2010). In other words, promotions are shown to have negative effects for both retailers and manufacturers.

Another problem observed by the literature is the fact that retailers postpone and finalize orders as close to promotion start as possible in order to deal with demand uncertainty. This type of behavior pushes all risks to the manufacturers, who have to adjust their operations in order to meet retailers' fluctuating demand (Breitner and Huchzermeier 2010).

3.3.4 Information Sharing

As mentioned, competition within Swedish grocery retail is very strong and the grocery market is heavily affected by private label products, see section on the *Swedish Grocery Retail Market*. This implies that retailers are restrictive about sharing information about their promotional activities. As a result of insufficient information sharing and long lead times for the manufacturer's raw material, the promotion products often need to be

sourced or produced before the promotion is confirmed by the retailer (Paus-Worm et al., 2015).

3.4 Process Management

According to Davenport (1993), a process can be described as a range of activities that are structured and measured in order to deliver a predetermined outcome for a specific customer or market. Anjard (1996, p. 223) defines a process as: “a series of activities (tasks, steps, events, operations) that takes an input, adds value to it, and produces an output (product, service, or information) for a customer”. The customer, in both examples, is the one receiving the process output and can be an end customer, internal user or the following process (Anjard 1996), see Figure 3.8.

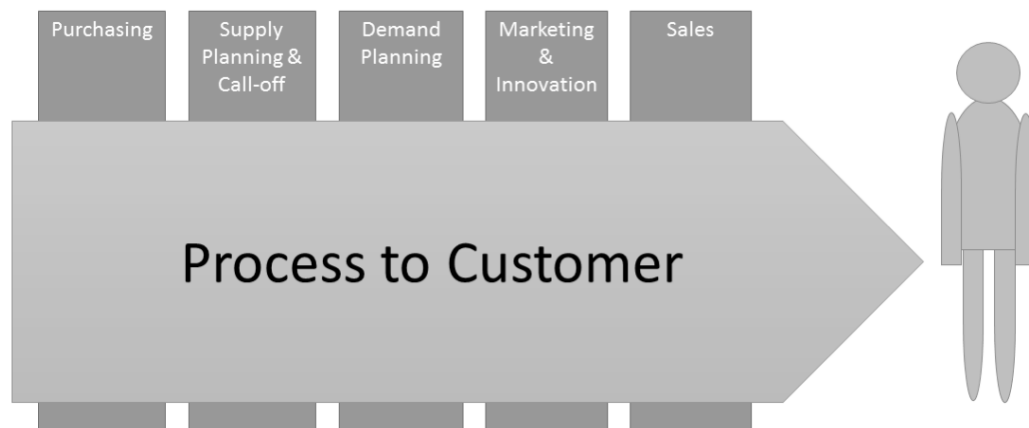


Figure 3.8 - Process to customer

In a traditional, vertical organization each function has its own task and goals, allowing for sub optimization (DeToro and McCabe, 1997). The various functions within the company are then viewed as minor companies themselves, serving the other functions instead of their common customer, who should be the organization’s top priority according to Rummler and Brache (1991). Said authors further mean that the functions become “enemies” to each other and a “silo mindset” is established where one’s own interests are prioritized over the organization’s interests. This further discourages cross-functional integration leading to less understanding for the process as a whole. In this situation, there is a lack of common goals and even more important, a lack of incentives to achieve common goals such as measurement and KPIs. The gaps between the vertical functions are called “white spaces”, marking the interfaces where the lack of communication arises, see Figure 3.9.

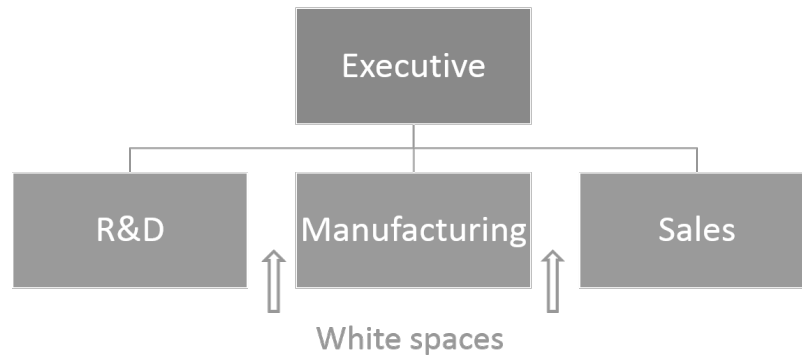


Figure 3.9 - White spaces in a vertical organization (Rummler and Brache, 1991)

Rummler and Brache (1991) suggest a horizontal view of the company's structure, which includes the customers, the product and the flow of work, implying a more process-oriented perspective. In a horizontal organization the white spaces are managed through communication and work between the different functions. Important to highlight is that the adaptation of and change to a horizontal organization requires a radical transformation. The organization's mindset needs to shift from top-down and personality based to a less hierarchical and more process oriented structure (DeToro and McCabe, 1997). Rummler and Brache (1991) provide 11 important actions for achieving process management and eliminating white spaces:

1. Identify a critical business issue
2. Select critical processes
3. Select a leader and members for process improvement team
4. Train the team
5. Develop "is" maps
6. Find the disconnects
7. Analyze the disconnects
8. Develop a "should" map
9. Establish measurements
10. Recommend changes
11. Implement changes

The first of two things that Rummler and Brache (1991) emphasize as most important for eliminating the white spaces is the need for a process owner. The process owner's responsibility is to ensure that customers are satisfied and that cross-functional work is maintained. The owner works as a "white spaces ombudsman" and should establish a plan and budget for the process. Regarding the importance of measurement, in a process organization the reporting is still done vertically and each function must still deliver their results.

The second key for achieving a horizontal organization according to Rummler and Brache (1991) is measurements that provide each function with incentives to work

cross-functionally. The performance indicators should be customer focused and process driven, and more specifically each function should be “...measured against goals that reflect its contribution to one or more processes” (Rummler and Brache, 1991, pp. 64). If two units are measured in contradictory ways, a successful horizontal process can never be achieved (Rummler and Brache, 1991). Since the measurements, in terms of KPIs, depends on the strategy this implies that strategy alignment between the functions are of highest importance to reach optimal cross-functional integration and horizontal processes.

Swink and Schoenherr (2014) have found support for several benefits and positive effects related to increase cross-functional integration, or internal integration as the authors call it. Their study shows that cross-functional integration have positive effects on both profitability and the efficiency in processes related to the profitability such as cost of sold product and return on sales. This gives further incentives for managers to prioritize the work with increased cross-functional integration.

DeToro and McCabe (1997) state that the way work is done, described as business processes, is as important as other strategic assets such as patents, properties, key employees and trademarks. In order to improve processes in a company it is important to understand what type of processes the organization consist of. Core processes are usually defined as processes that delivers outcome to customers and have a strategic impact on the organization’s work. The number of core processes varies between companies but is usually between 10 to 20. The core processes consist of functional processes, which in turn contain sub processes and work steps, depicted in Figure 3.10. When core processes are identified it is important to appoint a process owner for each core process (DeToro and McCabe, 1997), as previously mentioned by Rummler and Brache (1991).

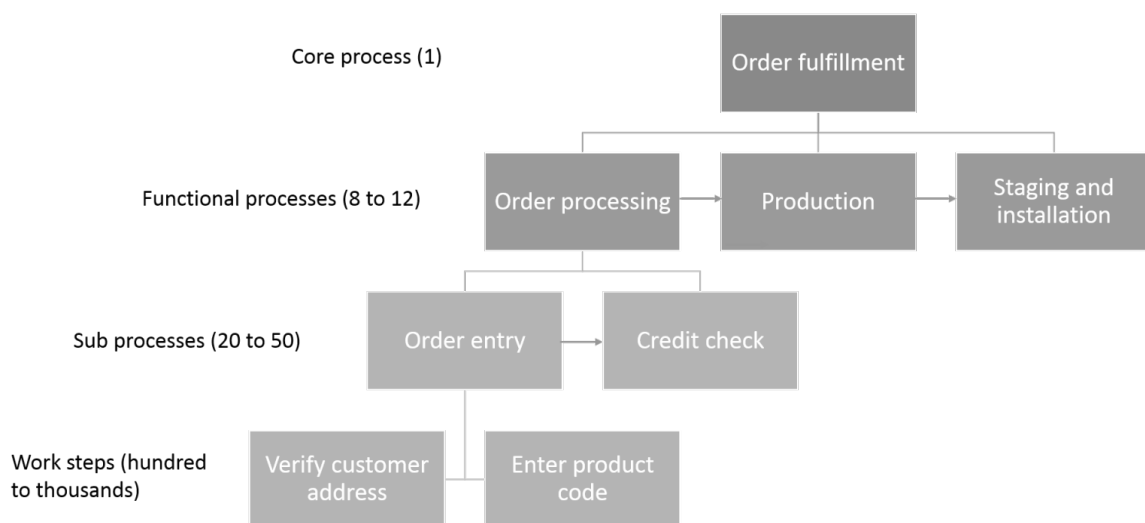


Figure 3.10 - Process Hierarchy (DeToro and McCabe, 1997)

3.5 Process Mapping

Anjard (1996) describes process mapping as a tool for improving processes through identification, documentation and analysis. It is important to focus on the processes rather than only the output, and the process map is a tool for visualizing how the inputs and tasks are linked to each other in processes. Mattson (2002) further enhances the importance of choosing right process to focus on for the improvement. The selection should be based on the possibility to improve customer satisfaction, results or usage of resources and the potential improvement should be weighed against the required resources. Mapping and description of processes are two important steps in order to gain thorough understanding, which is a prerequisite for perform improvement. These steps are commonly criticized by the personnel working in the processes, since they think that they already have knowledge and understanding for their own work processes. The problem is that in a functional organization is it uncommon to have understanding for the cross functional processes and the holistic perspective. Therefore it is of highest importance to perform process mapping in order to achieve improvement (Mattson, 2002).

There are three levels of detail in process maps; macro, micro and cross-functional. First, a process map on macro level should be established in order to gain a holistic perspective and determine the scope of the system. The macro map does not contain any decision points and should in general include 5-20 processes. After the macro map is developed, a micro process map should be performed. A micro process map usually consists of 5-15 processes and have a higher level of detail than the macro map. The dependency between different functions can be described in a cross-functional map, which differentiate from the two previous examples since it describes how the processes flow through the functions involved (Anjard, 1996). The process map consists of different symbols to visualize different actions. The oval is a symbol for a start or an end of a process, the square is a process step and the diamond is a decision point followed by different paths for yes or no answers (iSixSigma, n.y.).

When establishing a process map it is important to gain knowledge in map methodology. Further, it is an advantage to have management support and a team that has thorough understanding of processes in at least one function in the organization. The process mapping process continues by determining boundaries of the process to be improved and the main objective for the mapping. When discussing issues in the process it is important to address the gaps between performance and customer expectations and also between performance and competition. The next step in the process is to establish a critical process profile by answering questions such as "Where does the process start?", "Who supplies the inputs?", "Where does the process end?", "What is the final output?" and "Who are the customers of the process?" (Anjard, 1996).

3.5.1 Is Analysis

After the development of a critical process, a current state should be established.

Current state, or Is Analysis, is the identification of how current processes work, which should aid visualization and highlight problems in the current processes in order to identify opportunities for improvement (Anjard, 1996). The techniques for an Is Analysis are explained by Anjard (1996, p.225):

- “Develop the organization level view [-relationship] map which should include:
- What products, services and information is needed?
- Who are the customers?
- What is the customer input?
- What are the major organizational components involved?
- What inputs are critical to the organization?
- Develop an Is Process map
- Identify and analyze customer perception and expectations”

3.5.2 Should Be

The Should Be map, or future state map, is the wanted or desired state of the process in the future. It is established based on the goals for the new process and should solve the problems identified in the current state. The establishment includes several recommended activities to perform, such as:

- Benchmark best practice
- Brainstorm new ideas
- Establish the future state by macro, micro and cross-functional process maps.
- Validate the future state map
- Develop detailed process specifications
- Develop process measures including deliverables and target due dates and date for sponsor and executive committee process reviews.

Based on the future state map, the implementation planning step can be performed. In this step it is important to evaluate what actions and changes of the current state that are required for the organization to reach the future state (Anjard, 1996). When evaluating the current state Mattson (2002) propose five questions in order to analyze the process:

- What is the purpose with this activity and why does it need to be performed?
- Where is the activity performed and why is it done there?
- When in the sequence is this activity performed and why does it need to be performed then?
- Who is performing the activity and why is it that person?
- How is the activity performed and must it be performed that way? (Mattson, 2002)

Furthermore, it is crucial to gain executive support for these actions in order to start the implementation towards an improved organization (Anjard, 1996).

3.6 Sales and Operations Planning (S&OP)

Sales and Operations Planning (S&OP) is a cross-functional, integrated management process aimed at aligning supply and demand in a business. According to Smith (2008) and Jacobs et al. (2011), the managerial objective is to reach consensus on a single operating plan regarding volume or capacity, which is used to allocate critical resources optimally so that the company can reach its performance targets. This plan can then be divided into operationalized goals for the different functions, leading to a single point of direction for the company to move towards. Thus, S&OP works between the tactical and strategic levels by linking the day-to-day operations to the strategic business goals (Noroozi, 2014).

A successful implementation of S&OP is the result of monthly planning activities and thorough communication between the functions coordinated by the management team. These planning activities are different meetings involving different roles within the organization, that together help everyone decide on a operative plan for the coming month and maintaining a long term perspective of up to 18 months. For successful companies, according to Smith (2008), the steps include at the least the following six steps:

1. New product introduction planning
2. Consensus demand planning
3. Supply and resource capacity planning
4. Formal demand, supply, and capacity reviews
5. Financial plan reconciliation
6. Formal executive S&OP meetings.

In addition to this, there are several documented critical success factors (or common pitfalls, challenges or threats) to a successful implementation of S&OP. For example, Bower (2005) presents “Top Twelve Pitfalls” in his article “12 Most Common Threats to Sales and Operations Planning Process”, as seen below, and Lapide (2014) presents “10 Foundational Success Factors” in his article “S&OP: The Process Revisited”. What many of these articles have in common are however the connection between S&OP objectives and corporate strategy, making sure to meet every month and having clear agendas for each meeting, as well making sure that all functions are represented and working cross-functionally.

Table 3.2 – Common Pitfalls and Threats to a Successful S&OP Process

“Top Twelve Pitfalls” by Bower (2005):	“Foundational Success Factors” by Lapide (2014):
<ol style="list-style-type: none"> 1. There is a disconnect between S&OP and corporate strategy 2. Senior management indecision 3. The Single-number forecast is not Reality based 4. We meet every month...more or less 5. The process focuses on the balance of the year 6. The S&OP leader also owns supply or demand planning 7. Leaders are “obsessed” with last month’s sales 8. S&OP ignores product lifecycle management 9. S&OP ignores or excludes extrinsic (external) business trends 10. Failure to measure and monitor progress 11. No understanding about proper meeting procedures 12. Office “politics” undermines progress 	<ol style="list-style-type: none"> 1. Ongoing routine S&OP meetings 2. Structured meeting agendas 3. An unbiased baseline forecast to start the process 4. A planning horizon as long as the longest supply-demand lead time 5. Pre-work to support meeting inputs 6. Cross-functional participation 7. Clearly defined functional roles at the meetings 8. Participants empowered to make decisions 9. An unbiased, responsible organization to run a disciplined process 10. Internal collaborative process leading to consensus and accountability (by leveraging a forecast/planning hierarchy)

A large focus in S&OP is in other words put on working across the white spaces and reducing the traditional manufacturing industry silo mindset, which implies that it takes time and effort to succeed with. Due to globalization and changed demand patterns, its popularity has grown and it has now evolved to regard many aspects and almost all functions of an organization, including for example financial functions (Smith, 2008).

3.7 Master Scheduling

Master scheduling (MS), according to Wallace and Stahl (2003), is a business process that aims to balance the internal supply chain at the detailed level. They start off their book “Master Scheduling in the 21st century” by dividing several tools for effectiveness within manufacturing companies into three different groups, and conclude that MS, as well as S&OP, is a tool for enhancing coordination between supply and demand. To understand the use of MS, the authors further present the four fundamentals of a manufacturing enterprise, as previously presented; supply, demand, volume and mix. MS operates on the level of plans regarding production mix, whereas S&OP is on the volume level. The difference between volume and mix can be explained as Volume answers the question “how much?” and Mix answers the question “which ones?”

(Wallace and Stahl, 2003). According to Olhager (2000), the goal with MS is to produce “the right article in the right amount to the right time”.

3.7.1 Structure and Role in SCM

MS is, according to Wallace and Stahl (2003), primarily a decision-making process, implying that it is centered on people, and that systems are only there to support the people making the decisions. The output is the Master Production Schedule (MPS), and the inputs come from the S&OP process, Forecasting/Demand Management and Capacity Planning, as per Figure 3.11 displaying the relationship between processes in the internal supply chain.

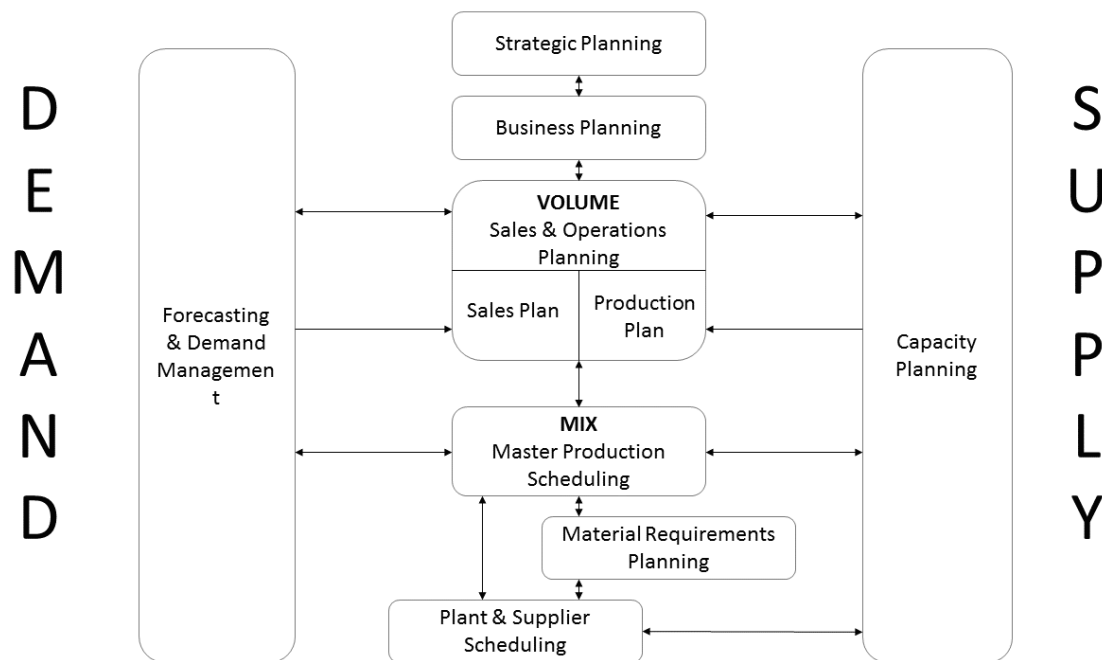


Figure 3.11 - The Resource Planning Model. (Wallace and Stahl, 2003)

S&OP, operating on the aggregate level, is a monthly process and is the linkage between the Business Plan and the downstream processes of MS, as seen in Figure 3.11. The main output from S&OP, which is the main input to the MS, is according to Wallace and Stahl (2003) the Operations Plan, which the Master Scheduler must follow in order to link the strategic goals to the daily operations. If S&OP is not present within a company, the general Production Plan, derived from the yearly budgeting, can suffice. The most important output from MS for this study is demand management, since the ability to know which incoming orders are Available-to-Promise is essential in promotion orders.

Wallace and Stahl (2003) argue that MS plays a major role in SCM, as it integrates customers and suppliers and enhances the cross-functional cooperation inherent in SCM. However the actual process of changing or releasing the system generated MPS, the making of a decision, is managed by one person. Even though the input to the MS is the

result of a cross-functional planning process, the operational work of the MS is not in itself cross-functional.

3.7.2 Logic

Wallace & Stahl (2003) present the logic of MS as a gradual build-up of the following parameters: time phasing, gross-to-net, lead time offset, order planning, planning time fence, safety stock/safety time, action messages, time zones, planning horizon and displays in daily increments, all presented in this section. The MPS can be exemplified by a series of tables, displaying the gradually added parameters as per previous order, starting with the week and sales forecast.

In MS, the time phasing is done in weeks, taking the monthly forecasts and dividing it into weeks, which is necessary as the monthly time horizon is too broad for effective detailed scheduling. This does not mean that the forecasts divided into weeks directly translates to the amount to produce, as this also needs to take into account supply that already exists, the on hand balance (OHB). This implies that one of the purposes of MS is to weigh the gross production to net production. In order to determine when a batch needs to be produced, the finishing lead time, the time it takes to complete an item, is needed. However, this is also affected by the cumulative lead time, which is the time it takes to source and produce components as well as finish the item (Wallace and Stahl, 2003), see Figure 3.12.

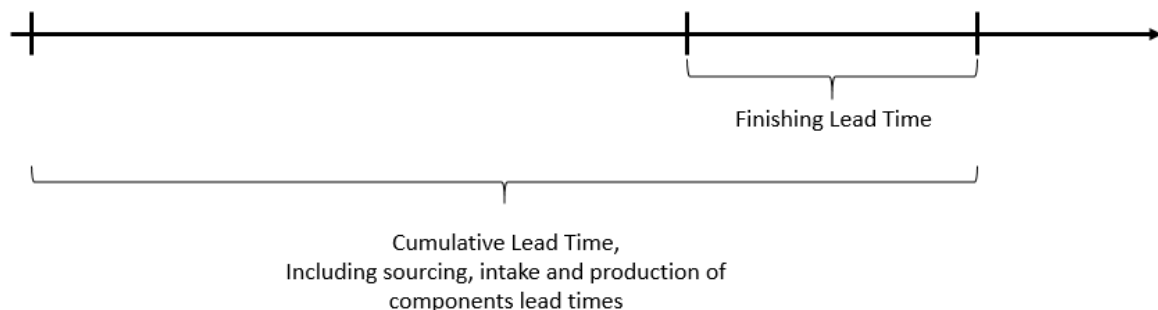


Figure 3.12 - Finishing and Cumulative Lead Times as per Wallace and Stahl (2003)

Today, the bulk of the master scheduler's operative work is done by computer software. To keep track of data and ensure long term planning, the system helps the master scheduler by creating, removing and moving future MPS that are not within a specified planning time fence (PTF). The plans within the PTF are viewed as "firm" and the plans outside the PTF are planned. How long the PTF should be is by Wallace and Stahl (2003) recommended to be about 25 to 50 percent greater than the cumulative lead time. The authors also argue that for the master scheduler to have good visibility into what is approaching the PTF, there is a need for a longer planning horizon extending the PTF, called Rough-Cut Material Planning. However the combined planning horizon should not exceed 12 weeks (Wallace and Stahl, 2003).

The PTF can also be related to so called time zones, within which the MS is changed in different ways. The Firm Zone, often the up-coming one to two weeks, implies a locked plan, which is not completely rigid, but where changes are cumbersome and often expensive. The next three to five weeks are within the so called Trading Zone, where the volume is basically locked, but the mix is entirely manageable. The following six to eight weeks are where both volume and mix are often up for discussion, with some restrictions in regards to volume due to the capacities of the plants. Wallace and Stahl (2003) point to this specific quantification of time zones as a general case, where different industries with different complexity in their products have either shorter or longer time zones (Wallace and Stahl, 2003).

Wallace and Stahl (2003) state that in the traditional process of releasing orders, the master scheduler should verify that the quantity of the MPS in fact is the amount needed before releasing. In addition to this, the master scheduler should perform a component availability check, where the bill of materials (BOM) data is used to ensure that there is enough raw materials or components to make the requested amount of finished goods in the MPS. If there is enough raw material, there is no problem with simply releasing. If there is not enough raw material, the master scheduler can either restrict from releasing the MPS, reduce the quantity of the MPS, release the MPS with full quantity (if for example s/he knows that the shortage soon will be restocked), or release the MPS in full quantity with an authorization of substitution for the components not available (Wallace and Stahl, 2003).

3.8 Five Why Analysis and Ishikawa Diagram

The Five Whys technique and Ishikawa diagram was invented by Sakichi Toyoda during the development of the famous Toyota Production System, which presented the concepts of Kaizen, JIT, Kanban, TQC and cross-functional processes. The Five Whys technique is a large part of the TQC theory (Imai, 1996).

Masaaki Imai, the founder of the Kaizen Institute, states that the aim of the Five Whys technique is to find root causes to a problem, and this is done by repeatedly asking the question "Why?" until the problem no longer is technical, but rather process-related (Imai, 1996). When repeatedly asking the question "Why?" several causes are revealed and when doing this five times, a root cause is generally found. This implies that a broken process or a behavior that needs to be improved is often the root cause to even the most trivial problems. Taiichi Ohno, previous CEO of Toyota Motors, once exemplified the Five Whys technique through the following example, according to Imai (1996):

1. **"Why did the robot stop?"**
The circuit has overloaded, causing a fuse to blow.
2. **"Why is the circuit overloaded?"**
There was insufficient lubrication on the bearings, so they locked up.
3. **"Why was there insufficient lubrication on the bearings?"**
The oil pump on the robot is not circulating sufficient oil.
4. **"Why is the pump not circulating sufficient oil?"**
The pump intake is clogged with metal shavings.
5. **"Why is the intake clogged with metal shavings?"**
Because there is no filter on the pump.

There are some critiques against the Five Why method, such as not really knowing which root cause is the most important and no guidelines on how to pose the why-questions, as well as the fact that the answers differ depending on who you ask making it hard to replicate an exact results (Bezos, 2012). However, some of the benefits are that it is an open analysis method with no hard rules, making it possible for the problem-solver to apply their knowledge and creativity freely to the problem.

The Fishbone, Ishikawa or Cause-and-Effect diagram can be viewed as an application of the Five Whys technique, where the problem-solver is aided in the process of asking "Why?" by following pre-decided categorized routes, making the diagram look like the skeleton of a fish, where the backbone is the posed problem. The categories can be chosen freely, but the original set-up as presented by Imai (1996) for the manufacturing industry is the 4 M's categories of Man, Machines, Materials and Method, and can be extended to 6 M's by adding Measurement (Imai, 1996) and Milieu (or Mother nature).

4 Empirical Study

In this chapter, the specifics regarding Cerealia, such as their customers, functions and processes, are presented. This chapter aims to fully present the information needed in order to understand the basis for the analysis. All the information in this chapter is gathered at Lantmännen Cerealia through the methods presented in the chapter Methodology, in other words mainly through interviews, observations and participation, if not stated otherwise. See Appendix 4 for an interview schedule.

4.1 General Information on Cerealia

In this section, general information on Cerealia is presented. This section includes information on Cerealia’s organizational structure, customers, S&OP process as well as software and data systems.

4.1.1 Strategy

When investigating the overall company strategy, it is not entirely clear what this is. The structure seems to be that there are general financial goals and then specific strategies for each function and category, where Breakfast is one category. Numbers are at the moment not communicated at all, which can partially be due to the restrictions in shared information that comes from being a player on a competitive market. The strategies for each category are not communicated either, and according to certain members of the Supply Chain organization, this can be a result of the new organization and a gap that needs to be filled.

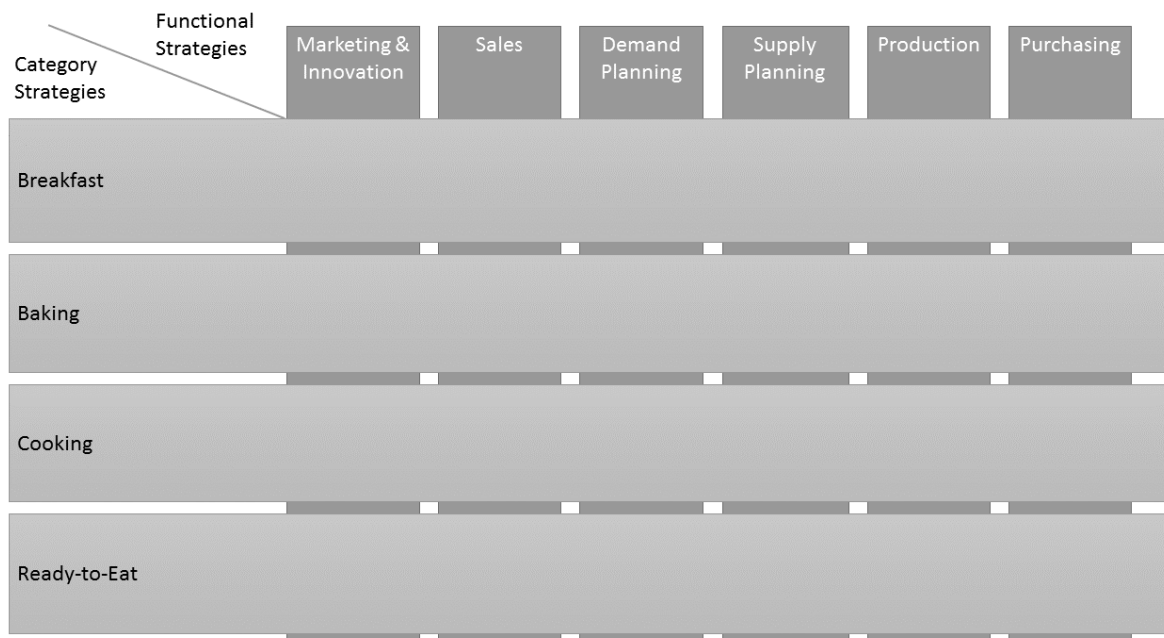


Figure 4.1 - Functional and Category Strategies

What is very clear however are the different functions' profiles and strategies, which span across the categories, and their strategies, within Cerealia, as shown in Figure 4.1. The Supply Chain organization has a clear cost-efficient strategy, with the three main objectives cost-efficient supply chain, low levels of tied up capital and high customer service levels. More specifically, the Logistics & Planning organization's KPIs are as shown in Figure 4.2. The Purchasing function's KPI is mainly spend. The Marketing & Innovation function's strategy has not been communicated clearly to the authors but seems to be to keep track of what products are out on the market, market trends and what gaps to fill in Cerealia's product portfolio, to develop new products accordingly. The Sales function is measured on volume sold and/or net sales according to a pre-decided plan, and awarded accordingly.

KPI	Measure
Health and Safety (OHSA)	Acc/Inc - Tot Inc
Warehousing Cost (WC)	SEK/Pallet
SBA/Mat Deviations (SBA) Total/Scrap	MSEK
Customer Service Level (CSL) PG	%
Days in Stock (DIS) PG/RM	Days
Demand Accuracy (DAC) PG/Bulk	%
Demand Volume Accuracy (DVA) FG	%
Supplier Service Level (SSL)	%
Excess Inventory	%

Figure 4.2 - KPIs for the Logistics & Planning Function

4.1.2 Organizational Structure

A recent restructuring of Cerealia's organization has led to a centralized, hierarchical and functionally oriented structure, where Sales, Marketing & Innovation and Supply Chain are represented at the top management level. These three units are further organized in different ways. The Sales organization is divided into B2C, B2B and Foodservice, with executives for each country within the business areas, and Key Account Managers for each customer reporting to the executive in their country. Marketing & Innovation is divided by finished product category and further by brand label.

The Supply Chain unit of Cerealia is the largest unit in terms of employees as it consists of Purchasing, Production, Quality Assurance and Logistics & Planning. The Production unit is divided into categories of finished products and then furthermore by site,

regardless of country, implying the bulk of operational employees. The Purchasers are divided into categories of raw materials and packaging material, which can be in several different categories of finished products. The Purchasers for raw material are called Category Managers and for packaging material Lead Buyer.

The Logistics & Planning organization includes Logistics, Supply Planning and Demand Planning, where Logistics is the unit concerned with the physical warehousing in each country. Supply Planning is divided by category and concerned both with planning the finished goods inventory and with raw material inventory according to the contracts set up by the Category Managers and Lead Buyers. In addition to this, Supply Planning is responsible for internal distribution. Demand Planning consists of only four employees, one for each Nordic country, implying the ownership of forecasts for all products in the respective country.

A consequence of the new restructuring has led to a more geographical cohesion. However, the Logistics & Planning unit is mainly located in Malmö, whereas Purchasing, Sales, Marketing & Innovation and Management is located at the headquarters in Stockholm. After the restructuring, a simplified version of the organization can be schematically mapped as in Figure 4.3, where the two most relevant functions for this study are highlighted.

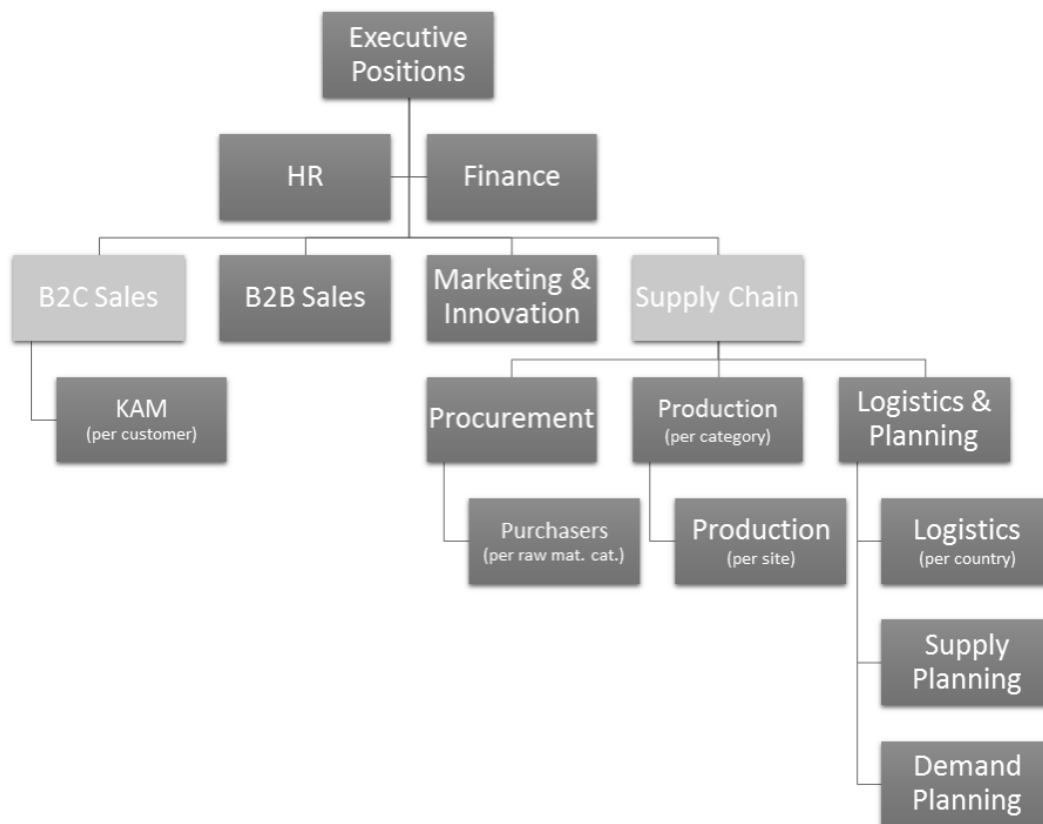


Figure 4.3 - Simplified Organizational Chart of Lantmännen Cerealia

4.1.3 Customers

Within B2C Sweden, Cerealia has all main grocery retailers as their customers. At the moment the largest customers are ICA, Coop and Axfood, who together hold close to 90 % of Cerealia's sales as seen in Figure 4.4. In addition, there are some minor customers such as Linas Matkasse in the category "Other". At Cerealia, the Key Account Managers (KAM) are responsible for a few customers each and they manage all the planning and forecasting of promotions for their customer(s). The customers' processes for promotions differ slightly, but in general the processes are the same, described in the chapter *Promotion Process*. Since the large retailers have a great share of Cerealia's total sales, the relationship between Cerealia and their customers is affected making Cerealia very dependent on the largest retailers. This implies an uneven power balance, which is further enhanced by the fact that the retailers sell private label products and as a result have become competitors to Cerealia.

For B2C, orders are supplied directly from stock, implying MTS production. In other words, the CSL for this type of customer is measured as the percentage of incoming orders that can be delivered from stock OTIF. If an order cannot be supplied from stock, the customers are informed and either place a new order for the amount that can be supplied from stock, which Cerealia confirms, or do not place a new order at all.

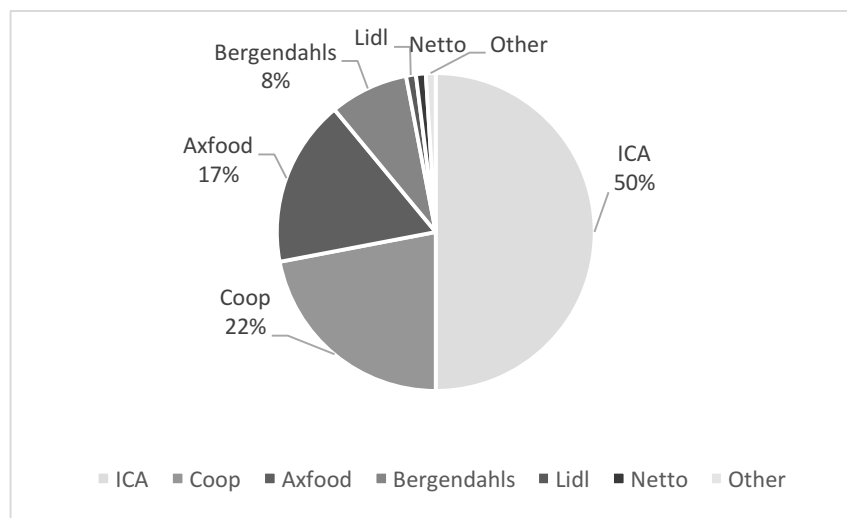


Figure 4.4 - Lantmännen's Customers by Share of Cerealia's Sales

Cerealia's B2C customers have requirements on CSL from Cerealia during promotions. The requirement is for ICA 100 percent, for Axfood 97.5 percent and for Coop the requirement is not stated in contracts at the moment. If Cerealia is unable to deliver the required CSL without warnings in advance and with a valid excuse, penalties can be issued from the customers. In the contract with ICA, penalties are not stated as per an old contract between the parties, when suppliers were in a more beneficial position for negotiating. If this however were to change, this can imply new costs for Cerealia. Penalties are not contracted with Coop either, but that will most likely change in the near future according to the KAM.

4.1.4 Competition and Market

Cerealia views the market competition for their breakfast products as tough, with many new players emerging over the last few years. This, in combination with the increasing amount of retailers' private label products, has increased the market competition drastically. The backwards integration that retailers have made have implied that the customers are now also competitors, affecting the communication with traditional suppliers and leading to a more competitive, rather than collaborative, atmosphere between the parties. This has been observed to lead to withholding of information, and implying a shift in power balance as the retailers gain a pole position. The authors have made several attempts to communicate with ICA, but the customer has denied contact repeatedly.

4.1.5 S&OP

Cerealia started implementing an S&OP process already in 2011, but quickly found that the organizational structure was not optimal for the process orientation that S&OP requires. Having implemented a new structure in 2015, the S&OP process is now back with a new S&OP project leader and with full top management support. Through the S&OP process, management hopes to achieve "one plan" for the whole of Cerealia, in each category. Each function can then work towards this in their day-to-day operations. Regarding the output of the S&OP process however, Cerealia does not seem to view the output in terms of an agreed, "single-number" volume plan, but rather as a cross-functional process through which issues can be addressed and employees can communicate.

The current longest time horizon for this process is twelve months, as the organization today needs to move from firefighting to a longer perspective, but is not yet ready for the full theoretically recommended 18 months. The goal however is to move towards 18 months. The Cerealia S&OP process consists of five monthly steps, mainly marked by meetings with the step names, but also including the preparations for and execution after said meetings. In other words, the S&OP process steps are repeated every month, with the shortest time horizon of one month ahead. These steps are shown in Figure 4.5 and consist of the following steps with relevant roles from the organization:

1. **Product Review:** Supply Planner and Nordic Brand Manager
2. **Demand Review:** Demand Planner and KAM
3. **Supply Review:** Supply Planner, Category Managers, Production and Logistic Manager
4. **Pre-S&OP:** Supply Planner and Demand Planner
5. **Executive S&OP:** B2C and B2B Sales Managers, Supply Chain Manager, Marketing & Innovation Manager and S&OP Process Owner



Figure 4.5 - General S&OP Process at Cerealia

Promotions are addressed through a long term planning sheet that is discussed during the Demand Review meetings where Sales and Demand meet. This sheet is however not finalized as of yet, and is also to some extent criticized as there already is a 4-month Promotion Plan that is used in this forum today. This is to be updated throughout the process.

The S&OP process owner at Cerealia is currently the Logistics & Planning Manager, owning both Supply and Demand Planning. The different roles have expressed a variety of different thoughts regarding what they hope to achieve through S&OP, but the common denominator is the hope of achieving more long term stability within Cerealia. The category Breakfast is at the time of this thesis in the starting phase of the S&OP process, and the first Product Review meeting was held in April 2016.

4.1.6 Systems and Master Data

Cerealia uses an ERP system called M3. This system is the basis for all of Cerealia's work and to which many other systems are connected, such as systems for demand planning, production planning and financial management. At the time of this thesis, the forecasting system had only been in use for less than a year and the implementation of a program to optimize inventory levels was finalized (Inventory Optimizer), implying varying levels of safety stock depending on forecasts and previous sales.

Today, the general perception at Cerealia is that the information in the ERP system is not to be trusted, and many use this as an excuse to use the ERP as little as possible, leading to a negative spiral as more information is lost. However, exactly what information in M3 that is unsatisfactory is hard to derive. The authors have found that there are many master data issues at Cerealia, such as incorrect lead times and safety stock levels, but much of the perceived volatilities in M3 are most often due to the largely inaccurate forecasts, affecting everything from production plans to forecasts to suppliers. The

volatile forecasts are clearly problematic, as this issue had been brought up in basically all interviews and observations.

4.2 Sourcing Process

The sourcing process at Cerealia is divided into operational purchasing, “Call-off”, and strategic purchasing, “Category Managers” for raw material and “Lead Buyers” for packaging material. Call-off is part of the Supply Planning department, and the employees are responsible for monitoring the production, raw and packaging materials’ inventory levels, and call-off purchase orders predetermined by the ERP system. These employees are also liable for the invoices generated from these orders. The Category Managers and Lead Buyers, part of the Purchasing department, are concerned with negotiating, creating and signing contracts with suppliers, which the operational purchasers later call from.

A lot of the contracts for ingredients to the breakfast production are signed on both a time and volume basis, which implies that Lantmännen has the right, and is obliged, to purchase a certain amount of a product within a certain period of time to a certain price. According to example contracts that have been provided, the amount of supply that the wholesaler is obliged to have in their stock available for Cerealia is not strictly regulated. The contracts for the largest suppliers state that they have to have the amount that has been provided to them through forecasts in stock. Today, forecasts to suppliers are only sent every third week, and in a file that combines the forecasted amount per month, making changes in forecasts around a change in month generate very different purchase forecasts. The lead times to which Cerealia can receive the called-off ingredient therefore depend on how much was ordered and if this is in line with the forecast sent up to three weeks ago.

Regarding packaging materials, the contracts are not as time based as for ingredients. However, they often specify a certain price depending on how much material that is purchased, indicating a graduated price list. Another unique aspect of sourcing packaging materials is the booking of raw materials at the packaging supplier. As the wood pulp industry provides many different industries and thus produces in extremely large batches, Cerealia’s packaging suppliers need to make sure that the correct raw materials are booked in time. Thus, Cerealia needs to “promise” to purchase for example a roll of paper, which is later divided by certain article numbers. In addition to this, it seems that a lot of the activities performed regarding the purchasing of packaging materials is handled very manually and inefficiently.

The performance of the Purchasing department is mainly measured on spend, very much in line with the overall goals for the Supply Chain unit of being cost-efficient. This implies that the reasoning of the Category Managers and Lead Buyers are to sign contracts with larger batches for a lower unit-price and for a longer period of time. This also has to do with the character of the raw materials. Many of the ingredients are exotic fruits, nuts and seeds, some of which can only be found in a certain part of the world,

implying a limited amount of harvest times per year. The packaging material can on the other hand vary a lot in lead time, since the wood pulp industry provides many different industries and thus produces in extremely large batches over long time periods.

The previously mentioned large volatilities in demand data in M3 makes it almost impossible for the Category Managers and Lead Buyers to work strategically and sign contracts for long time ahead, since the long term forecasts are not to be trusted. This often leads to situations where the Category Managers either have contracted too small or too large volumes. Too small volumes result in need of additional contracts and that is often more expensive than contracting a larger amount at the same time. If contracting too much, Cerealia can be forced to buy the contracted volume at the end date of the contract even though it is not needed, which implies large unnecessary costs and potentially waste. Also, this volatility leads to situations where the operational purchasers should have made a call-off yesterday or several days earlier, according to the system. This implies a lot of communication with suppliers in order to make sure the goods are still delivered on Cerealia's requested date, as well as making the activation of contracts in M3 a crucial phase in the operational activities, and thus forcing the Category Managers and Lead Buyers to be a part of the more operational tasks. In other words, both the operational purchasers and Category Managers/Lead Buyers are needed to keep a good relation with the supplier and secure the sourcing process.

4.3 Production Process

The units involved in the direct production is the Supply Planning unit and the actual Production unit, containing the most of Cerealia's employees. The Supply Planners, part of the Supply Planning unit, set the master production schedule (MPS) and plan the amount of finished goods to be produced by a certain date with input from the S&OP process, see Figure 4.6.

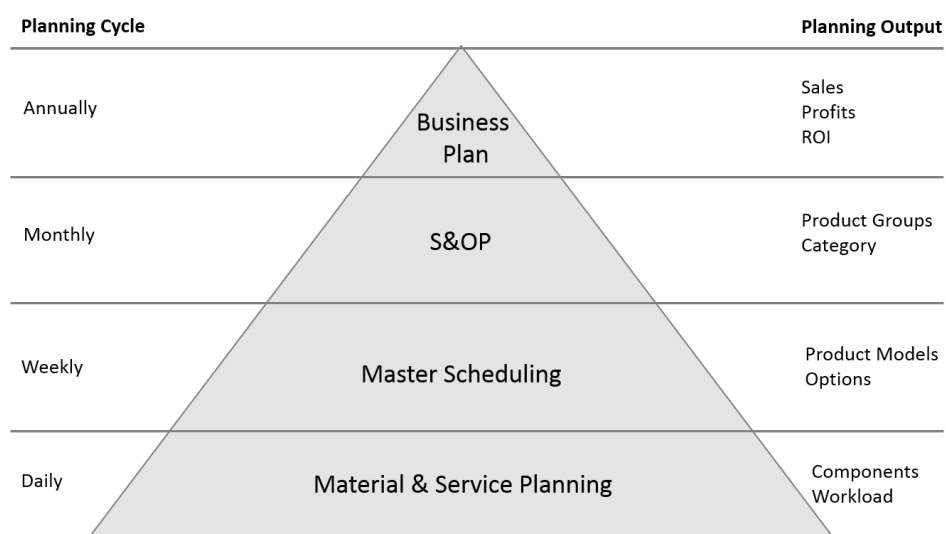


Figure 4.6 - Levels of planning in Cerealia

The actual production, part of the Production unit that is divided by category and furthermore site, then set the detailed production plan. The only site producing products to the category Breakfast that are sold in Sweden is in Järna, and here there are a total of 8 different production and mixing lines and 4 different packaging lines. The other two countries only produce Oats for their own market, and Järna produced Müsli and Granola & Flakes to all three countries. A schematic overview over where products are produced and then sold is shown in Table 4.1.

Table 4.1 - Schematic overview of where products are produced and sold

Produced in Country	Sweden	Norway	Denmark
Sold in Country			
Sweden	Müsli, Granola & Flakes, Oats	N/A	N/A
Norway	Müsli, Granola & Flakes	Oats	N/A
Denmark	Müsli, Granola & Flakes	N/A	Oats

The production in Järna has a raw materials- and finished goods warehouse. When the Supply Planner releases a production order in the ERP system, it is up to production in Järna to assign the batch a time slot in production before the due date of that production order. The raw materials are then brought in from the raw materials warehouse to a pre-mixing area before entering production. When the product has passed the mixing and packaging lines, the consumer packages are palletized according to the customer orders and put away in the finished goods warehouse.

During the process of this study, a new rule of rolling frozen production plans two weeks ahead was implemented, which was new at the time. Previously, the production plan was not fixed, implying that sudden changes were allowed, much according to the mentality of “making it work” within Cerealia. This new way of working implies that the Supply Planners cannot change what is going to be produced next week since it is frozen, as per last week. This week, the plan for the week after the next is set, implying that the production plan is fix for two weeks forward, +/- one week. This gives the production employees a larger degree of security as to what to produce by the end of each week, as last minute promotions cannot interfere with this plan, making it easier to allow for unanticipated sick leaves, break downs etc.

The promotions imply some complications even in the production step, as many of the promotional units are so called “half pallets” that go straight into the stores from which the end consumer can pick freely. On these half pallets, it is common that several

different products are mixed so the consumer can pick what they want, as promotions often regard “2 for 25 SEK” out of a mixed assortment. These mixed pallets imply new article numbers, making them hard to sell to other customers with other promotion deals. Further, the finished products are placed on the pallet on trays that differ from the traditional boxes used for baseline sales. This unfortunately implies complications in the palletizing step since the products are only suspended at the bottom, allowing for unstable bottoms for other trays.

4.4 Demand Planning Process

The Demand Planning unit at Cerealia is mostly concerned with demand forecasts. For this, a program connected to the ERP system called S099 is used. S099 generates all demand forecasts at Cerealia and derives the forecast for the next month by looking at previous sales data. The Demand Planner, one for each country, is responsible for the forecasts for all products sold in their country and making sure they are correct. At Cerealia, forecasts are the basis for production planning, which in turn generates the plan for the call-off of raw material. Hence, the forecasts are crucial for Cerealia’s planning in order to achieve high CSL as well as cost-efficient and accurate purchasing, production and distribution.

According to Cerealia themselves, the baseline sales are very stable, and the promotional sales is what generates volatility. Most of the baseline sales forecasts are carried out by the system and should not require much attention and time from the Demand Planner. However, the Swedish Demand Planning unit is responsible for more than 900 finished products, implying that the time basically only allows for updating the baseline forecasts with forecasts for promotions, which the KAMs estimate. This is however done by manually adding the estimated volumes on to the automatically generated baseline sales forecast figure, implying that the system cannot tell the difference between baseline and promotional sales retrospectively. As such, the “baseline sales forecasts”, based on previous sales data, could already include promotional sales if there are seasonalities, making the forecast figures unreliable.

The system can however differentiate between baseline and promotional sales if this is inputted to the system retroactively through a “retroactive marking tool”, as done in Denmark. In this process, the Demand Planner manually updates yesterday’s sales outcome with information regarding what fraction of those sales were promotional sales. This seems to be time-consuming, but yielding the wanted results, as the retroactive division between baseline and promotional sales leads to more correct future forecasts. The division between baseline and promotional sales is however difficult to derive from the ERP system, since there is no exact internal data available regarding what volume was sold to a promotional price. Data regarding promotional volume sold can however be provided by the KAMs who purchase data from their customers.

In other words, in Sweden, the forecasts for promotions are manually added to the baseline sales forecast, whereas in Denmark, the actual outcomes are the inputs. When looking forward however, Cerealia wishes the process to be entirely different. The idea is to implement a new module to S099 by the name of Demand Collaboration Hub (DCH). This module would allow for “marking” a certain part of the forecast as part of a promotion proactively instead of retroactively, implying less work per article number in general. In this tool, the KAMs would also be given access to create promotion forecasts, allowing for a higher level of information sharing as well as a more cross-functional process. This tool would also be able to deny the input of forecasts for promotions if this is done within the cumulative lead time for the finished product. This tool is however only in the idea stage and probably more than a year from being realized.

S099 was implemented in May 2015 and a new Demand Planner in Sweden was introduced in September 2015, implying that many processes are still fairly new and not fully developed yet. Cerealia views S099 as a “state of the art” forecasting system, and has invested a great deal in this system in order to “fix the forecasting problem”. However the general conception seems to be that they still have issues with forecasting in terms of forecast accuracy and the amount of time spent on forecasting each product.

4.5 Promotion Process

The responsibility for promotions at Cerealia lies with the respective country's sales organization. For B2C in Sweden, the organization is led by the Director Commercial B2C who is responsible for the KAMs, Sales and Trade Marketing, see Figure 4.7. Promotions at Cerealia consist of many different activities, but can be simplified to mainly two types. The first is promotions involving all stores of a customer, called central promotions, which are advertised through for example TV commercials, emails and flyers. The second is smaller sales promotions, which can be activities in a selection of stores such as a collaboration where for example pasta, sausage and ketchup are placed together in the store to encourage a certain type of meal and as a result increase sales. The smaller promotions are normally not inputted in the forecast, unless it is a larger activity ranging over several stores or customers at the same time.

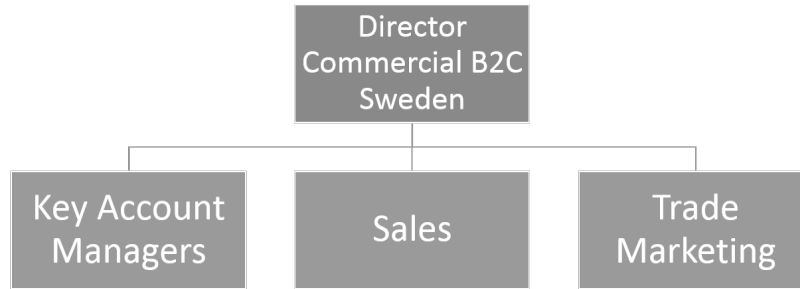


Figure 4.7 - Cerealia B2B Sweden organization chart

Cerealia’s main objectives for initiating promotions are to increase sales and defend volume market shares. Another aspect is that they need to match competitors’ offers and promotions. Therefore, Cerealia benchmarks other brands to get information such as what type of promotions competitors offer, frequencies and prices. Further, Cerealia has as a requirement from retailers to offer a certain number of promotions or a certain budget for their customers’ marketing during a year, and this requirement varies between the different customers. In other words, both Cerealia and their customers have an interest in promotions.

The costs for Cerealia in regards to promotions consists mainly of a fixed cost for initiating the promotion as well as a cost per item sold, which can be seen as the discount retailers get in order to sell the product to a reduced price. The volume sold must be large enough to cover for the fixed cost and a consequence of this is that not all promotions yield a positive economic result.

4.5.1 Planning of Promotions

Central promotions are planned and forecasted by the KAMs for each customer and the smaller sales activities are arranged by Sales or Trade Marketing and forecasted by responsible KAM. All promotional activities are gathered in a common Strategic Yearly Promotion Plan, see Figure 4.8, and discussed during “Market and Sales-meetings”, which take place every other month between the Sales and Marketing & Innovation units. In general, the KAMs plan their promotional activities for the current month plus four months ahead. This 4-month Promotion Plan is made together with the customer and is based on the suggestions and desires from Cerealia, through the Strategic Yearly Promotion Plan, and negotiated with the requirements from the customer. Thereafter, the promotions are confirmed by the customer.

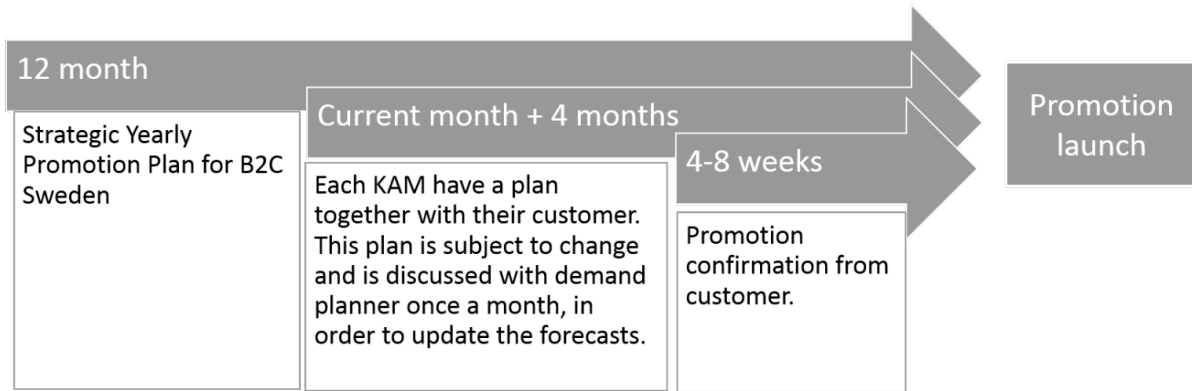


Figure 4.8 - Planning time horizon for promotions

The new organizational structure implied a new Demand Planning organization, which also changed the ways of working. Today, the Demand Planner updates the forecasts in SO99 according to the promotion forecasts in the 4-month Promotion Plan when s/-he is informed of changes in this plan from the KAMs. However, this new way of working has led to some miscommunication between Demand Planning and Sales and as a result some promotional volumes have not reached SO99 at all or double volumes have been registered in the system. However, according to the new S&OP process, KAMs and Demand Planners should meet once a month and together go through the 4-month Promotion Plan and discuss the promotion activities four months ahead, see Figure 4.9, thereby eliminating risks for missing promotional information.

When a customer plans to have a promotion in their stores in for example week 10 a certain year, the products generally need to be in their central warehouses two weeks before, in other words in week 8, implying that the promotion confirmation, triggering new forecasts, purchase orders and production orders, should have arrived in week 0.

4.5.2 Confirmations and Changes

Today, the final promotion confirmation with article number, volume, price to end-customer and time period should be received at least eight weeks before the planned start of the promotion, according to retailers' industry standard. However, this is not always complied with by the customers themselves. How often the customers deviate from providing the promotion confirmation within eight weeks is however not entirely clear. According to Sales, most confirmations arrive more than eight weeks prior to promotion start and scheduled in the 4-month Promotion Plan, and that customers exceptionally provide the confirmations less than eight weeks prior. However, according to the Planning unit there are often late confirmations or changes from the KAMs, at least once a week, regarding promotions three to four weeks ahead.

The late promotion confirmations and changes close to promotion start obstruct the work with accurate forecasts which has negative consequences on many processes within and without Cerealia. The Strategic Yearly Promotion Plan is not shared with the

rest of the organization. According to the Sales unit, the short information lead times imply that the long term planning, done in the Strategic Yearly Promotion Plan and 4-month Promotion Plan, is subject to change and thus hard to act on for other functions.

During March, Sales, Supply and Demand Planning had ongoing discussions about what time limit there should be for changes in the 4-month Promotion Plan. At the moment, a procedure is tested where Demand Planning reports to Supply Planning when a change in the plan is initiated by the KAMs. This communication can be either a demand or more of an inquiry, depending on if the promotion is only discussed, or already sold or confirmed. How often the KAMs requests are a demand versus an inquiry is hard to derive, but regardless, everyone tries to meet the requests, further indicating the “Make-it-Work” mentality.

At the moment there are no specific process steps for handling changes in promotion planning. The information reaches the Supply Planner from the Demand Planner, and the Supply Planner involves Call-off and/or Category Manager and Lead Buyer if necessary. This procedure is time consuming for all parties involved.

4.5.3 Promotion Process Map

Presented in Figure 4.9 is a cross-functional process map for the promotion planning process, from long term strategic planning to execution in terms of promotion confirmation, call-off and production planning. How long and complex the planning process turns out to be depends on the amount of negotiation needed and the amount of additional information received from customer. All changes in the 4-month Promotion Plan affects the Planning unit since changes in forecasts changes the production plan and amount of raw material needed.

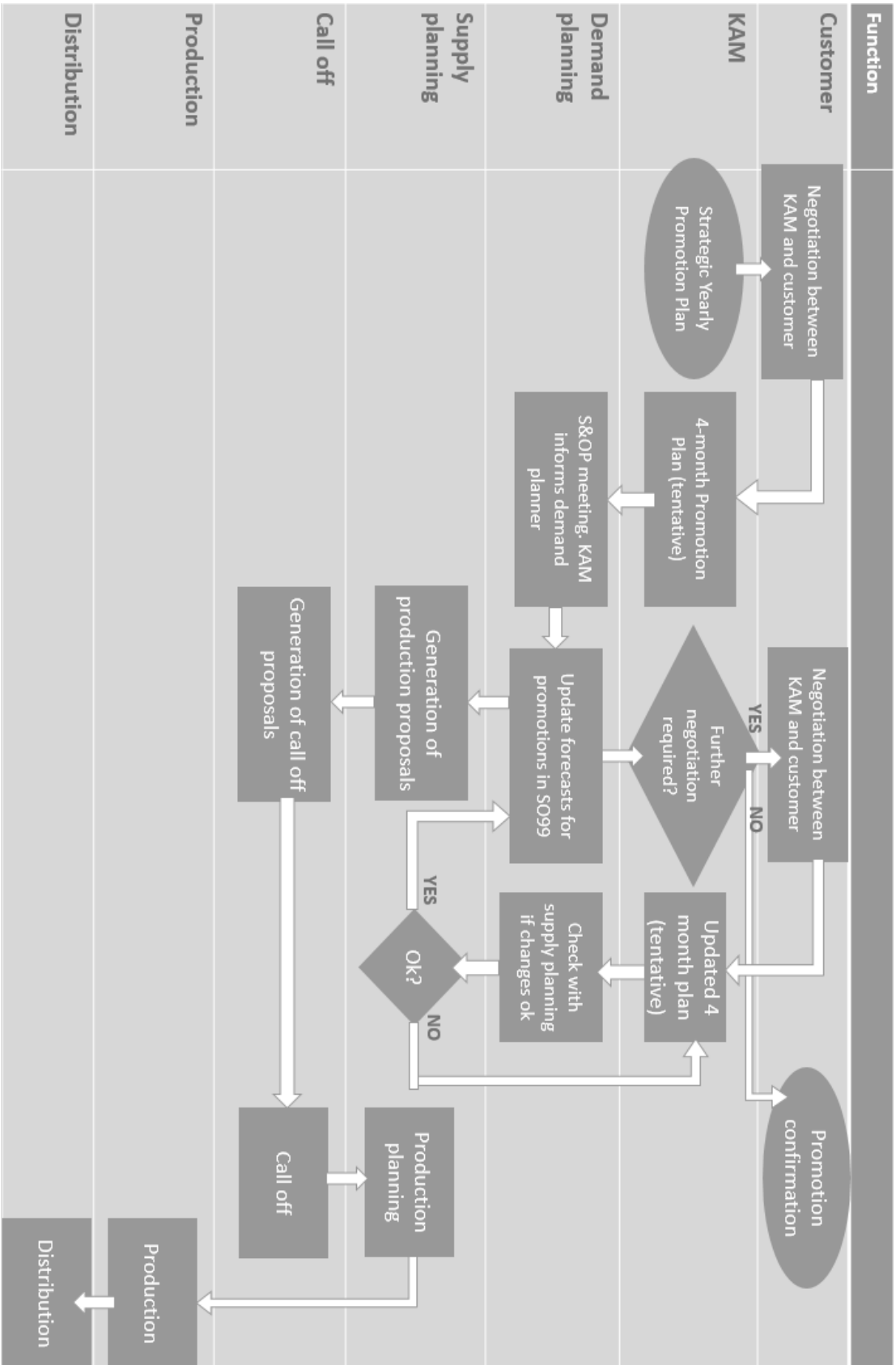


Figure 4.9 - Promotion Planning Process Map

The process step “Check with Supply Planning if changes ok” in Figure 4.9 is further depicted in Figure 4.10. When the Supply Planner receives a question regarding if a change in the 4-month Promotion Plan, affecting forecasts, is possible, information is needed in order to proceed with the evaluation internally. The primary information required is:

- Excess capacity in the production plan ahead
- Availability of raw and packaging material (contracted volume)
- Sourcing lead time for raw and packaging material (earliest possible delivery date)

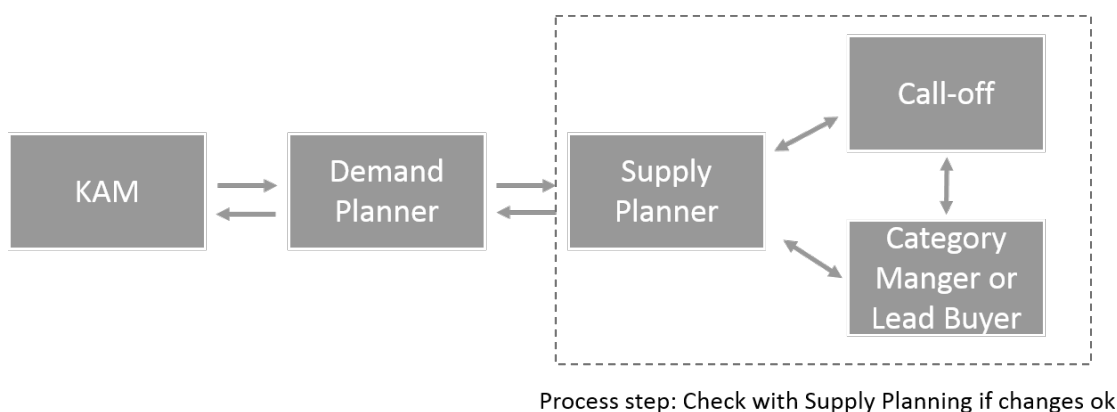


Figure 4.10 - Process Step “Check with Supply Planning if changes are ok” from Figure 4.9

In most cases, this information requires the involvement of Call-off and Category Managers and/or Lead Buyers. Currently, no specific routines exist regarding how this communication should be managed. Observations of this type of scenario showed that there were more discussions about who is doing what and what information is needed, rather than discussing the actual question; can we deliver to this promotion?

As mentioned, there are some cases where a change in the 4-month Promotion Plan already is done and sold to customer. In these cases it is not a question for Supply Planning to evaluate, rather a demand, but the same people are still involved since the information needs to be processed in order to perform the changes required. It has been noted that regardless of how the information is communicated, Sales does not seem to take no for an answer according to Supply Planning, making the “Check with Supply Planning if changes ok”-loop reiterated several times.

4.5.4 Evaluation of Promotions

At the time of this study, the evaluation process for promotions was not standardized, and the Sales organization had ongoing discussions on how to improve the evaluation process for promotions, as well as establishing a common process for this. According to the KAMs follow ups on volume sold are currently done through Point of Sales (POS) data, but comment that this can be misleading since POS data shows the numbers sold to end customer, not what the retailer actually ordered from Cerealia. Evaluations of

promotions are also done through estimating the previous week's mean baseline sales and subtracting this from the total sales. This is not done in the system, but manually by the KAMs. Since promotional products are not ordered separately from baseline products, it is difficult for the ERP system to yield numbers on the promotion sales, which also obstructs the evaluation process, and thus this is required of the Sales organization. The evaluation is crucial in order to provide SO99 with correct data and thus more accurate forecasts in the future as well as securing a relevant product portfolio for promotions.

4.6 Products

Category Breakfast includes 88 articles produced in Järna, where a majority is sold in Sweden. All products sold in Sweden are produced in Sweden and these are the articles that will be analyzed further. The range of products in the category is fairly wide, from oatmeal, containing one raw material from Sweden and few process steps in production, to more complex products such as exotic müsli or granola, with several raw materials from different parts of the world and many production steps. During year 2015, Cerealia had 54 products from category Breakfast on promotions yielding increase in forecast, see Appendix 1. Appendix 1 includes all types of promotions for all customers and one promotion normally has the duration of one week.

4.7 Supply Chain

In category Breakfast, there are a variety of different raw materials that come from many different Purchasing categories. The categories are Müsli and Granola; purchasing dried fruits, aromas and spices, Oats and Pasta; handling oats not sourced from Lantmännen for example barley flakes, and Green Foods and Drinks; sourcing for example pumpkin and sunflower seeds. In other words, many of the raw materials to the breakfast production are "exotic" in the sense that they cannot be produced in Sweden and hence come from many different countries around the world, implying a certain supply chain as well as lead times.

The upstream supply chain for many of the products Cerealia sources for breakfast production are sourced through a wholesaler, in other words not from the producers or farmers directly. This is a strategic decision as Cerealia aims to reduce purchasing costs by reducing the amount of handling and operational purchasing work required when having a direct relationship with farmers/producers. However, this also implies that to keep costs on the low, first tier suppliers only have a small portion of Cerealia's needed supplies in their stock, as higher stock levels imply higher costs for them that otherwise would have been reimbursed by Cerealia. The supply chain from raw material to finished product to Cerealia's customers can be depicted as in Figure 4.11.

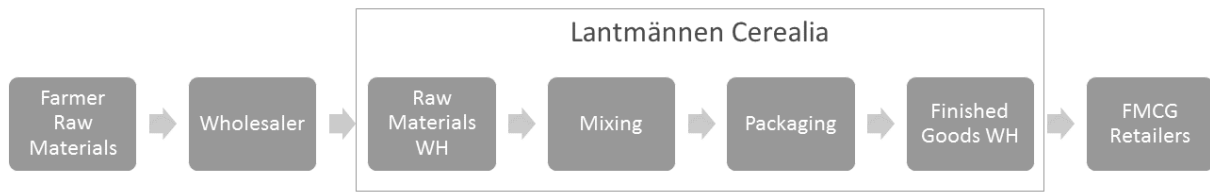


Figure 4.11 - The supply chain for breakfast products from raw material market to the grocery retail market

This of course affects lead times in the sense that much of the first tier suppliers' work is basically to forward Cerealia's orders to their sub suppliers as only small orders are able to be supplied from their stock. In some cases, the orders are shipped directly from the country of origin, reducing the use for a wholesaler. This induces a longer information lead time as well as longer delivery lead times. Cerealia's raw material lead times were later extracted from the ERP system.

Generally, all finished products go through the same processes, with the exception of Oats as this is normally sourced through Lantmännen's farmers. The internal processes generally require the same amount of time for all finished products, implying that the critical lead time of the finished products are the ingredients' longest sourcing lead time, as long as the longest sourcing lead time is not shorter than the frozen production plan. If that is the case, the cumulative lead time is estimated to be 20 weekdays, where 15 weekdays are due to the frozen production plan and 5 weekdays as a safety margin. The process steps that may differ between products are production and packaging, as well as the analysis time after production for gluten free products, which is 2 weeks. Packaging mainly concerns products packed in mix pallets and half pallets, which require longer time for packaging than for regular pallets.

For all raw material there is a security time of generally five days in the system, which means that the call-off proposals are generated to secure a delivery to the warehouse five days before the raw material is needed in production. For exotic products the security time is 10 days. In general, packaging material do not have a security time in the system. A general timeline for cumulative lead time for a finished products in category Breakfast can be seen in Figure 4.12. When applying the "frozen rolling two-week production plan", the shortest cumulative lead time will, as previously described, be minimum 4 weeks (20 weekdays). In other cases, the longest lead time plus control, intake and security time is the determining factor for the earliest date a product can be delivered. The cumulative lead time for finished products in category Breakfast can be seen in Appendix 2.

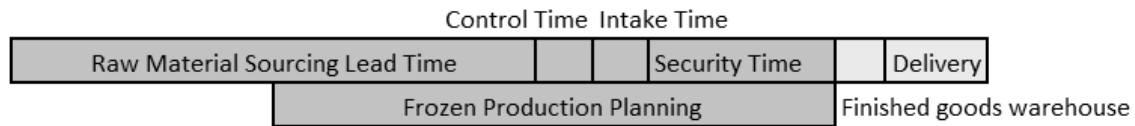


Figure 4.12 - General time line from call-off to delivery

4.8 Supply Chain Configuration and Costs

Cerealia has previously dealt with questions regarding what the costs and benefits are of changing the upstream supply chain in order to reduce costs later in the supply chain. For example, by investing in reducing supply chain risk or uncertainty upstream, the effects downstream can be increased CSLs and thus less penalty costs, yielding either less costs or an actual surplus on the investment. Management at Cerealia has stated that it is willing to make investments like these if it is economically viable. Specifically, Cerealia is interested in looking into whether there are economically viable investments to make regarding lead times. There is in other words a willingness to pay for reduced lead times, as long as those investments imply a pay back later, such as less shortages and less costs connected to re-planning in production, which further leads to less shortages to customers inducing less penalty costs and indirect costs in terms of customer relationships.

When investigating if the lead times are well thought through and reasonable, the impression is that it has not at all been considered. When observing during meetings, the information was given that some of the lead times have not been validated. For example, one of the raw materials with a lead time of 57 days was, according to Category Managers, only assigned this lead time in the system as the suppliers kept exceeding their delivery lead times and was thus given a longer time frame, and should not be a valid lead time anymore. This lead time is probably the time it takes for Cerealia to receive the raw materials from the second tier supplier, but this is not entirely clear. When approached with questions regarding possible lead time reductions to first and second tier suppliers, the Purchasing department emphasizes the importance of cooperating more within Cerealia rather than trying to reduce lead times. Category Managers and Lead Buyers do not have a specific budget for this today, implying that the actual will to pay comes from the costs that are induced as a result of tight re-planning due to promotions. Examples of these costs could be:

- **Extra allergen cleanings of machines**
Products with nuts are usually consolidated and manufactured every three weeks, and re-scheduling due to promotions might imply re-scheduling inducing more of these cleanings. The allergen cleanings take approximately 18 hours and cost the same as production hours as all employees are needed.
- **Manual labor as a consequence of shortages of raw and/or packaging materials**
Shortages mean that production cannot commence as planned. If a shortage is revealed after all picking, unpacking and preparing for a production, this implies restocking and re-picking, or interim warehousing, which are both time and cost consuming and unnecessary.
- **Manual labor as a consequence of problems in production**
Promotions imply different boxing and palletizing that leads to complications more often, see section on *Production Process*, such as trays that make palletizing more cumbersome and therefore more time-consuming.
- **Overtime in production**
A consequence of tight schedules can imply overtime, which according to Supply Planning is not common but also a realistic risk.
- **Penalty costs**
Tight time frames can imply shortages leading to missed CSLs to customers, thereby inducing penalty costs.

When looking into how much penalty costs Cerealia receives per year, it does not seem to be a noteworthy amount, since the two largest customers do not issue penalties. Another aspect of lead times and penalties is regarding how often Cerealia's suppliers keep their agreed CSLs, and if Cerealia is reimbursed if and when suppliers cannot meet our CSLs and agreed lead times etc. There seem to be small penalty costs issued to suppliers in general when CSLs are missed, both in terms of less quantity delivered and delays, but how often this is issued and to which suppliers is not entirely clear. However, according to Category Managers, the penalty costs are only a small percentage of the total value and the days of delay, and does not make up for the costs induced by the shortage that might occur as a result of a delay.

5 Analysis

This chapter aims to connect theory with empirics in order to draw conclusions as to how Cerealia can handle promotions better. This is structured as per the method stated in the chapter Methodology, in other words in the chronological order of the analysis.

5.1 Key Issues Identified in the Empirics

In order to summarize the empirics, the following key issues were identified:

1. Occasionally unaligned functional and category strategies, which are not always communicated throughout the organization
2. Make it work-mentality implying too much rescheduling, leading to an “agile” supply chain which is not in line with the corporate strategy
3. “Broken” processes throughout the organization, due to the restructuring of the organization
4. Complex relationship and uneven power balance between Cerealia and their customers due to few large customers and private label products
5. Low degree of communication and understanding between Sales and Supply Planning, and Supply and Demand Planning
6. Largely inaccurate forecasts, despite the new system S099, implying high volatilities affecting production plans and sourcing process
7. S&OP does not result in a single number volume plan
8. Unanticipated problems in production
 - a. Mix pallets with new article numbers that cannot be sold to others than the customer’s requesting the campaign
 - b. Trays that make palletizing cumbersome, and these are put onto half pallets that require more time per SKU to palletize than whole pallets

This information, and all other empirics, was the basis for the Ishikawa Diagram and Five Why Analysis described in next section.

5.2 Root Causes for Low CSL during Promotions at Cerealia

In order to get a better overview of the root causes for low CSL during promotions in Cerealia, and better structure the information gathered through empirics, the decision was made to execute an Ishikawa Diagram and a Five Why Analysis, presented below. This led to a variety of different paths to further pursue, which are also discussed later in this section. Both these methods were executed by structuring the gathered information and then validating with members of Cerealia with a general perspective.

5.2.1 Root Cause Identification

In order to get a better structure and overview of the information gathered through empirics, the decision was made to execute an Ishikawa Diagram, as seen in Appendix 3. This was done by first formulating the main problem as “Low CSLs during promotions”,

the backbone of the Ishikawa diagram, and then identifying all first-level issues that have a direct effect on this problem. Thereafter, all sub-issues, directly affecting the first-level issues and indirectly affecting the main problem, were identified. Further analyzing of the empirics then led to a division of these direct issues into six areas, namely Systems, People, Processes, Measurements, Machines and Materials.

The Ishikawa diagram made it hard to categorize certain sub-causes that have many different effects within several different areas. This led to the pursuing of a more simple root cause diagram, also referred to as a Five Why Analysis, in order to get a better overview of the root causes for low CSL during promotions in Cerealia, without the issues having to belong to a certain area.

The Five Why Analysis was performed by first posing the question “Why are CSLs low at Cerealia during promotions?”, and the answers as to why were further noted, see Figure 5.1. This process then continued for these answers until the root causes were identified. This process was inspired by the findings of the Ishikawa Diagram, but was executed as if the Ishikawa Diagram had not yet been performed, in other words with the direct empirics as a base. The Five Why Analysis was validated with employees with insight into the many different processes of Cerealia, and was further updated to make sure that each level contains “nodes” that are mutually exclusive as well as compoundly exhaustive of the relevant “parent node”.

The Five Why Analysis is the diagram chosen to proceed with as the findings here were better structured for the research questions.

The eight specific root causes identified from the Five Why Analysis can be shown as the bottom-most nodes in Figure 5.1, and are as follows:

- Power imbalance
 - Oligopoly on the Swedish grocery retail market
 - Backwards integration - Customers have become competitors
- Many competitors
- Declining market
- Make-it-work mentality deeply established within the Cerealia culture
- Always default risk that forecasts are not 100% accurate
- Faulty process to input forecasts to SO99 -> should input sales outcomes
- Several unaligned functional and category strategies

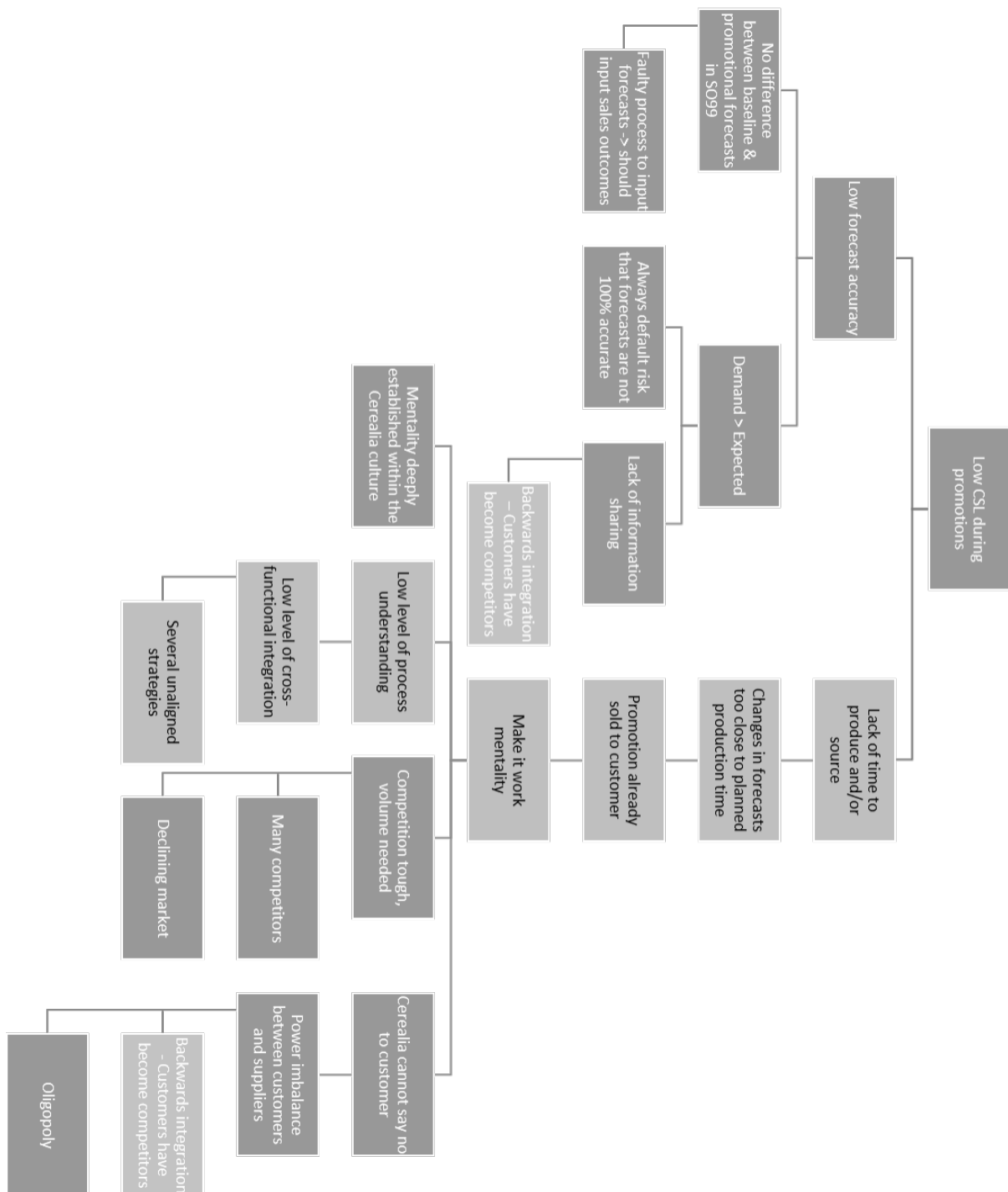


Figure 5.1 - Five Why Analysis

5.2.2 Choosing a Path

When looking at the eight root causes yielded from the Five Why analysis it became clear that all of the identified problems could not be approached within the scope of a master thesis. Therefore, a selection of one problem was needed in order to narrow the scope. The basis for the selection was that the solution to the problem should have great

impact on Cerealia's work, fit into the time constraints of this study and be aligned with the authors' knowledge and interest.

The root causes connected to power imbalance, competition and market situation are something that cannot be affected or solved at this point. These factors are seen as surrounding factors and Cerealia has to adjust their business accordingly. Furthermore, the identified "Make-it-work" mentality lies deep within Cerealia's culture and the people working there. This cultural problem is therefore not chosen to proceed with, and the expectation is that solving other root problems will reduce the extensiveness of this mentality.

Regarding problems related to low forecast accuracy, three root causes were identified. The first is connected to backwards integration from retailers, which is not chosen as previously explained. Another root cause is the fact that "forecasting will always be forecasting", in other words that the sales outcomes will never be exactly equal to the forecasted demand. Unanticipated changes in forecasted demand will always be a risk, and therefore, this path is not chosen. The third root cause concerns SO99 and the work routines related to the usage of the program. This problem is of highest importance in order for Cerealia to perform more accurate forecasts, but the challenge lies in changing old habits of the employees, which is already identified by Cerealia, and is not easy to change even for them.

The root cause chosen to proceed with is thus the low level of cross-functional integration between functions at Cerealia, due to misaligned strategies within functions and categories, as this is within the scope for this thesis and in line with the authors' interests and educations. This problem is enhanced or identified in almost every interview and observation made during the study. The questions and answers for the chosen path according to the Five Why Analysis are in this case in seven steps and as follows:

1. **"Why does Cerealia have low CSLs during promotions?"**
There is a lack of time to produce products.
2. **"Why is there not enough time to produce products?"**
Changes in forecasts are made too close to planned production time.
3. **"Why are changes in forecasts made too close to planned production time?"**
The promotion (or changes) has already been sold to customer.
4. **"Why is the promotion already sold to customer?"**
Because of Cerealia's "Make-it-work" mentality.
5. **"Why is there a "Make-it-work" mentality?"**
There is there a low level of process understanding.
6. **"Why is there a low level of process understanding?"**
Because the functions have a low level of cross-functional integration.
7. **"Why do the functions have a low level of cross-functional integration?"**
Because there are several unaligned strategies.

To further emphasize the issues connected to this root cause, a couple of quotes gathered from structured interviews, see Appendix 4, are presented. These have been translated by the authors from Swedish to English.

“If you ask the Sales unit, they would say that we are not flexible enough. But that is not a part of our strategy.”

- Employee with a higher position within the Supply Chain Organization

“The long term promotion plan is not supposed to be used for long term planning for production. The long term promotion plan is for us to use when working with our customers. We have an agenda, and the fact that we have products in the warehouse for promotions is in my world a prerequisite. It just has to be there.”

- Employee within the Sales Unit

“There is a lack of structure and framework [for the process], but also understanding, between the Sales and Supply Planning units”

- Employee with a higher position within the Supply Chain Organization

“We need more information, a direct communication with the people throughout the organization. No one tells me: this might be a problem”

- Employee within the Sales Unit

“It is better to have a close collaboration [between Sales and Supply units] rather than establish more KPIs to measure the Sales unit’s performance.”

- Employee with a higher position within the Supply Chain Organization

“We can’t do anything else than comply with our customers’ requests”

- Employee within the Sales Unit

“The Make-it-work mentality has been there a long time, and everyone talks about saying no to the Sales unit, but nothing really happens.”

- Employee within the Purchasing Department

“This general [promotion] plan can be used by others, even if I don’t know what it would be used for, since production needs sharp forecasts in order to produce. They can’t produce according to a plan.”

- Employee within the Sales Unit

“If we are close to shortages to customer, everyone should just “make it work” until it works. When we inform of a potential shortage situation, everyone [in production] rises to the challenge to 100%. That [high service levels] is what we live for.”

- Employee within the Production Unit

“The Demand Planner should have the knowledge and tools to challenge KAMs in their decisions.”

- Employee with a higher position within the Supply Chain Organization

“It would be great to have the information regarding which articles having long lead times, in order to avoid fast and short term decision that costs us a lot of money.”

- Employee within the Sales Unit

“We must help our customers to develop and that is not achieved by saying yes to everything they ask for, but by having a dialogue about what will yield the best results and by having certain information in advance. The customers want a low price, a high service level on deliveries and on service from Cerealia in general, which is not possible with such short lead times for promotions and deviations in their own forecasts. We need to work much closer to the customers.”

- Employee with a higher position within the Supply Chain Organization

To conclude, it is clear that there is a lack of understanding and collaboration between the Sales and Supply Chain organization. As a result of the Five Why Analysis, the issue of low level of cross-functional integration, within the scope of promotions and how they are handled internally, as well as the unaligned strategies, is chosen as the basis for further analysis.

5.3 Current State

In order to find the disconnects in today’s processes and strategies, and suggest improvements to these, the current state must be identified. First, the general state of Cerealia is discussed, before pinpointing the specific promotion planning process.

5.3.1 General

In general, Cerealia’s new organizational structure is a classic, hierarchical structure typical for manufacturing companies and not revolutionary per se. This structure implies risks for silo mindsets and disconnects in the white spaces, and even more so since the Supply Chain organization is situated in Malmö whereas the rest of the organization is in Stockholm. This implies higher requirements on the daily cross-functional communication in terms of routines, knowledge of whom is responsible for what and so on. Cerealia has today a fairly high level of internal communication, but a

fairly low level of understanding for the overall company process to customer and how one's actions affect other functions.

In addition to this, the company's overall strategy is also not well communicated throughout the organization. The different functions have very different KPIs that are not always in line with the categories' specific strategy at the moment, which creates potential mismatches in the strategies, as shown in Figure 5.2. For example, the Supply Chain organization is involved in all categories and has a clear cost-efficient strategy, which is not in line with the current strategy for certain categories. The fact that certain information, such as numbers, are not communicated within the organization is understandable. However, the fact that the strategies for each category are not further communicated internally is problematic, as each function will simply do as their respective function's goals are, rendering the category strategies unused and redundant.



Figure 5.2 - Potential Internal Strategic Mismatches

As the category strategies are not communicated sufficiently throughout the organization, the functions strive only towards their respective goals. The most noted issue with Cerealialia's supply chain today is the fact that Sales and Supply Planning are striving towards two largely different strategies, responsive and cost-efficient respectively, illustrated in Figure 5.3. This causes major strains on the supply chain as it is not optimal, according to theory on Supply Chain Configuration, to try to be low-cost and efficient as well as being responsive to customer demands and changing plans frequently. What strategy that is correct for everyone to act on is however unclear, as the category goals might interfere with the different functions' goals, making no function more "right" than the other.

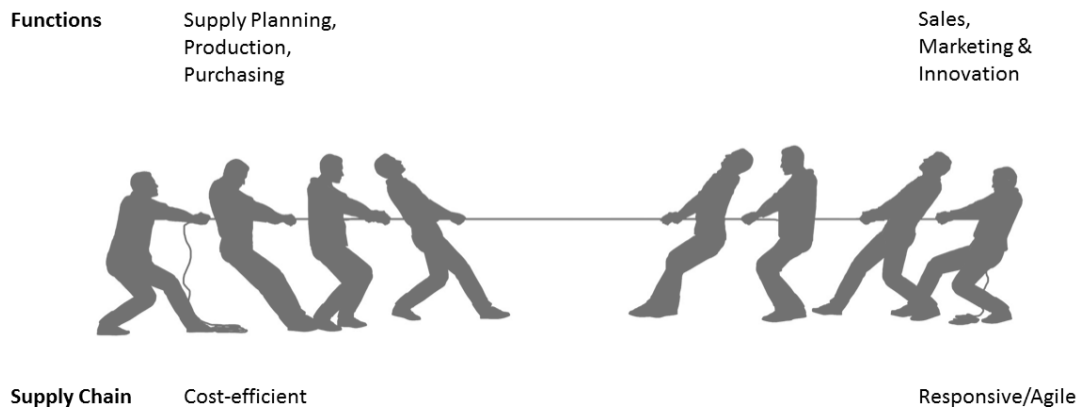


Figure 5.3 - An illustration of Cerealia's Supply Chain where the functions apply different strategies.

Regarding the S&OP process, the lack of capacity planning and agreement on one volume plan is identified as a potential risk and is not in line with S&OP theory. This can lead to the exceeding of capacity plans, generating costs such as overtime. The fact that S&OP is viewed as more of a communication tool is also potentially problematic, especially if the parties walk away from a meeting having understood each other, but not agreed on what volumes to comply by. In addition to this, theory states that a successful implementation of S&OP relies on a strong link to the corporate strategy, and as this is unclear at the moment this is also identified as a potential risk to the cross-functional success that S&OP can bring. Since S&OP is a process for enabling cross-functional integration, the KPIs are important for a successful integration, and since the KPI depends on the strategy, it is important to have established a clear strategy.

In addition to this, it seems that the Supply Chain unit is also “stuck in the middle”, as their lead times to their first tier suppliers in some cases are very short, as they use wholesalers to purchase products from other parts of the world. A more cost-efficient approach would be to source directly from the farmers, without paying a middle-way supplier extra for reducing the time it takes to receive products.

5.3.2 Promotion Planning Process

Regarding the promotion planning process, there is really no formal process, and the communication regarding promotions internally differs depending on the situation, which country, which customer, how long in advance the promotion is decided on, and so on. Depending on the promotion situation, the information to the rest of the organization is phrased either as more of a question, “Can we do this promotion?”, or a demand, “We sold this promotion and need the finished products.”. In the process map in Figure 5.4 the actions marked in two lighter shades are activities that are focused on in the further analysis and activities that are expected to be indirectly affected by the new way of working.

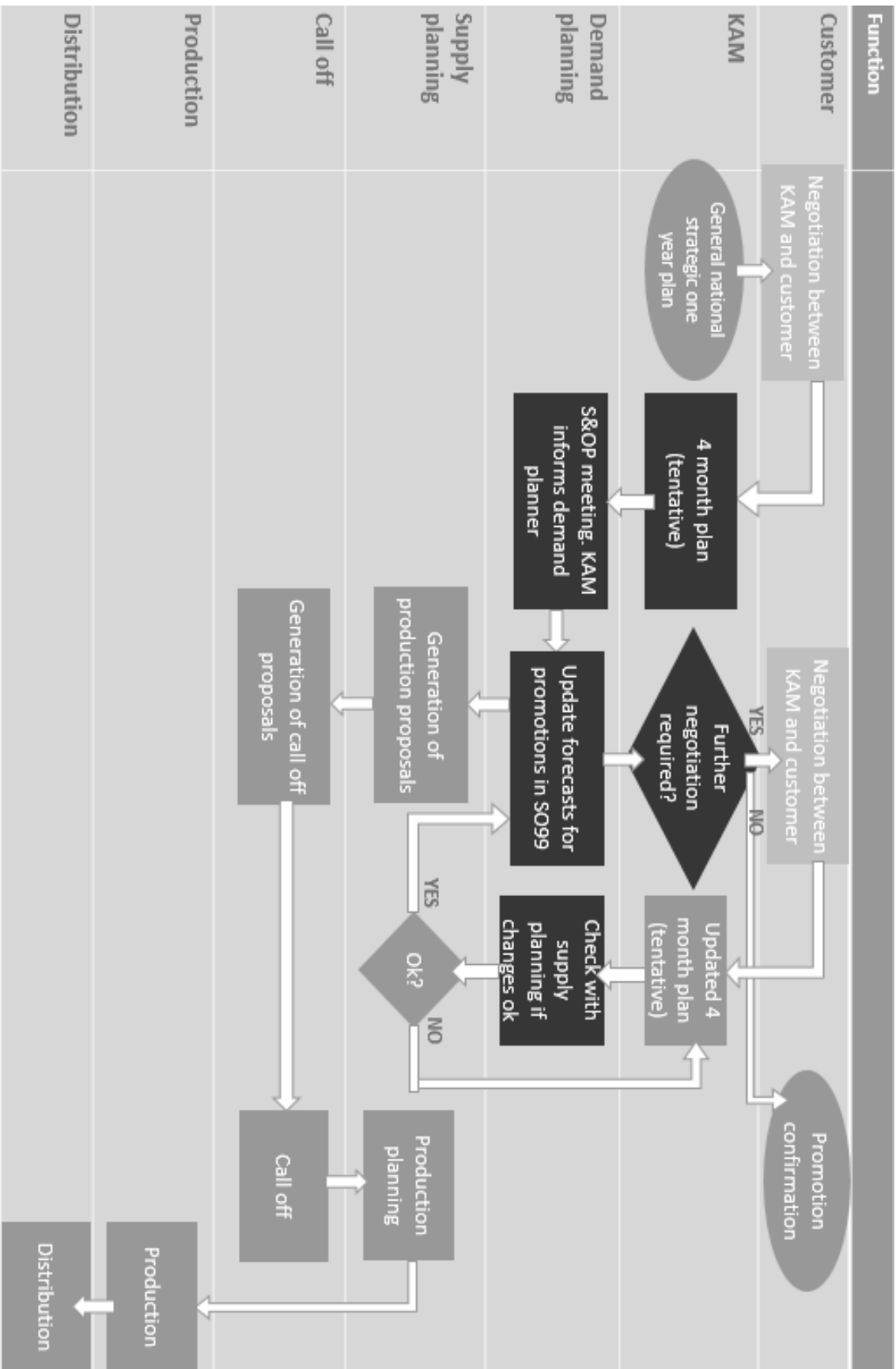


Figure 5.4 - Processes focused on in the analysis

When investigating what the reactions and actions are when a promotion cannot be delivered, Sales does not seem to take no for an answer on the first hand. The perception from the Supply Chain organization is that regardless of how the information is presented, when the information reaches them, the promotion has already been sold and Sales tries very hard to make the Supply Chain organization produce the needed products. In other words, the “Check with Planning”-loop in Figure 5.4 is reiterated several times, and becomes unnecessary if a “no” is not accepted. It has become evident that the Supply Chain organization has, since long, had a bit “too much” understanding for Sales and their work, more than the other way around, potentially leading to the point where Sales utilizes the Supply Chain organization more simply because they can.

In Sweden, the grocery retail market is special, and even Cerealia is aware of this. Cerealia currently views itself in a difficult situation as retailers have become their competitors due to private label products, and few, large actors dominate the retail market. This causes a “power imbalance” between grocery retail market actors, but more importantly between the retailers and Cerealia. The power imbalance between the grocery retail market players and their suppliers of course affects the possibilities and requirements of the supply chain upstream, and the negotiating situation of Cerealia to its customers. However, it is hard to derive how uneven the power balance really is and what is simply caused by low cross-functional integration at Cerealia.

At the moment, Sales states that most of the promotions are within the industry standard lead time of eight weeks. When asking another function however, the perception is that promotions are seldom informed of far in advance, and changes in forecasts are often made close to production or even delivery date. This leads to a good forecast accuracy, but very bad CSLs, which is interesting since the Sales unit today is not measured on forecast accuracy. When investigating if Cerealia has tried to secure that customers confirm within the standard lead time, there is a general perception that Cerealia is in no place to require that, implying the uneven power-balance, and further the fact that when the customer wants a promotion, no one says no.

In addition to this, there seems to be a low understanding at the Sales unit for the complexity of the supply chain for certain products, regarding both to source and to produce. This lack of understanding generates requests for promotions that are often hard to fulfill, sometimes due to the sourcing times of ingredients and raw materials and sometimes due to production schedule and making sure other customers’ baseline sales are not affected. The result of these “tough” requests is thus that products cannot be delivered, leading to low CSLs. The imbalance of understanding for each others’ units is visualized in Figure 5.5, where the Supply Chain unit has more understanding for the Sales unit than vice versa.



Figure 5.5 - Understanding for each other's functions today

5.4 Optimal Future State - Promotion Planning Process

In an optimal future state, according to theory from a supply chain perspective, promotions would not exist as irregular demand is challenging to cope with. Promotions are especially not suitable for a supply chain for functional products that is supposed to have a cost-efficient strategy, since low demand deviation is a prerequisite. Also, when having customers that are not able to, or do not want to, share information for long term planning, promotions cause several problems within an organization, as seen in the example with Cerealia. However, as long as Cerealia's influential customers want to have promotions and other competitors are willing to offer it, skipping promotions completely is not an option. What can be done to improve this situation lies basically in how Cerealia chooses to handle promotions internally, and this can be done by suggesting an optimal strategy and solutions for the cross-functional integration between the Sales and Supply Chain unit.

In order to achieve a higher level of cross-functional integration, specifically in the horizontal promotion planning process, theory states that it is important to:

- Establish common goals and incentives for the promotion planning process
- Increase the understanding for each other's challenges and facilitate the communication between the units involved, in this case Supply Chain and Sales
- Create a horizontal process for promotion planning internally at Cerealia
- Appoint a process owner for this process

Hence, the further analysis is based on these recommendations.

5.4.1 Establishing Common Goals and Incentives

Without a clear, optimal strategy, either responsive or cost-efficient, it is hard to recommend a horizontal process that triggers specific changes within certain functions. Therefore, it is of the utmost importance to first identify the common goals and incentives that the horizontal promotion planning process should have.

In regards to the different types of strategies and their incoherency, when attempting to execute the daily operational activities, the fact is that the supply chains are basically completely separated for each category, even though the Supply Chain unit is viewed as one unit. According to process theory, having different functional strategies does not allow for successful cross-functional processes, as the key to success lies in having common goals and objectives. Therefore, the category strategies are more useful in trying to achieve cross-functional integration. Since the different finished product

categories are on different markets, with different competitors and different supply chains, these categories can easily have different strategies whilst still aligning the functions, as long as the strategies are clearly communicated internally. When a category strategy is chosen, the supply chain should then be configured accordingly, implying that this strategy is the correct strategy to comply by for all functions within the company.

According to theory on supply chain configuration, the products within Cerealia's category Breakfast should be viewed as functional products, when sold to a regular price. Even the supply chain, with certain long raw material lead times, a production that benefits from longer series, high target CSLs and a Purchasing department measured on spend, is more in line with theory on cost-efficient than with responsive supply chains. The authors acknowledge the fact that there today are many different products with different market strategies in Cerealia's Breakfast portfolio, some being more innovative than others. This would not have been problematic if the supply chains were configured differently for these products, but since the more innovative products are sourced and produced through the same channels and sites as the more cost-efficient ones, this indicates a state that will never be optimal.

According to theory, products sold to a promotional price can be seen as innovative, even though the same product sold to regular price can be viewed as functional. The baseline sales have according to the empirics a steady demand pattern and the promotion sales are volatile, see figure 5.6.

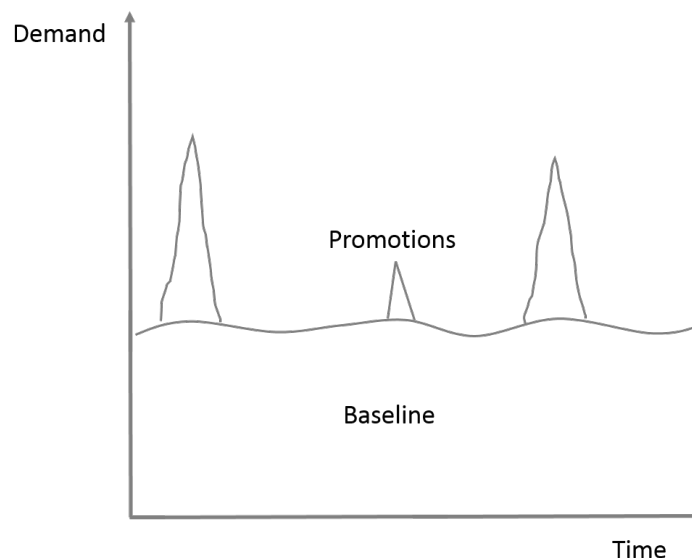


Figure 5.6 - Demand pattern for an example product

This motivates further that a specific product should have different supply chains depending on the demand type, promotion or baseline. In an optimal state, the supply chain would be entirely divided implying different production facilities. This can today not be achieved in the production step within category Breakfast at Cerealia, since all demand types for the same product are produced together. However, this can be

achieved through different types of replenishment. The suggestion is to have long, stable lead times for raw material to baseline sales, possibly bought direct from the country of origin without a wholesaler involved. For raw material to products sold on promotion, the raw material should be bought through a wholesaler who have an agreed safety stock available for Cerealia, in order to have short lead times and manage volatile demand, which is the case regarding promotions. This can be summarized as in Table 5.1.

Table 5.1 - Strategy for Products Sold on Regular and Promotion Price

Product	Product characteristics	Strategy	Supply chain
Regular priced products	Functional	Cost Efficient strategy	<ul style="list-style-type: none"> -Long and stable lead times -Cheap transport mode -Suppliers are primarily chosen for cost and quality
Promotional priced products	Innovative	Responsive strategy	<ul style="list-style-type: none"> -Short lead times -Fast transport mode -Invest aggressively in ways to reduce lead times -Suppliers are primarily chosen for speed, flexibility and quality

Therefore, it is important to decide whether to invest in having two different supply chains for the different strategy products, or to agree on a single market position for all of Cerealia's Breakfast products, configuring the supply chain (the same for all products) accordingly.

In other words, one recommendation is to remove functional strategies and only apply category strategies, that are well communicated internally and do not change over time, implying a certain configuration of the supply chain(s). Also, it is recommended to assign products with different strategies depending on the characteristics of the product, innovative or functional. Promotion products, seen as innovative, are assigned with a responsive strategy, and regular priced items, seen as functional, with a cost efficient strategy, with optimal supply chains supporting the respective strategies. However, the recommendation regarding two different supply chains is today not feasible due to Cerealia's current supply chain and IT systems, for example the ERP system cannot

handle multiple suppliers for one raw material. This is however viewed as a goal to strive towards in order to achieve a better fit between supply chain and strategy.

To achieve a process oriented structure in the promotion planning process it is of highest importance to introduce measurements that provide each function with incentives to work cross-functionally. These performance indicators should be customer focused and adjusted to the chosen category strategy. If having a cost efficient strategy for the category, KPIs such as spend and days in stock is to recommend. If a responsive strategy is applied for the category, the number of promotions and cumulative lead times in days are suggested measurements to focus on. The category strategy is in other words the common goal, and this strategy can be applied to the different functions through specific KPIs for incentive alignment. This can of course imply vagueness for the roles in functions working cross-categorically, but this is much better than the current strategy set-up, without the functional strategies and with aligned goals for the horizontal processes to customer within each separate category (and supply chain).

In order to give more substantial, short term recommendations to Cerealia today, the current state is from now on assumed, implying unclear strategies in general, and a cost-efficient strategy for the SC unit specifically, which affects the analysis and recommendations.

5.4.2 Increased Understanding

Today, the people working in the Supply Chain organization has in general a bit “too high” understanding for the Sales unit’s work, which is why the “Make-it-work” mentality and firefighting exists. This is also the exact behavior that renders the supply chain non-optimal, leading to declining CSLs and a strained supply chain. However, the high understanding for the market situation that Cerealia acts on, and that it is difficult to receive exact information regarding promotions long time in advance, should not be a drawback. In fact, the problem is the two inversely different strategies that the functions act on, responsive and cost efficient.

Sales, however, needs to understand that the supply chain has its limitations when it comes to time and capacity, in terms of what quantity of a certain product can be delivered at an appointed time. This is especially important in Cerealia’s supply chain, which currently has a cost-efficient strategy, where resources are shared throughout the supply chain, lead times are not expected to be short and the volatility is supposed to be close to zero. The optimal state is to increase understanding for what capacity in production is available for promotions and which type products are more suitable for a promotion. This knowledge would help the Sales unit in their work since the products they suggest for promotions will be better suited for promotions and the Sales unit will know in advance what volume and products are possible to produce. The increased understanding will also aid the communication between Sales and Supply Chain since they will have a better understanding for when a product can or cannot be delivered, and not only see products available in the warehouses as a “prerequisite”.

In other words, the Supply Chain organization has since long been too compliant with Sale's ways, and now it is recommended to find a balance in understanding between the two, see Figure 5.7, as opposed to Figure 5.5.



Figure 5.7 - Understanding for each other's functions in the future - A balance

5.4.3 Horizontal Process for Promotion Planning

Having recommended a solution to the strategy-problem by establishing common goals and incentives for the promotion planning process, it is time to define the process per se. This section will first cover the aspect of volume planning in regards to promotion planning, followed by the mix planning accordingly.

Volume Planning

The volumes possible to produce to a promotion (and in general) is restricted by the capacity available in production. Regarding the communication and planning of capacities during promotions, a suggestion is that each KAM within each country is allocated certain volumes per line/site for promotions (as breakfast products are produced at one site only to all Nordic countries). The baseline sales are according to the empirics relatively steady and the capacity fairly constant. Therefore it would be possible to identify a division of the capacity available for promotions between each country based on previously sold promotion volume. The capacity allocation is made per month and has a 12 month horizon as per the S&OP process, which will help the parties involved in promotion planning to gain a long term perspective.

The products are produced or mixed on a production line and packed on another one. Since, generally, one product can only be packed on one specific packaging line, this is identified as the bottleneck and therefore the capacity should be specified per packaging line. The products packed on each line should be identified, and when Sales decides to have a promotion on a product, this specific volume is withdrawn from the customers' (in a specific country's) allocated capacity for the relevant packaging line. In other words, the equation for the total promotion volume possible to allocate for a production line, can be calculated as the total capacity minus a safety margin, and potential capacity for, for example, production of new product developments, minus the baseline sales volumes. Thereafter, the previous years' promotion sales volumes can assign a percentage of that volume to each country, followed by a similar division, within each country, for each customer, as per Figure 5.8.

$$\text{Allocated Promotion Volume (\%)} = \text{Total Capacity} - \text{Baseline Sales} - \text{Safety Margin} - \text{NPD Production}$$

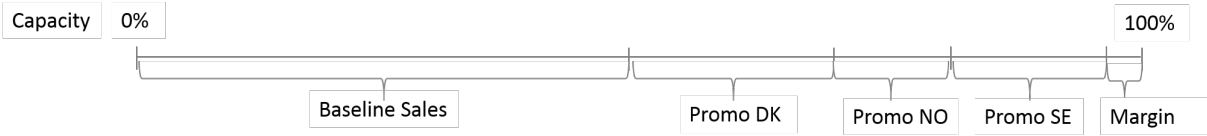


Figure 5.8 - Example of allocation of volume for promotions

Since the S&OP process is supposed to yield an agreement between the Demand and Supply functions regarding what volumes to produce and sell, the promotion capacity plan is discussed and decided on in the Pre-S&OP meeting, where the Supply Planner for the category meets the Demand Planners from each country. With this allocation of capacity, the Sales unit will gain a greater understanding for what restrictions exist in terms of production capacity and they will as a result be able to adjust their promotion planning accordingly. This will hopefully also imply incentives for the Sales unit to plan their promotions with a longer perspective, since they need to “book” volume in advance in order to be able to get a promotion accepted. Still, the Sales unit has the possibility to use the allocated volume for different types of products (later decided on in the mix) and therefore a level of freedom is kept in order to meet customers demand and requests.

In the S&OP process it is important that the capacity plan is discussed together with KAMs 4-month Promotion Plan in order to increase transparency and easier, and earlier, broadcast information that affects everyone in the organization. However, this implies that the 4-month Promotion Plan should have a longer perspective of 12 or 18 months, both according to S&OP theory, but also since it is important that the S&OP process takes into account the time aspect of volumes (of promotions) throughout the year. Today, it may not be known if the current 4-month Promotion Plan contains more or less than one third of the year’s total promotional volumes, which makes it potentially risky to only have one 4-month plan. If for example a majority of the promotions take place in august, this must be produced under a longer period of time in order to not exceed the capacity limits at one point, and hence need to be planned for under the first two 4-month plans of the year. In other words, it is important that the 4-month Promotion Plan is prolonged to a 12-month Promotion Plan that can be actionable in the S&OP process.

In relation to this, the costs for producing on overtime must be specified in order to decide whether it is worth to produce on overtime and if it will affect the end product price. Important to highlight is that it is generally not an economically viable equation to produce products on overtime hours, which are more expensive, and then sell these products to a reduced price. If a prioritization between promotional products is needed, the rule of “first in, first served” is applied, which further strengthens the incentives of long term planning of promotions.

After all meetings in the S&OP process for the current month are finished, the output should yield, according to theory and empirics:

- An updated promotion capacity plan for 12 months
- An agreed promotion volume for each country for next month
- Well informed decision regarding overtime hours in production and how it affects the costs of end product

Mix Planning

When the volume is set, and everyone has agreed on a capacity and understood what the big constraints are, the mix is the remaining question to be answered, according to theory. Since the mix is of less strategic importance than volume, and planned with a shorter time horizon, this decision is not suitable for the S&OP process, and should be handled on a lower level and in processes such as MS, according to theory and as per Cerealia's specific case. Today, Cerealia works much according to theory on MS, and in addition to this it is recommended to implement the mix planning for promotions in the MS process. Also, Cerealia's 4-month Promotion Plan can be used in this process, as best as possible, in order to set early forecasts that are suitable with regards to capacity and mix.

As the time passes throughout the year, the 4-month Promotion Plan is operationalized by KAM when promotion confirmations are received, containing exact information regarding finished product, volume, price and time of promotion in the stores. At this point, the KAMs of each country are supposed to add the new information to the forecasts with the help of Demand Planning. However, it is here that it would be optimal to let the KAMs, with the added understanding for the supply chain and a restriction in amount of units sold per production line, could make their own decisions before starting unnecessary investigations with Supply Planning. In order to suggest a new routine, an example is presented.

Example

Say for example that a customer (or KAM) wishes to have a campaign on a certain product in week 10 a certain year, requiring the delivery of these products to customer in week 8. If the KAM is standing in week 2, there are 6 weeks in total left until delivery date, affecting which products are possible to both source and produce before that date. The information needed here is the cumulative lead time to source and produce a certain finished product, as well as inventory levels of both finished products and raw materials. Even vice versa, knowing what product to sell but to which delivery date, requires this information. So, if only the safety stock is in stock at the moment, or all the existing stock is promised to other customers, the cumulative lead time will be the decision variable and the KAM will have to choose a finished product that has a cumulative lead time of six or less weeks for the said promotion.

This can be accomplished through a “tool”, preferably implemented in the ERP system, using the recipes for finished products, revealing the raw and packaging materials, combined with the safety, control, intake and sourcing lead times for these raw and packaging materials. In an optimal future state, this “tool” or program would also contain information regarding inventory levels as well, promoting products with a high stock level for example. However, at the moment, there are few resources to implement such a program, implying that an interim tool in for example Excel could be used. This does however not enable the use of information on inventory levels, as this sways daily, and the input of only the safety stock level is unnecessary as it is not meant to be large enough to supply entire promotions and is there for safety purposes.

In other words, a simple tool in Excel, until projects like DCH are developed and implemented, containing information on cumulative lead times for finished products, is proposed for the KAMs to use.

Having investigated what options there are for certain promotions on their own through this tool, they can then contact Demand in order to update the forecasts, who can also ensure that the KAMs comply by the lead times in the tool. Even though the lead times should not be a problem, Supply Planning should be informed of the raise in volume, as this affects the yearly volumes of raw materials needed and that require new or updated contracts from Category Managers and Lead Buyers. In addition to this, accidents at suppliers might happen, affecting the campaign and furthermore the relationship to customer, if KAM is not informed.

In other words, both a new tool and a process with routines and procedures is needed in order to secure that sound decisions regarding promotions are made. The following sections will describe the construction of said tool and the appurtenant horizontal process.

The Tool

In order to understand the structure of the tool and how it was constructed, a business case is performed. Here, the program for recipes in M3 was used to extract all raw and packaging material that needs to be sourced, followed by the extraction of intake, safety, control and replenishment lead times from the constituting material data program. Necessary assumptions were made, for example that the intake, control, safety and parts of the replenishment time can overlap the frozen planning time in production, as seen in Figure 4.12, and that a product always will have a cumulative lead time of 4 weeks regardless of how short the replenishment time is. The frozen production planning time at Cerealia is the equivalent of the Firm Zone within the PTF in theory on MS. The results of these queries are shown in Table 5.2 and Figure 5.9.

Table 5.2 - A table of the raw and packaging materials and their respective lead times.

Finished prod. Article no.	Article no.	Replenishment time	Control lead time	Intake time	Security time	Cumulative lead time (week days)	Cumulative lead time with restrictions	Cumulative lead time (days)
101312	300398	30	1	1	5	37	37	51
	300392	10	1	1	5	17	20	28
	300261	30	1	1	5	37	37	51
	300129	30	1	1	5	37	37	51
	300142	3	1	1	5	10	20	28
	300135	3	1	1	5	10	20	28
	401778	30	1	1	0	32	32	44
	402445	14	1	1	0	16	20	28
	401307	7	1	1	0	9	20	28
	401087	14	1	1	0	16	20	28
	401034	10	1	1	0	12	20	28
	400454	5	1	1	0	7	20	28
	400070	21	1	1	0	23	23	33
	401937	21	1	1	0	23	23	33

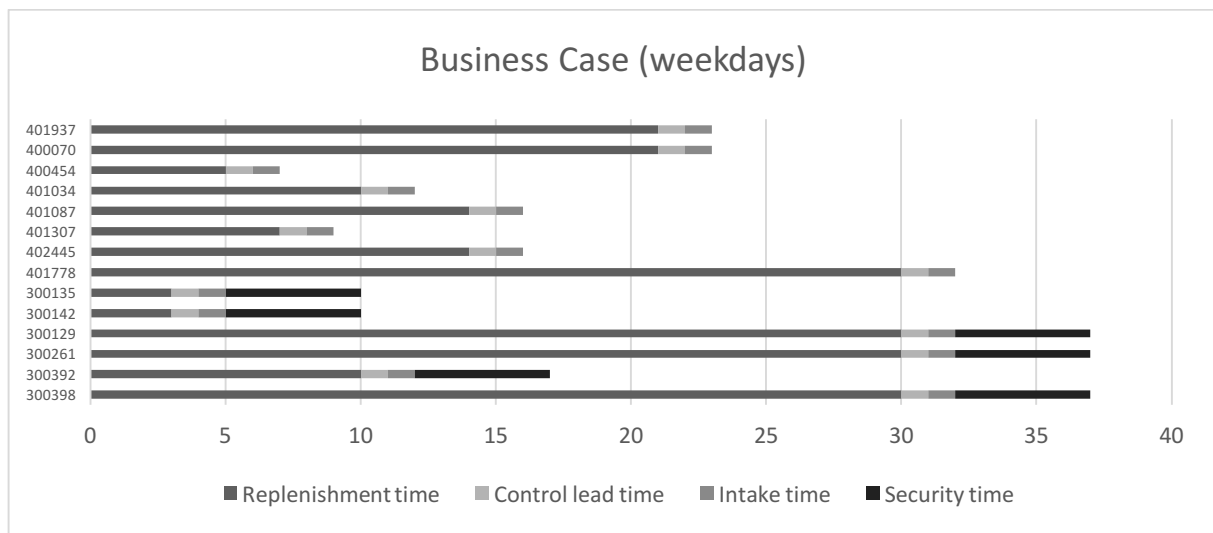


Figure 5.9 - An illustration of what products affect the length of the cumulative lead time

This process, however, triggered an internal investigation on which type of “days” the different programs in M3 use, weekdays or regular days, as well as whether the inputted lead times were in weekdays or regular days. The internal investigation on the functionality of the programs in M3 is currently driven by Cerealia, whereas the authors found it necessary to validate all raw material replenishment lead times in order to secure the validity and future use of the tool. The next section describes the process of validating all raw material replenishment lead times.

Replenishment Lead Time Validation

In this case, the validation of replenishment lead times implied contacting all suppliers to demand new, up-to-date sourcing lead time data for raw materials. This further triggered discussions regarding how easy it is to contractually specify how much a supplier is obliged to have in stock for us, and how long their replenishment lead times are if this quantity is exceeded, and if this is done today. These discussions showed that there is no specific stock level contracted, and that the reimbursement if a delivery is delayed is very small compared to the costs generated by this. In other words, the lead times are somewhere between “long” and “short”, but most importantly are not entirely stable, as the ordered quantity regulates the time it will take to receive more of this raw material. If the quantity is larger than in the latest forecast, that might be three weeks old, it might take longer time than stated in the system to receive, as some raw materials sourced from different parts of the world have more than 100 days if not in stock at the wholesaler.

The findings are in other words that the replenishment lead times vary depending on the ordered volume, and thus are fairly unstable, which is not in line with a cost-efficient strategy, as the Supply Chain unit has. In addition to this, this implies that Cerealia takes more risks than their suppliers, since the contracts are based on Cerealia’s forecasts, which in turn are affected by their demanding customers. A general recommendation to Cerealia is thus to put more resources on securing that the lead times are stable for a

certain and predefined quantity. Of course, this brings us back to the question of strategy and if the cost-efficient strategy is chosen for this category in the future.

Another finding was that the raw material replenishment lead times were not really the determining factor when it came to the longest replenishment lead times within a certain finished product. In fact, the packaging materials were shown to be the composing material with the longest replenishment lead time in many cases. If these are validated is unclear, however, but the time constraint made it impossible to research this further.

After the replenishment lead times for raw materials were validated, the business case above was executed for all finished products. This generated a large Excel file with a lot of data that was coded with VBA to generate product outputs for a certain input lead time, as well as a lead time output for a certain input product. Analyzing the data then led to the identification of certain product groups, as explained in the next section.

Product Classification

Analyzing all the input data showed that there are basically no products that have cumulative lead time (CLT) of four weeks or shorter, to replenish and produce the requested promotion products. The shortest lead time noted was 29 days, one day longer than four weeks. The results can therefore be discussed regarding their validity, especially in regards to the packaging material lead times, since today many promotions seem to be informed of six weeks before planned production date or shorter. However, if this information is correct, it is clear that four weeks or shorter in advance for promotions is exceptionally hard to fulfill. The different CLTs and how many finished products that need that amount of CLT is shown in Table 5.3, excluding organic and gluten free products.

Table 5.3 - Spread of cumulative lead time days and how many finished products require that amount of time, and the corresponding amount of weeks.

Weeks	Cumulative lead time	No. Of Products
4,1	29	1
4,7	33	35
5,7	40	4
6,0	42	3
6,3	44	16
7,3	51	2
8,0	56	1
8,9	62	16
10,0	70	1

Regarding a relevant product classification, a suggestion is to draw a line at six weeks, so that all products with less than six weeks are seen as a “Class A” type of product which are probably easier to fulfill as they have cumulative lead times closest to what is used today. Thereafter, products with a cumulative lead time of six to eight weeks might be relevant as “Class B” products, as these have longer lead times, and products with eight weeks or more might be suitable as “Class C” products. However, any product regarding organic or gluten free raw materials, regardless of cumulative lead time, should be included in a “Class D” product group, as these are special and generally require a component availability check on markets, according to theory on MS, before sourcing can be secured. This is suggested more in line with the empirics regarding lead time than with regards to theory on product classification. The suggested classification can be seen in Table 5.4.

Table 5.4 - Suggested Product Classification

Class	Weeks	Cumulative lead time	No. Of Products	Class Share
A	4,1	29	1	45%
A	4,7	33	35	
A	5,7	40	4	
B	6,0	42	3	24%
B	6,3	44	16	
B	7,3	51	2	
C	8,0	56	1	20%
C	8,9	62	16	
C	10,0	70	1	
D	N/A	N/A	9	10%

This classification can be used as a “rule of thumb” for KAMs and Demand in order to quickly remember if there is something special with a certain product. However, the exact lead time is what affects when the promotion can start, or what product can be sourced, produced and delivered to a certain date. With the classification above, this might promote an extensive use of the Class A products, as these generally have cumulative lead time of four to six weeks, which is within the time frame and advance that is used at the moment. This might have unanticipated effects on Cerealia’s supply chain, brand and so on, which might not be optimal, however this also brings us back to the discussion of strategy.

With the help of the tool, the KAMs will be able to make more sound decisions regarding promotions. The product classification can provide a certain intuition regarding what process to follow further when in contact with for example the Supply Chain organization. This should in other words imply that the component availability check stated in MS theory is only performed on Class D products, instead of on all products, implying a more transparent and efficient process. The interface of the tool can be seen in Appendix 5. With the “tool” made, there may still arise situations that need to be handled, and therefore the next section will derive the processes needed in order to handle the promotion decisions effectively.

The Process

As the tool was developed, a discussion arose regarding how to handle different

situations that might arise. For example, even though a product is chosen for a promotion that is due later than the cumulative lead time from today, the promotion implies an increased yearly volume of certain raw materials that need to be covered in new contracts. In other words, the increased volumes will empty the existing contracts earlier than anticipated, creating a need to be proactive to the Category Managers and Lead Buyers so that they can contract more in time. Also, if there is a problem with a raw material at a supplier, this can affect the time it takes to replenish this raw material, implying that even Call-Off needs to be informed of all promotions, as they might need to get back to the KAMs so that they in turn can inform their customers.

In other words, even though the initial decision point is put closer to the customer, implying shorter lead times and more transparent information throughout Cerealia internally, there might still arise situations requiring a specific process in order to be handled efficiently. In order to specify these situations, the classification was used to set up the different process routines. For the “Class A”, “Class B” and “Class C” products, the routine is basically to choose a product with a Cumulative lead time (CLT, to source and produce) that is within the Promotion Lead Time (PLT), see Figure 5.10. For the “Class D” products, the routine should always be to check with Supply Planning, as these products might have special sourcing restrictions that the Category Manager/Supply Planners can decide on before the promotion of this product is added to the forecast.

Important to note however is that the tool should always be used, regardless if the check is for a new promotion or a change in an already created promotion added to a forecast. This implies that changes to a product with a CLT larger than the PLT will not be accepted, which is the most important change from a planning perspective.

Promotional Rules: (<i>PLT = Promotion Lead Time & CLT = Cumulative Lead Time (to source & produce)</i>)		
IF A-product:	IF PLT < CLT:	Add promotion to forecast
	IF PLT >= CLT:	Choose other (A) product
IF B-product:	IF PLT < CLT:	Add promotion to forecast
	IF PLT >= CLT:	Choose other (A or B) product
IF C-product:	IF PLT < CLT:	Add promotion to forecast
	IF PLT >= CLT:	Choose other (A, B or C) product
IF D-product:	IF PLT < CLT:	Check with Supply **
	IF PLT >= CLT:	Choose other (A, B or C) product

Figure 5.10 - The actions of the KAMs/Demand in the different cases using the Product Classification.

When this check has been made, there is a need for a communication process for informing Supply Planning of the additional volumes. For classes A, B and C, this regards mere information, and this can be sent by Demand when the update of the forecasts has been made, as seen in Figure 5.11, to Sales and Supply Planning. However, there is still a need for the Supply Planner to forward or translate this information to Call-Off and Category Managers since the information received from Demand and KAM is in finished products and Call-Off and Category Managers needs to know what raw materials to source. Call-off could do this themselves, but this is not a part of Category Managers' routine, so this can be sent to both to reduce the amount of unnecessary work.

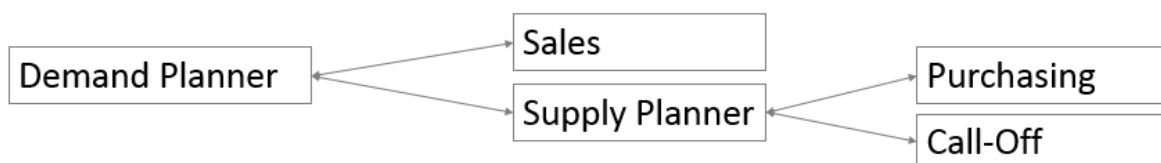


Figure 5.11 - How the information of the added promotion shall be communicated: in two steps.

In addition to this, there is a need to steer the communication effectively if the first instance of a promotion request for a “Class D” product is realized (** in Figure 5.10), in other words the component availability check. In this case, the communication process that is used today is satisfactory, considering that this inquiry will not happen as many times as in the current state (for all “classes”). In this case, the communication should proceed as shown in Figure 5.12.

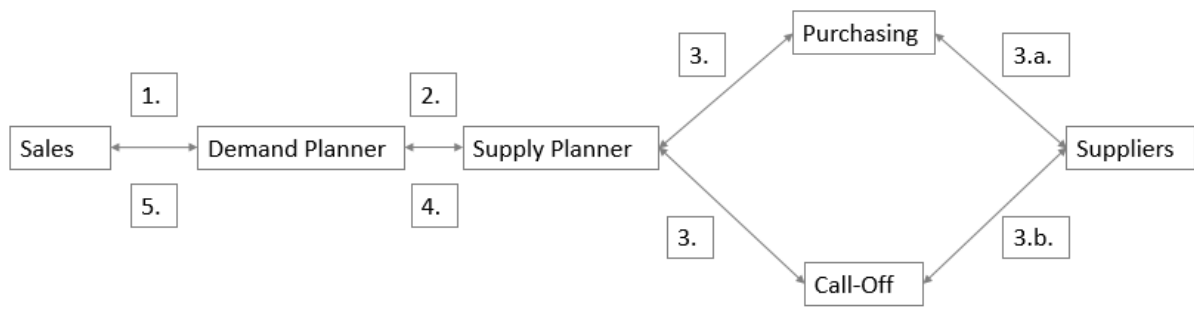


Figure 5.12 - Inquiry process, alike the process of today.

Important to remember is that the KAMs are just as much a part of the Promotion Planning process as the Supply Planner, Demand Planner or Call-off role, and that this must be reflected in the cross-functional process.

Promotion Process - Process Map

Both the volume planning, mix planning and process routines, and how they interrelate, can be summarized in an optimal future state process map for planning and handling promotions. This is shown in Figure 5.13.

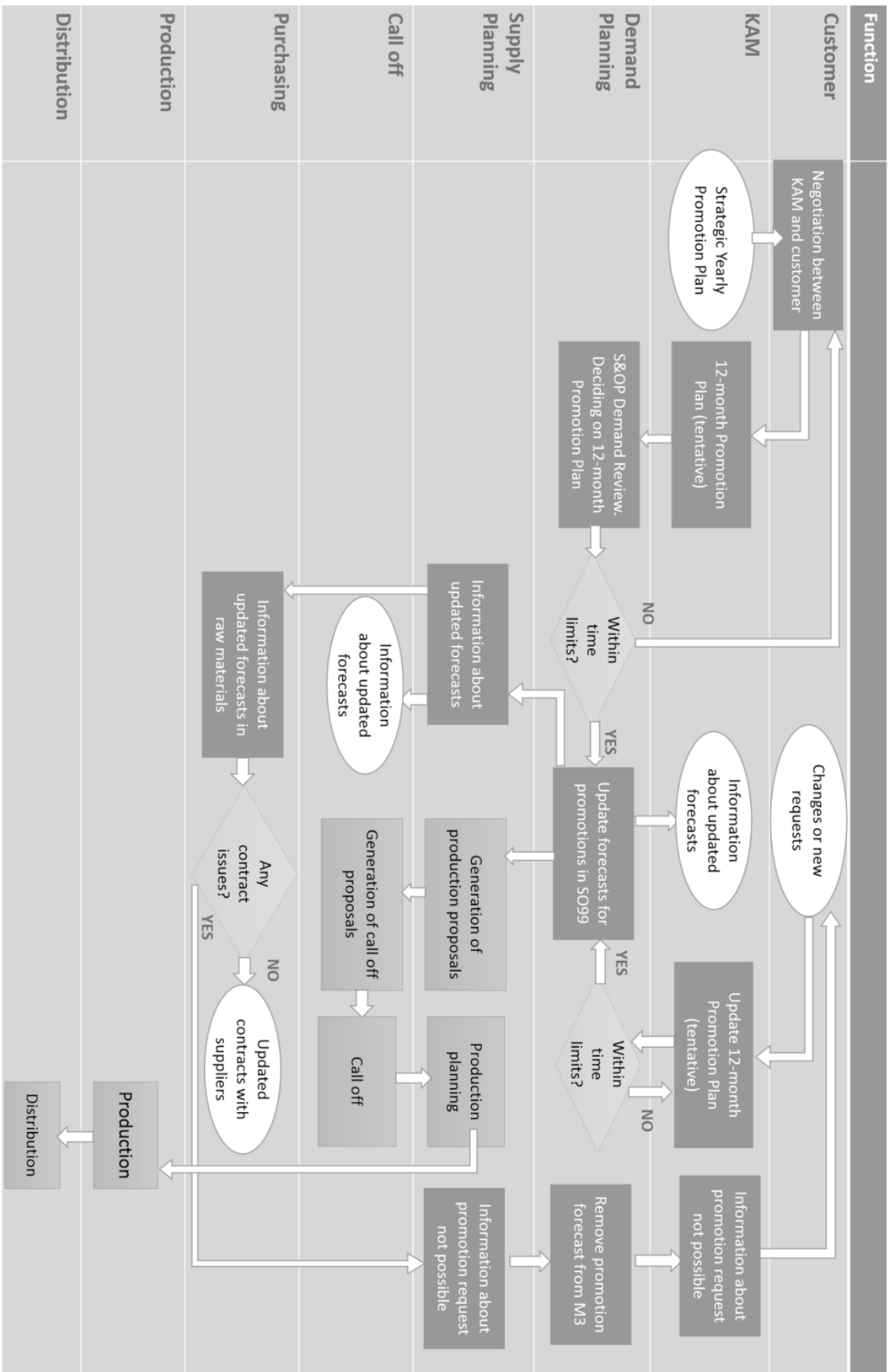


Figure 5.13 - Optimal Future State Map of the Promotion Planning Process

5.4.4 Process Ownership

According to theory, another critical success factor for cross-functional integration is a process owner. The process owner for the overall promotion planning process should be someone that is involved in both Supply's, Demand's and Sales' work, and make sure that the communication is done according to the previously mentioned process. The process owner is also involved in establishing a budget for the process and solving problems within the functions contributing to the process. To have a process owner is crucial in order for the function not to go back to old routines and lose the process mindset.

In Cerealia today, there is no impartial role suitable for process owner of the promotion planning process. Therefore, a recommendation to Cerealia is to introduce a Promotion Coordinator role, with the main task to coordinate promotions and the work between the different functions involved. There are several examples of FMCG companies having introduced this type of role, and this role might be useful for all categories. A new role is of course a large investment, but might be a feasible idea if the role could be responsible for all promotions within Cerealia or maybe other divisions outside Cerealia as well.

If Cerealia chooses not to proceed with establishing this new role, the Supply Planner is the person with the most points of contact with different functions within the organization, rendering this person most suitable for process owner. This might be the least functionally biased person out of all roles involved in the process, considering that Call-off and Category Managers have daily contact with suppliers and KAMs with customers. Furthermore, the process for mix planning should according to theory be owned by the Supply Planner, who is in charge of the master scheduling where the mix planning is included.

5.5 Gaps to Close

When looking at the Current State and how to get to the Optimal Future State, there are several steps that need to be performed.

Firstly, the category strategies need to be decided on, and the functional strategies removed. This should then be communicated thoroughly throughout the organization, and KPIs assigned accordingly.

Furthermore, the aspect of promotions needs to be decided on in each category. If Cerealia chooses to work with promotions within a certain category, these products are to be viewed as responsive and a supply chain needs to be set up for this specific flow.

Thereafter, the capacity in production for each promotional product group needs to be calculated for all countries and further customers. The long term promotion planning process then needs to be established within the organization through the S&OP process, which needs to be updated with the capacity constraints for promotion volume planning as well as long term promotion planning information through the prolonged 4-month

Promotion Plan. In addition to this, it is important that the S&OP process results in a single number volume plan that all parties agree to comply by. When this has been done, it is recommended to appoint an impartial promotion process owner, preferably a new Promotion Coordinator role that can make unbiased decisions regarding promotions.

When this has been implemented, the daily operational work of deciding on mix and following the process routines appurtenant to the tool can proceed.

This can in other words be summarized in four general steps:

1. Remove functional strategies and communicate firm category strategies throughout the organization.
2. Decide on promotion strategy within each category and set up supply chains accordingly.
3. Secure a long term promotion planning process by including capacity constraints for promotion volume planning and long term promotion information in the S&OP process.
4. Facilitate mix planning on the MS level with the help of a promotion planning tool and appurtenant process routines.

These steps are presented in a logical order, in order to gradually improve the organization and its processes. Steps 1 and 2 are long term theoretical goals and may take several years to implement, and might require extensive investigations and discussions to decide upon. Therefore, steps 3 and 4 are designed to be applied to Cerealia today and are in other words more of an interim solution, even though they might be implemented in the future as well.

6 Conclusion

This chapter aims to conclude the study by summarizing and discussing the answers to the research questions. Also, this chapter provides Cerealia with the conclusions and recommendations from this study as well as further research, both for Cerealia and the academia.

6.1 Discussion

This section aims to discuss the results of the study, as well as if the research purpose and questions are fulfilled. The section then discusses and evaluates the setup of the report in terms of method and sources.

6.1.1 Discussion of the Results

The results of the study are based on the research questions, implying a two-step structure below, and the results for these questions are discussed below.

1.a. Eight specific root causes to low CSLs during promotions

The Ishikawa diagram and Five-Why Analysis, as seen in Appendix 3 and Figure 5.1, reveal many different root causes identified by the authors. Of course, the outcome of these types of analyses can differ depending on who is performing them and what data it is based on, which might affect the further analysis. However, the authors view the extensive gathering of empirics, as well as input from employees on these analyses, as a security for their validity, implying that there is a very low risk for missing information in terms of root causes. In addition to this, a check to make sure that the nodes in the Five Why diagram are as much “mutually exclusive and compoundly exhaustive” as possible was made, implying a high degree of validity from the authors as well.

1.b. Cross-functional integration and misaligned strategies as a root cause to low CSLs during promotions

The basis and foundation for this report lies in the fact that Cerealia cannot meet their target of 98%+ CSL. This KPI indicates a cost-efficient strategy, which was assumed at the beginning of this study, and is correct for the Supply Chain organization, but apparently not for the entire organization or all categories. The aspect of strategy changes the “problem with low CSLs during promotions” to perhaps not so much of a problem, as theory states that market responsive companies should be involved in promotions, and that it is acceptable to have lower CSLs in general during these promotions. However, Cerealia must still fulfill the requirements from their customers, which seem to be high CSLs. It is however unclear if the goal of high CSLs comes from Cerealia’s strategy for the Supply Chain Management, or as a requirement from the customers.

Due to time constraints, only one root cause was chosen to address in the further analysis, see section *Choosing a Path*. This of course affects the total result since all the causes found are important to work with in order to solve the main problem of low CSL during promotions. A good reminder in this case is that the chain is no stronger than its weakest link, since the problem with for example forecasts will have a large impact on the promotion process, regardless of how great cross-functional integration the organization achieves or how well implemented the strategies are. Thus, a better result would be expected if all root causes were approached, but that was not possible due to time constraints and can be recommended for further research for Cerealia.

As the aspect of lacking cross-functional integration and lack of clear strategies was chosen, it was not always easy to determine what was in fact a lacking or faulty process, and what was just a symptom of the reorganization. The authors are well aware that the aspect of low cross-functional integration and/or lack of unclear strategies might be exaggerated by the fact that the organization is changing, but the determination was made that there is a foundational problem regarding these aspects that need to be addressed in order to succeed with handling promotions in the long run.

2.a. Remove functional strategies and communicate firm category strategies throughout the organization

The aspect of lacking cross-functional processes and strategies was not anticipated at the start of this study, and changes were made as the study commenced as it was viewed as impossible to disregard from these disconnects when theory clearly states that these are prerequisites for successful processes.

The aspect of strategies in a study conducted in four months might be viewed as odd to some, and some might even argue that there should not have been enough time to get that deep within the organization. The authors have however been working as employees at Cerealia whilst conducting this study, implying an increased insight and knowledge into processes, culture and behaviors. This sped up the information gathering process and has made a deeper analysis possible in a shorter time. The authors do however acknowledge that there might not be enough insight into the top management level to fully understand if the suggestions made are feasible, but have drawn the conclusion that since the strategies are unclear in the lower parts of the organization, something must be done.

As the organization can be viewed according to a matrix, this implies of course difficulties in the interfaces of each function and category, and from a business management perspective, having several contradicting strategies as Cerealia has today might not be problem. However, from a supply chain management perspective, these strategies affect the supply chain and its optimality, which is the perspective of this study. Therefore, the recommendation regarding strategies should not be viewed as something that can improve the organization in general, even though it might, as the study is based on theory of supply chain configuration and strategies.

Furthermore, the recommendation to remove functional strategies comes from the notion that category strategies are cross-functional, which is desired in order to better make supply and demand meet in numbers. However, this might not be the way Cerealia wants to work, and the authors acknowledge that. This also implies certain difficulties, as the KPIs assigned to each function are then depending on category strategy, and an employee involved in all categories might find it confusing to keep track of what actions are done for which category and how to perform those actions optimally according to corresponding strategy. This is however viewed as better to comply by than blindly following the functional strategy and disregarding the cross-functional category strategies.

In addition to this, the category strategies seem to change within certain time intervals, which can further add to the confusion of the everyday employee. If this is optimal from a business management perspective or not is hard for the authors to say as this has not been researched, but if the strategy for each category changes frequently, so should the supply chain. Since this generally implies high investment costs, this does not seem optimal from a supply chain perspective. Therefore the category strategies should be fixated if possible. It could also be an idea to further look into creating one single company strategy, according to for example Cerealia's core values, vision and mission, in order to better and more easily bring the entire organization together towards one common goal. This goal should be at one end of the spectrum to be truly optimal, such as "bringing the everyday people good, everyday, low price products" or "being the pioneers of food innovation".

2.b. Decide on promotion strategy within each category and set up supply chains accordingly

This suggested solution is an adjustment of the theory presented by Fisher (1997), since not all characteristics of promotional products at Cerealia are aligned with the characteristics of an innovative product in theory. Thus, it can be argued how optimal this solution really is. However, the fact remains that Cerealia cannot today completely refuse from participating in promotions. Their customers want it, and denying from participation would imply a much higher market share (in volume sold) to their competitors. As argued previously, the scope of this study does not allow for changing the entire Swedish grocery retail market, and hence the theory must in some way be adjusted to reality in order to create value for Cerealia. In other words, the decision was made to apply theory to reality in the best possible way, and what can be assured is that it will be more optimal than continuing with the current state of having no clear strategy.

The important difference between theory and the suggested solution to highlight is the product contribution margin. A responsive supply chain costs more than a cost-efficient one, and this is supposed to be justified by having larger contribution margins for innovative products. In this case, with products sold on promotion price, the margins are even lower than usual. This is of course questionable according to theory, but the

authors argue that this equation could be justified by implementing an even more cost efficient supply chain for the regular priced items, which would yield a higher margin on these products that can be used for the responsive supply chain. In other words, by making the cost-efficient supply chain more optimal, capital can be freed which can be used for investments in and operating the responsive supply chain. This redistribution of costs could thus make the implementation of a more expensive responsive supply chain more feasible, as if the organization operates within both strategies, it does not really matter where the profits come from and how they are used internally.

If proceeding with a separate supply chain for innovative products it is important to carefully evaluate which products should belong to this category. It would not be feasible to have products with only one promotion per year available in a responsive supply chain. This type of low frequency promotion products can still be available for promotion but kept in the cost efficient supply chain, resulting in less flexibility and longer lead times. A suggestion is to perform a Pareto analysis on the net sales or volume for the products sold on promotion in order to find the most important products to have in a responsive supply chain. This can also be used for evaluating which products are possible to have in a cost efficient supply chain, or to remove from the portfolio.

This solution would in an optimal state require large investments since different production facilities are needed. A division of the supply chain depending on the type of product would be an advantage in a longer perspective since not only promotional products are classified as innovative but also some regular priced products such as new product launches. In a world moving towards faster consumer trends it would be a competitive advantage for Cerealia to have both a cost efficient and a responsive supply chain.

2.c Secure a long term promotion planning process by including capacity constraints for promotion volume planning and long term promotion information in the S&OP process

The capacity constraint aids the long term planning. As the promotions on a certain production line can be “booked” in advance, this acts as an incentive for the Sales organization to push customers towards a more long term perspective. By dividing the promotion volume shares by customer/KAM (in each country) and production line, this implies a “roof” or constraint on the amount of volume they can sell. The KAMs could then be able to trade production line volumes between themselves, given that it results in a bonus-economic status quo between them, as their incentive system still is to sell more as this implies bonuses. In other words, they would however not be inclined to give their volume shares to another KAM, as this would raise his/her bonus and not their own, which could result in hogging of promotion volume shares, which is not optimal for the profit of the company. This is because of the incentive system with bonuses, which, with this solution, also is not entirely optimal as the incentive system today still would yield bonuses for sales that exceed the assigned volume shares. This

would then yield the same problem as per today with promotions, where a promotion is agreed to, but it costs more than it yields in return. Therefore, the incentive system should perhaps be revised according to the new limits.

Another idea would have been to divide the promotional volumes only by selling country and production line (not further customer), as this would act as a clear incentive for the KAMs to input their data earlier. This would mean that if they plan on selling more than their percental share, they can do so and be awarded accordingly, given that they are still given bonuses according to sales outcomes. However, this could also spark unnecessary competition within the organization, and be unfair as not all customers have the same preconditions when it comes to long term planning and forecasted promotional sales. This is viewed as more serious than the first case, which is why it is not recommended, but the solution of course needs to be altered in such a way that it yields the best incentives for all involved. In both cases, however, the fact remains that the capacity cannot be exceeded, or may only be exceeded (through overtime) if it is economically viable.

In relation to this, the authors have identified issues in general with the KPI of “amount of products sold” for the sales force. Being solely judged on the amount of volume that one manages to sell is not optimal for the company, as the economic equation of amount sold multiplied by profit margin (which is lower for promotion products) minus fixed costs for promotions might actually be negative, even before the promotion is acted on within Cerealia. Therefore, it is recommended to look into this in order to align the incentives further. In the long run, it would of course be interesting to align the incentive of time into the equation in order to ensure that the positive economic equations for promotions stay positive by respecting the time limits provided in the tool, as this affects the total profit outcome as penalties might be subtracted from the equation. Of course, bearing the whole responsibility of how the supply chain manages to produce as much as needed is wrong, and a potential role of “Promotions coordinator” could actually bear this kind of KPI, but this is not relevant in today’s system.

An important aspect of this discussion is what maximum capacity really is. The production can be run on overtime, which implies a higher capacity but also higher costs. In this suggestion the normal production rate without overtime is assumed, but it would be interesting to investigate if it is more optimal to extend the normal production rate to including weekends, thus minimizing overtime hours, as this affects the total costs.

The capacity per KAM/customer and production line (and indirectly country) will be based on previous volumes of promotional sales, and will therefore be basically the same as before and in other words not a constraint entirely. However, since this is a new way of working and might be perceived as a constraint on the Sales organization’s work towards their customers, it will require that the people involved are willing to change and make an effort to implement a new way of working, which can be tough. However,

the authors still view this suggestion to have great potential since it will increase the understanding between Sales and Supply, as well as facilitate the long term planning while keeping a level of flexibility for Sales to meet customer's demand.

Another discussion valid in regards to this recommendation is how appropriate it is to input largely uncertain, long term, projected promotional sales data into the system, compared to inputting more accurate data closer to the sales date, as done today. This of course depends partially on chosen strategy, and as Cerealia is discussing this themselves, and the authors recommend that Sales prolong their 4-month Promotion Plan. This is to achieve long term planning for increasing the transparency and easier and earlier broadcast information that affects all in the organization. However, it is not guaranteed that the documentation for this is compatible with the S&OP process today, but this should be investigated.

The aspect of a Promotion Coordinator role is presented here, even though it might not be feasible today, as this requires extra resources that might not be possible to allocate yet, and more of an optimal future state scenario. However, if the resources are the issue, this could be solved by employing this role not only at Cerealia, but centrally at Lantmännen, in order to more efficiently use such a resource. If it is feasible however to implement this role today, it is recommended to do so as this might close the gaps and white spaces between the functions and increase the understanding for the whole process to customer within the functions.

2.d. Facilitate mix planning on the MS level with the help of a promotion planning tool and appurtenant process routines

The tool for promotion planning will increase the understanding between Sales and Supply since it gathers information about what products are possible to plan on promotion and as a result facilitate the mix planning and the promotion planning process. Still, the problem with contracts exists. Even though the product is within the lead time, demand deviations are difficult to handle from a contracting perspective since it has to be long term and as a result relies heavily on correct long term forecasts. What can be done in this situation is to update the status for different raw material regularly in order to work proactive and decide beforehand what products are suitable for promotions or not. Also, if the planning horizon for promotions is prolonged, it would be easier for the Category Managers and Lead Buyers to contract volumes.

The input data to the tool is important to evaluate in order to not have longer or shorter lead times than necessary. For example, raw material in M3 have 10 days of security time, which could be shortened as well as evaluating if it is necessary to have both control lead time and intake time. Also, the lead times for raw materials have been validated but it is important to also do that with packaging materials, since many of the longest lead times in the tool depends on packaging material. Depending on what strategy is chosen, further lead time reductions can be relevant.

As with the case in solution 2.c. this solution will have big impact on the Sales Unit's way of working and thus it requires that the people involved are willing to strive towards change and make an effort to implement the new way of working. This is of course a challenge but with clearly formulated goals and communicated advantages of new work routines, it is possible to implement new routines and change behaviors.

Since both solution 2.c. and 2.d. will affect the sales organizations work, it is important to evaluate how this will affect relationships to customers, as it can affect the sales and furthermore profit. It is hard to derive how uneven the power balance really is between Cerealia and their customers. If promotions mostly are initiated by Cerealia, there would not be a problem to choose products for promotions that are more suitable for promotions and thus aid the promotion planning. If the requests are mainly ruled by the customers, it will not be possible to push the customer in a way that suits Cerealia, which makes the need for changes in strategy even more necessary.

As previously mentioned, solution 2.a and 2.b are long term, foundational recommendations, which of course are important for Cerealia, but might take time, or even be impossible to implement. Solution 2.c and 2.d are more short term recommendations to the current state of Cerealia, which might be more helpful at the moment. In other words, the authors hope that this structure, with both short and long term solutions, implies a comprehensive view and analysis that satisfies Cerealia's expectations. Of course, with more time on hand, the aspect of strategy and supply chain configuration could have been pursued further, but given the fact that both long term and short term recommendations were intended, these solutions seemed most suitable.

In addition to this, the authors would like to remind the reader that the information used in this study was gathered mainly during February and March. As per an organization in the midst of an organizational restructuring, this implies continuous and rapid improvement, indicating that some information might be rendered old sooner than later. The authors have seen a lot of changes within Cerealia under a very short period of time, indicating that some of the issues presented here might already be up for discussions.

6.1.2 Research Purpose and Questions

The purpose of this study is, as per the Introduction:

...to help Lantmännen Cerealia achieve and secure a better match between demand and supply for promotions through increased understanding for promotional causes and effects as well as better planning processes.

Through the two-step model of first investigating root causes, followed by the pursuing of lacking cross-functional integration and supply chain configuration, leading to the four-step recommendations for their promotion planning process, this is viewed to fulfill the purpose. The first research question is:

What are the causes within Cerealia for low CSL during promotions?

In order to answer this, two root cause analyses, Ishikawa and Five Why, were performed. The root cause analyses yielded eight specific root causes to the effect low CSLs during promotions, which also is the answer to research question number one. From the root causes identified, the cause regarding lack of cross-functional integration due to unaligned strategies was chosen to proceed with for further analysis, which yielded research question number two:

What can Cerealia do, and how can the Sales and Supply Planning units work together, to improve their promotion planning process?

The four-step implementation model recommended in the section *Gaps to Close* is the result of this question. Hence, both research questions are answered, as well as the purpose fulfilled.

6.1.3 Evaluation of the Study

All data in the study has been evaluated and assured through several trustworthy sources, both in theory as well as in empirics. Since the data collection in this study is mainly qualitative, the results are based on interviews and the employee's insights. The study is a single case study, which in combination with a qualitative approach yields an in-depth understanding for the company and the unit of analysis, but also a lower generalizability and thus external validity. To increase the generalizability of the solutions and recommendations, to for example more suppliers to the Swedish grocery retail market, a multiple case study is recommended to perform.

Also, the qualitative data relies on the employees' answers and it is sometimes hard to derive if the answers are honest, especially when asking about critical issues. This is to some extent avoided by interviewing several persons within the same function in order to get the most nuanced perspective. Also, the authors' observations through participation have added to the overall perception and validation of gathered empirics.

The construct validity is achieved by interviewing several different persons at Cerealia, implying the usage of multiple sources of evidence and the establishment of a chain of evidence. To improve the study, a larger group of persons could have been interviewed.

To improve the study, all countries within Cerealia should be investigated in order to ensure that the processes and tool is applicable for all countries. Also, the study should be extended to involve products in all categories. This was not possible due to the limited time of 20 weeks but is suggested for further research.

6.2 Results & Recommendations

In this section, the main recommendations are presented. In order to fully exhaust all the insight and knowledge that has been gathered throughout the process, the section

also includes some general recommendations to Cerealia that are out of scope for the study.

6.2.1 Main Recommendations

To summarize the findings of this study, the main issue with Cerealia today in the context of their promotion planning, is their lack of cross-functional integration as a result of unclear strategies and lack of optimal supply chain configuration. To combat this issue, the analysis yielded four general steps to follow, described in this section and section *Gaps to Close*. The analysis also yielded a new process map, as opposed to the current state map shown in Figure 4.9, which can be seen in Figure 5.13.

1. Remove functional strategies and communicate firm category strategies throughout the organization.
2. Decide on promotion strategy within each category and set up supply chains accordingly.
3. Secure a long term promotion planning process by including capacity constraints for promotion volume planning and long term promotion information in the S&OP process.
4. Facilitate mix planning on the MS level with the help of a promotion planning tool and appurtenant process routines.

The first finding was that the functional and category strategies within Cerealia are in some ways counterproductive. This is because the category is supposed to work cross-functionally and thus involve several different functions, but when these functions have strategies of their own that are not aligned with the category strategy, it is impossible to have a common strategy and goal for the category. This in turn, obstructs successful cross-functional processes and as a result yields low customer service levels. The functional strategies today determine the KPIs which the employees are measured on, and this, in combination with the insufficiently communicated category strategies (and the fact that they change regularly), makes it hard for employees to comply by the category strategies and easy to comply by the functional strategies, leading to a strained supply chain where the functional strategies are unaligned.

The aspect of a clear strategy affects both product characteristics and the decision of whether to handle promotions or not. With the unclear strategies of today, and since Cerealia cannot deny promotions today, the theory must be adjusted to reality in order to create direct value for Cerealia. Since promotional products have many characteristics aligned with the characteristics of innovative products, it is suggested to classify promotional products as innovative and regular priced products as functional. These two types of products require different supply chains, which implies that it is recommended to divide the supply chain into two flows; one for functional products with a cost efficient strategy and one for innovative products with a responsive strategy. Since a responsive supply chain is a better match for quick changes and unstable demand, this a solution to today's issue of short information lead time for promotions.

These are however very long term recommendations to the promotion problem, and as stated in the *Introduction*, the objective of this study is to provide both short and long term recommendations. Therefore, the recommendations to work with today, in order to improve the promotion planning process, are in terms of volume and mix planning, implemented into the S&OP and MS processes respectively.

For the volume planning, it is recommended to calculate and assign volume shares to each KAM/customer (for each country) for each production line in the category (sharing the same capacity). These shares should be based on previous sales outcomes for promotions, and will therefore not be restrictive entirely. The volumes can then be traded between the KAMs, implying that there is some degree of flexibility in terms of what products can be produced to whom. This needs to be discussed on a more long term level, implying that S&OP is a suitable forum for these decisions. However, the capacity constraints depend on the implementation of a single number volume consensus plan that everyone agreed to comply by in the S&OP process, as per theory. In addition to this, the 4-month Promotion Plan needs to be extended to regard at least 12 months, as this otherwise will create a gap in the S&OP process when it comes to promotions.

Regarding the more operative mix planning, a mutual respect for the lead times needed for producing a certain product is required. This is aimed to be achieved through a tool, containing lead time data that can output possible products to sell on promotion on given a certain lead time to order date, or output a lead time for a requested product for a promotion. This is preferably in the future implemented into the ERP system, where this can be extended to also incorporate stock levels in the warehouse, but today this is presented in an Excel file due to the time constraint.

As a part of this, a simple product classification is made in order to easily remember intervals of lead times or if the product belongs to certain category that needs special process routines. Products with cumulative lead times of less than six weeks are assigned to Class A, products of six to eight weeks are assigned to Class B, and products with eight or more weeks are assigned to Class C. The special case products, such as organic or gluten free products, need special market component availability checks and/or assigned production slots affecting the cumulative lead time, and hence belong to a Class D. For the cases of A, B and C, the forecasts for promotions on these products can be updated in the system directly as long as it is line with the lead times shown in the tool. However, there is still a need to communicate this increased volume to for example purchasers so they can update the contracts with higher volumes, so this needs to be communicated efficiently as per Figure 5.11. The Class D products also need special communication routines, and this is shown in Figure 5.12.

In addition to this, the authors recommend that Cerealia look into the possibility of employing a Promotion Coordinator role, if they still plan on participating in promotions. This role could be an impartial role capable of making unbiased decisions

regarding whether the promotion is feasible or not. This role can be central for all categories, implying a workload relevant for a full-time employee.

6.2.2 Additional Recommendations

In addition to this, some general recommendations have been identified that might be of interest for Cerealia. As these are out of scope for this study and has no direct foundation in theory, this is to be seen as very secondary to the main recommendations and be read with that in mind. These are elaborated on below, and summarized as follows:

1. Secure that lead times are stable for a certain and predefined quantity.
2. Better forecasts (rolling weeks instead of months) and more frequently sent to supplier, as the forecasts are a basis for our contracts.
3. Put more resources into securing the support of certain functions in the ERP system, such as dual sourcing.
4. Try to work with receiving stock level information from supplier.
5. Increased information sharing from Lead buyers/Category Managers to Call-off, proactively and regularly, regarding what raw and packaging materials that are critical at the moment.
6. Clarify the division of work related to the cross-functional purchasing process.

Regarding the Purchasing function's work, and depending on what strategy to pursue, a general recommendation is to look into the possibility of securing certain lead times for certain quantities. This is because today, the replenishment lead times depend on the ordered volume and what was forecasted to be ordered. For a cost-efficient strategy, this is very necessary, regardless of where the product comes from (farmer or wholesaler). However, this is also important for a market responsive strategy, as the risk right now is very much on Cerealia, even towards their suppliers. If a wholesaler is used, the amount of stock in the supplier's warehouse needs to be contracted in order to secure short lead times as well as sharing the risks of volatile demand. This would also make the tool reflect reality better, as the lead times in it today are largely dependent on the ordered quantity. In this case, more proactive, informed decisions regarding promotions can be made.

In addition to this, it is discussable if it is optimal that Cerealia's forecasts should be a basis for contracts, as per today. If so, the forecasts must be improved radically in order to not expose Cerealia to even more risk. As the forecasts today are sent every third week, and with information of raw materials aggregated per month, this yields a low level of insight for the supplier into changes that might potentially affect them. Therefore, the authors recommend to create a more detailed forecast, per week, that is sent to suppliers automatically every week. This will increase the information they are given and the chances of them being able to meet our demands.

In relation to purchasing and strategy, the aspect of dual sourcing is relevant if the cost-efficient strategy is chosen. However, it is not possible today to implement such a work procedure in the ERP system. This is recommended to look into in order to further optimize the cost-efficient strategy.

Another aspect of purchasing and relationships to suppliers is information sharing. This is extremely important in both strategies, but Cerealia might not be ready to share certain information. However, as this is in fact done today through shared forecasts, the authors argue that the suppliers should provide Cerealia with projected stock levels allocated for them in order to secure that their forecasts can be met by the suppliers proactively, instead of realizing too late that there is a mismatch in this information. This might not be possible today, but is not impossible in the future as it is only fair that the information goes both ways, as it is of interest for both parties.

In relation to information sharing is also the aspect of information sharing internally at Cerealia. Since the purchasing process is divided by the roles of more strategic purchasers (Lead Buyers and Category Managers) and operational Call-off roles, this requires an extensive communication between them. Today, the information flow is mainly from the Call-off to the Purchasing department regarding operational activities and outcomes. However, the authors recommend that the Lead buyers/Category Managers in the future also update Call-off proactively and regularly on what raw and packaging materials that are critical at the moment, and for example not relevant for promotions under a certain period of time.

It is also extremely important that the workload is clearly divided between the Purchasing and Call-off roles, and that both functions work collaboratively towards each other. This means that the Call-off roles need to be less operative and more tactical in some issues, and that the Lead Buyers and Category Managers need to be less strategic and more tactical in some issues. Unfortunately, this is not happening today, and needs to be sorted out in order to have a well-functioning cross-functional purchasing process.

6.3 Further Research

In this section, future elaborations for both Cerealia and academia are recommended. These are only the most relevant aspects according to the authors, but hopefully the study inspires to research other topics not listed here as well.

6.3.1 Further Elaborations for Cerealia

In addition to looking further into the seven remaining root causes and implementing the recommendation to all categories and countries, an important aspect of promotion planning is to be able to follow up and evaluate promotions in a more comprehensive way. As a start, the ERP system needs to be able to handle data regarding what order or sales was a part of a promotion or a part of baseline sales. This is even more important if the supply chain for promotions is separated from the baseline supply chain in the future. The Pareto analysis suggested in the *Analysis* is a good start to analyzing if it

necessary to have promotions on all products today, or if promotions can be limited to a number of products that are more or less suitable for promotions. This requires information on volume and net-sales for products sold on promotions, implying that this needs to be implemented.

Another interesting aspect to analyze in relation to promotions at Cerealia is the, both short and long term, effects of saying no to some campaigns. There are surely drawbacks, such as decreased sales due to less brand substitution, but it is hard to say how much Cerealia loses in saying yes to a campaign that they cannot deliver to later. This will need to be analyzed further in order to make sound suggestions regarding promotions.

In relation to the suggested solutions is the aspect of KPIs for the sales force, as discussed in the section Discussion. The authors have identified issues in general with the KPI of “amount of products sold” for the sales force. Being solely judged on the amount of volume that one manages to sell is not optimal for the company, as the economic equation of amount sold multiplied by profit margin (which is lower for promotion products) minus administrative costs might actually be negative, even before the promotion is acted on within Cerealia. Therefore, it is recommended to look into this in order to align the incentives further.

6.3.2 Further Elaborations for Academia

As the aspect of supply chain configuration has been covered in theory to a large extent, one of the most interesting aspect for further research, according to the authors, is the Swedish grocery retail market.

As per the theory on this in this study, the Swedish grocery retail market is an oligopoly and in a “grey zone” for what is considered legal from a competition perspective. Rumors circulate that the largest actor ICA in the latest years has been “hiding” figures because they would otherwise face charges for having more than a 50% market share. In addition to this, the retailers require price cuts on all products every year, implying that foods only get cheaper, but as the costs for the suppliers are the same, their margins decrease. This also leads to so called “re-size” and “re-price” of products in order to cope with these requirements. The authors strongly urge others within academia to research the Swedish grocery retail market in order to make improvements on how the supply chains upstream are affected by these retailers, and the long term effects of this on for example environment and society.

Furthermore, it is recommended to further research the results of having low margin products in a responsive supply chain and having higher margin products in a more cost efficient supply chain, covering the costs for the more expensive responsive flow.

7 References

- Ali, Ö, Sayin, S, van Woensel, T, and Fransoo, J. (2009). SKU demand forecasting in the presence of promotions, *Expert Systems With Applications*, Vol 36, pp. 12340-12348
- Anjard, R. P. (1996). Process mapping: one of three, new, special quality tools for management, quality and all other professionals, *Microelectronics Reliability*, vol. 36, no. 2, p. 223
- Axsäter, S. (2006). *Inventory Control*. Boston, MA : Springer Science Business Media, LLC.
- Baltas, G. and Argouslidis, P. C. (2007). Consumer characteristics and demand for store brands, *International Journal of Retail & Distribution Management*, Vol. 35 Iss 5 pp. 328 - 341
- Bezos, Jeff. (2012). FiveWhys. <https://fivewhys.wordpress.com/2012/02/21/the-five-whys/#more-331> [Retrieved, 2016-03-02]
- Bower, P. (2005). 12 Most Common Threats to Sales and Operations Planning Process, *The Journal of Business Forecasting*, Fall 2005, pp. 4-14.
- Breiter, A. and Huchzermeier, A. (2010). The New Logic of Truly Efficient Retail Promotions, *International Commerce Review -- ECR Journal*, Vol 9, No 1/2, pp. 36-47
- Chopra, S. and Meindl, P. (2013) *Supply chain management : strategy, planning and operation*, Harlow, Essex : Pearson Education, cop. 2013.
- Christopher, M. (2000). The Agile Supply Chain: Competing in Volatile Markets. *Industrial Marketing Management*, Elsevier Science Inc., Vol. 29, p.37-44.
- Davenport, T. H. (1993). *Process innovation : reengineering work through information technology*, Boston, Mass. Harvard Business School Press [for] Ernst & Young, Center for Information Technology and Strategy
- DeToro, I. and McCabe T. (1997). How to stay flexible and elude fads. *Quality Progress*, Vol 30 No 3 pp 55-60.
- de Treville, S., Shapiro R.D. and Hameri, A-P. (2004). From supply chain to demand chain: the role of lead time reduction in improving demand chain performance. *Journal of Operations Management*, vol. 21, p.613-627.
- Ettouzani, Y, Yates, N, and Mena, C. (2012) Examining retail on shelf availability: promotional impact and a call for research, *International Journal Of Physical Distribution and Logistics Management*, 42, 3, pp. 213-243.

- Fisher, M. (1997). What Is the Right Supply Chain for Your Product?, *Harvard Business Review*, Vol 75, No 2, pp. 105-116
- Fisher, M., Hammond, J., Obermeyer, W. and Raman, A. (1994). Making supply meet demand in an uncertain world., *Harvard Business Review*, Vol 72, No 3, pp. 83-93
- Gligor, D.M. (2014). The role of demand management in achieving supply chain agility. *Supply Chain Management: An International Journal*, Vol. 19 Iss 5/6 pp. 577 - 591
- Gruen, T.W., Corsten, D.S. and Bharadwaj S., (2002). Retail out-of-stock: a worldwide examination of extent, causes and consumer responses. The Food Business Forum.
- Gullstrand, J, and Jörgensen, C. (2012) Local Price Competition: The Case of Swedish Food Retailers, *Journal of Agricultural and Food Industrial Organization*, vol. 10, no. 1
- Höst, M., Regnell, M. and Runesson, P. (2006). *Att genomföra examensarbete*. Lund, Studentlitteratur AB, 2006.
- Imai, M. (1996). *Kaizen - Att med kontinuerliga, stegvisa förbättringar höja produktiviteten och öka konkurrenskraften*. Uppsala, Konsultförlaget AB.
- iSixSigma. (n.y). *Practical Guide to Creating Better Looking Process Maps*. <http://www.isixsigma.com/tools-templates/process-mapping/practical-guide-creating-better-looking-process-maps/#comments> [Retrieved 2016-03-14]
- Jacobs, F.R., Berry, W.L., Whybark, D.C. and Vollmann, T.E. (2011). *Manufacturing Planning and Control for Supply Chain Management*. Sixth edition. McGraw-Hill Professional Publishing, 2011.
- Johansson, U. (2001). *Retailers - Suppliers Relationships In The Grocery Industry : A Comparative Study Of The UK, Sweden And Italy*, Lund, 2001.
- Jonsson, P. and Mattsson, S-A. (2011). *Logistik: Läran om Effektiva Materialflöden*. Lund, Studentlitteratur AB, 2011.
- Konkurrensverket. (2012). *Konkurrensverket utredning visar att dagligvaruhandeln utnyttjar sin köpkraft på flera sätt som är konkurrensmässigt tveksamma*. <http://www.kkv.fi/sv/aktuellt/meddelanden/konkurrensverket/2012/konkurrensverkets-utredning-visar-att-dagligvaruhandeln-utnyttjar-sin-koparkraft-pa-flera-satt-som-ar-konkurrensmassigt-tveksamma/> [Retreived 2016-03-09]
- Kotzab, H., Suering, S., Müller, M. and Reiner, G. (2005). *Research methodologies in Supply Chain management*. Heidelberg. Physica-Verlag Heidelberg 2005.
- Lapide, L. (2014). The S&OP Process Revisited. *Journal of Business Forecasting*, Fall 2014, pp.12-16.

- Liang, L. and Zhang, K. (2010). Coordination in Retailer-Dominant Two-Stage Supply Chain Based on Lead-Time Reduction. *International Conference on E-Business and E-Government*, pp. 3215-3220.
- Marketline. (2015). *Food Retail Industry Profile: Sweden*. pp. 1-31
- Mattsson, S. (2002) *Logistik i försörjningskedjor*, Lund, Studentlitteratur, 2002.
- Mentzer, J.T., DeWitt, W., Keebler, J.S., Min, S., Nix, N., Smith, C.D. and Zacharia, Z.G. (2001). Defining Supply Chain Management. *Journal of Business Logistics*, Vol.22, No. 2.
- Meredith, J. (1998). "Building operations management theory through case and field research", *Journal of Operations Management*, Vol 16, No 4, 441-454.
- Mohr, J., and Low, G. (1993). Escaping the Catch-22 of Trade Promotion Spending. *Marketing Management*. Vol. 2. Iss. 2.
- Mulhern, J. and Padgett, D.T. (1995). The Relationship between Retail Price Promotions and Regular Price Purchases. *Journal of Marketing*. Vol. 59, No. 4 pp. 83-90.
- Nielsen. (2014). *The state of private label around the world*.
<http://www.nielsen.com/us/en/insights/reports/2014/the-state-of-private-label-around-the-world.html> [Retrieved 2016-03-14]
- Nijs, V., Dekimpe, M., Jan-Benedict E. M. and Hanssens, D. (2001). The Category-Demand Effects of Price Promotions. *Marketing Science*, Vol. 20, No. 1, pp. 1-22.
- Noroozi, S., (2014). A Framework for Sales and Operations Planning in Process Industries, s.l.: Linköping University.
- Olhager, J. (2000). *Produktionsekonomi*. Lund, Studentlitteratur AB, 2000.
- Olhager, J. (2013). Evolution of operations planning and control: from production to supply chains. *International Journal of Production Research*, Vol. 51, No. 23-24, p. 6836-6843.
- Olhager, J. (2016) Introduktionskurs till examensarbete inom teknisk logistik Fö 3: Forskningsmetodik – översikt och case.
- Pauls-Worm, K.G.J., Hendrix, E.M.T., Alcoba, A.G. and Haijema, R. (2015). Order quantities for perishable inventory control with non-stationary demand and a fill rate constraint. *International Journal of Production Economics*.

- Ramanathan, U, and Muyldermans, L. (2010). Identifying demand factors for promotional planning and forecasting: A case of a soft drink company in the UK. *International Journal Of Production Economics*, pp. 538-545.
- Rummler, G. and Brache, A. (1991). Managing the White Spaces. *Training*, Vol 28, No 1, p. 55-70.
- Shields, K, and Leskiw, R. (1996) Eight myths of trade promotion, *Brandweek*, Vol 37, No 12, p. 17.
- Smith, M. (2008). Sales and Operations Planning: Making BPM Work. *Business Performance Management*, March 2008.
- Srinivasan, S., Pauwels, K., Hanssens, D.M. and Dekimpe, M. (2004). Do promotions benefit manufacturers, retailers or both? *Management Science*. Vol 50, No 5, p. 617.
- Stalk, G.Jr. (1989). Time - the next source of competitive advantage. *The McKinsey Quarterly*, Spring 1989.
- Swink, M. and Schoenherr, T. (2015) The Effects of Cross-Functional Integration on Profitability, Process Efficiency, and Asset Productivity, *Journal of Business Logistics*, vol. 36, no. 1, pp. 69-87
- Van Selm, A. (2000) The role of consumer retail price promotions in the marketing strategies of manufacturers and retailers. *Networked Digital Library of Theses & Dissertations*.
- Wallace, T.F. and Stahl, R.A. (2003). *Master Scheduling in the 21st Century*. T. F. Wallace & Company.
- Woodruff, R. (2003), "Alternative paths to marketing knowledge", Qualitative methods doctoral seminar, University of Tennessee.
- Yin, R. K. (2009). *Case Study Research - Design and Methods*. Fourth Edition. USA. Sage Publications.

8 Appendices

Appendix 1 - Finished products on promotions

Article	Number of promotions 2015
100442	43
101156	36
102522	36
102520	33
102536	32
102419	30
100473	29
100495	28
102347	27
102348	27
102349	26
100211	26
100034	24
100127	21
102521	20
102523	19
100211	19
102525	18
102329	17
102156	16
102155	15
100183	15
100041	12
Utgått	12
Utgått	12
Utgått	11
100591	10

102524	10
102727	9
102728	9
102526	8
102735	7
102741	7
102736	7
100377	6
102540	6
100039	5
102715	4
100625	4
102539	4
100282	4
100544	4
102632	3
Utgått	2
102432	2
100272	2
Utgått	1
Utgått	1
102301	1
Utgått	1
Utgått	1
100326	1
100761	1
102171	1

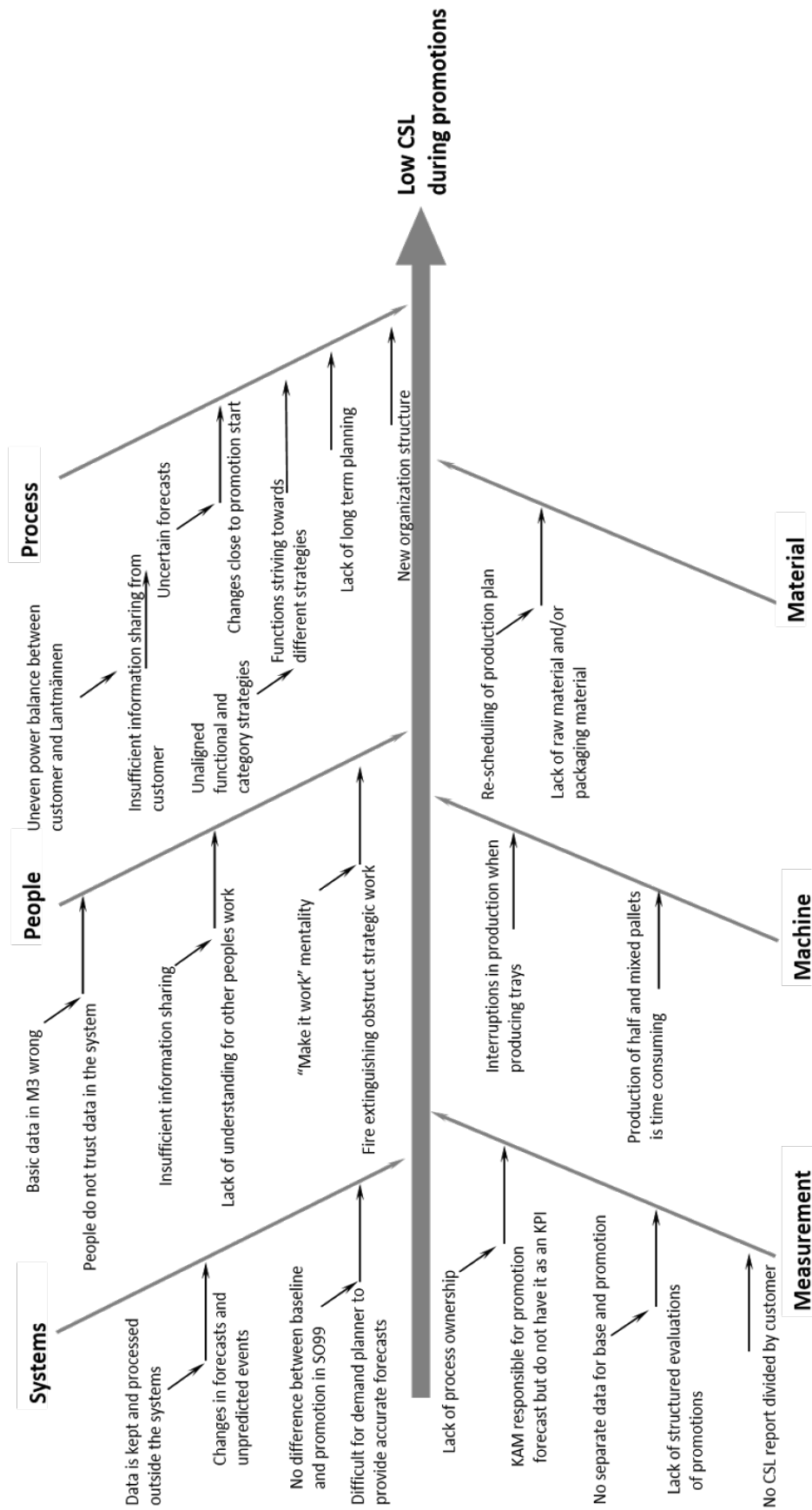
Appendix 2 - Finished product cumulative lead times

Article Number	Cumulative lead time
100001	29
100016	33
100034	33
100039	33
100041	33
100063	33
100077	33
100127	33
100146	62
100183	44
100209	33
100211	33
100222	33
100233	47
100272	33
100282	33
100364	33
100377	33
100399	33
100407	33
100442	44
100473	33
100486	33
100495	33
100591	33
100606	33
100625	33
100761	33
101156	62
101312	44

101317	44
101481	33
101596	33
101597	33
101881	47
102069	33
102128	33
102155	62
102171	62
102269	33
102270	33
102279	33
102280	33
102297	33
102329	33
102347	62
102348	62
102349	62
102409	44
102419	62
102441	33
102469	33
102520	44
102521	62
102522	62
102525	51
102539	62
102542	62
102593	33
102594	62
102632	47
102677	51

102715	33
102727	44
102728	40
102735	44
102736	40
102737	40
102738	44
102739	44
102740	40
102741	44
102742	33
102799	42
102803	42
102834	33
102835	44
102836	44
102837	62
102838	62
102840	70
102841	56
102849	44
102850	62
102851	44
102852	44
103049	33
103057	42

Appendix 3 - Ishikawa diagram



Appendix 4 - Interview Schedule

Role	Date
Production Leader	2016/02/08
Manager B2C Customer Service	2016/02/08
Teamleader	2016/02/09
Teamleader	2016/02/09
Consignee	2016/02/09
Teamleader	2016/02/09
Category Manager (Purchasing)	2016/02/10
Supply Chain Manager	2016/02/10
Nordic Brand Manager Grain & Granola	2016/02/11
Nordic Brand Manager Grain & Granola	2016/02/11
Project Manager S&OP	2016/02/11
Lead Buyer	2016/02/15
Customer Director ICA	2016/02/16
Logistics Manager SE	2016/02/16
Demand Planner SE	2016/02/17
Sales Manager B2C	2016/02/18
Planning and Logistics Manager	2016/02/19
Customer Director Coop	2016/02/22
Service Manager Purchasing and Planning	2016/02/24
Director Commercial B2C SE	2016/02/25
Customer Director Axfood and Lidl	2016/02/25
Supply Planner Breakfast	2016/03/14
Category Manager (Purchasing)	2016/03/17
Lead Buyer	2016/03/17
Demand Manager	2016/03/24
Call-Off Planner	Continuously
Supply Planning Manager	Continuously

Appendix 5 - Interface of the Tool

TOOL2 - Excel

Alternativ 1

INPUT

ANGE Produktnummer	102834
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OUTPUT

Total ledtid (köpa in & producera)	33 veckodagar
Veckor	5 veckor
+ 2 veckor till kampanj i butik	7 veckor
Klass	D

Alternativ 2

INPUT

ANGE tid i veckor fram till kampanj i butik	8 veckor
Veckor att tillgå för köpa in och producera	6 veckor
Veckodagar att tillgå för att köpa in och producera	42 veckodagar
Produktnummer kolumnindex	1

OUTPUT

Produkt att tillgå	Artikelnr.	Klass
	103057	B
	103049	A
	102834	D
	102803	B
	102799	B
	102742	A
	102740	A
	102737	A
	102736	A
	102728	A
	102715	D
	102593	A
	102469	A

Buttons: Visa Produkter, Tom lista