The Impact of E-Tailing on Inventory Management

A multiple case study of Swedish e-tailers and multi-channel retailers

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Abstract

Title The Impact of E-Tailing on Inventory Management:
A multiple case study of Swedish e-tailers and multi-channel retailers

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Background In traditional retailing, where the challenge lies in providing goods in a store with limited space while minimizing tied up capital and obsolescence, good inventory management is often an important competitive advantage. However, the emergence of the online channel changes some of the challenges, and the associated requirements on inventory management. These differences are studied in this thesis project.

Purpose The purpose of the thesis project is to study how e-tailing as a market channel impacts inventory management in a company.

Methodology In order to fulfill the purpose, a multiple case study was used. In each case study, interviews were conducted and annual reports were studied. The general approach was to examine the effects of e-tailing as a market channel and how they impact inventory management.

Conclusions For pure e-tailers, centralizing inventory reduces the inventory management complexity significantly. This enables them to implement various activities that attract customers, but increase the complexity and risks. Mature e-tailers seem to have well-developed policies to mitigate risks whereas e-tailers experiencing rapid growth seem less concerned about how their activities affect the complexity of inventory management. Furthermore, multi-channel retailers face a number of decisions that potentially can create synergy effects in their inventory management.

Keywords E-tailing, Online retailing, Multi-channel retailing, Inventory Management

Contents

List of Figures

List of Tables

Chapter 1

Introduction

This chapter introduces the reader to the background, problem, and purpose of the thesis. Furthermore, it describes the delimitations in scope and the thesis disposition.

1.1 Background

E-commerce is a fast-growing market channel which has spread to many different industries. Business-to-consumer electronic retailing, or e-tailing, has allowed consumers to buy almost everything they need online and get it delivered within a few days. In Sweden, customers bought products online for a value of approximately 58 billion SEK in 2016 (PostNord, 2016b), and from 2014 to 2016 the overall market grew by 16.17 % on average (PostNord, 2015, 2016a, 2017). For companies, e-tailing is creating new conditions e.g. for marketing, displaying products, selling, charging the customers, and distributing products. There are many differences between e-tailing and traditional retailing, e.g. the fact that the physical store is replaced by a "virtual showroom". Because of this, buying things online is associated with delivery times, whereas traditional stores offer immediate on-hand availability. At the same time, e-tailers are expected to offer services that traditional stores offer, e.g. returns. In traditional B2C-flows, where the challenge lies in providing goods in a store with limited space while minimizing tied up capital and obsolescence, good inventory management is often an important competitive advantage. E-tailers experience close to no limitation to what they can display on their website, which means that they can use larger assortment mixes and have more SKUs in inventory. However, this increases the complexity of the supply chain. Furthermore, many e-tailers seem to prioritize sales and growing their market share while neglecting the balance between service and tied up capital. Evidently, e-tailing as a market channel differs a lot from traditional channels, but differences also exist within different e-tailing industries.

MYSIGMA, a management consulting firm in Lund, was wondering how e-tailing differs from traditional retailing and how this affects the way companies work with inventory management. Hence, this master's thesis was initiated.

1.2 Problem Description

E-tailing differs in many ways from traditional retailing. The consumption patterns, campaigns, return flows, assortment ranges, and distribution structures are some of the areas where conditions in e-tailing and traditional retailing may differ.

In e-tailing it is easy for the customers to click and enter the website to buy products. This suggests that it is easy for customers to make single item purchases, while the effort of getting to a store indicates a greater effort. However, many e-tailers charge their customers for shipping. This might lead to purchases of greater value or multiple-item purchases in order to justify the shipping cost.

Within e-tailing, campaigns are easy to initiate, they attract customers and they clear inventory space. However, campaigns could make inventory control more difficult as they affect demand.

Return flows in e-tailing are bigger than in retailing. Customers have the right to return online purchases within a specified time frame so there is a possibility to purchase more than one variant of a product (e.g. different sizes) to then return all but one. As products are returned, a portion of the products that are taken from the inventory are put back, which may lead to more complex inventory control.

Many e-tailers offer a wide assortment to attract as many unique customers as possible; the goal of this strategy is, simply put, to be able to satisfy the needs of a large range of customer segments. This in turn leads to more complex inventory control. Furthermore, goods are sent to the end customer instead of to the stores, and usually fairly quickly, which puts pressure on having efficient distribution options.

These conditions create challenges for e-tailers and they struggle to become profitable. Warehousing, warehouse sizing, inventory targets, and the planning process are areas where MYSIGMA has seen that e-tailers experience problems. In addition, cost drivers in e-tailing and traditional retailing may differ. E-tailing is now in a situation where costs are set against service, and it is possible that many struggle to reduce costs, e.g. those related to tied up capital and inventory handling, whilst keeping a high service level to the customer.

1.3 Purpose

The purpose of the thesis project is to study how e-tailing as a market channel impacts inventory management in a company.

1.4 Delimitations in Scope

Only B2C-companies, i.e. companies that sell directly to end customers, will be studied. In order to keep the market of the companies similar, the project is geographically limited to the Nordic countries. Also, the project will exclude retailers of perishable items such as food.

1.5 Thesis Disposition

This thesis is divided into seven chapters: Introduction, Methodology, Frame of Reference, Empirical Study, Case Analysis, Cross-case Analysis, and Dis-

cussion.

1.5.1 Introduction

This chapter introduces the reader to the background, problem, and purpose of the thesis. It also includes delimitations in scope and thesis disposition.

1.5.2 Methodology

This chapter describes different ways of conducting a master's thesis project and what approach was chosen for this thesis. The chapter includes the scientific approach, research process, research strategy, literature review, data collection, interviews, and quality assurance.

1.5.3 Frame of Reference

This chapter introduces the reader to the role of inventory, inventory management and profitability. Furthermore, it reviews existing literature regarding effects of e-tailing as a market channel and presents some data about customer requirements.

1.5.4 Empirical Study

In this chapter, the multiple case study is presented. The case studies include interviews and reviews of annual reports.

1.5.5 Analysis

The case studies are analyzed on company level, with regards to the effects of e-tailing, as well as inventory management.

1.5.6 Cross-case Analysis

The analyses conducted in the previous chapter are synthesized, and conclusions are drawn. The conclusions are summarized in figures.

1.5.7 Discussion

This chapter includes discussion about the fulfillment of purpose, contribution to theory, as well as limitations and suggestions for future research.

Chapter 2

Methodology

This chapter provides an overview of how the thesis project was conducted, including the choice of scientific approach, research process, research strategy, and approach to literature review. The research strategy, multiple case studies, as well as how quality was ensured in the case studies are described in detail. A summary of the used methods and the thesis process are presented at the end of the chapter.

2.1 Scientific Approach

According to Gammelgaard (2004), there are three main methodological approaches within logistics research; the analytical approach, the systems approach, and the actors approach.

2.1.1 The Analytical Approach

In the analytical approach, reality is assumed to be objective, and patterns and causal relations can thus be analyzed and revealed through research. This approach assumes that each concept can stand alone. It is important that the researcher does not interact with the research object, in order not to alter the conditions or results. Typically, this means that the researcher finds explanations, generalizes the results, and uses this to forecast future events (Gammelgaard, 2004).

2.1.2 The Systems Approach

As opposed to the analytical approach, which deals with reality by decomposing it into small parts and analyzing these in isolation, the systems approach instead looks at the interactions between the parts - it is a holistic approach. The researcher aims to identify the system parts, and understands systems by analyzing and comparing cases. This way, a pragmatic solution with the potential to work in practice can be achieved. As opposed to the analytical approach, the researcher needs to be in close contact with the research object; testing different theories and influencing the research object (Gammelgaard, 2004). Arbnor and Bjerke (2004, p. 102) explain the general idea behind the Systems Approach in similar words; as a "framework by which a creator of knowledge can analyze and/or describe any group of objects that work in concert to produce some result". Further, they argue that the idea behind the systems approach was that by analyzing the whole, properties can be distinguished that would not have been distinguished had the components been analyzed in isolation.

2.1.3 The Actors Approach

Finally, the actors approach is contextual and asserts that reality is not objective; it is the result of social constructions. In essence, this means that external cause-effect-relations cannot be used to make predictions; instead the intentions of people are used. Mainly qualitative studies are used to survey intentions, with the purpose of understanding reality (Gammelgaard, 2004).

2.1.4 Scientific Approach in This Thesis

This thesis investigates elements of inventory management and e-tailing factors affecting inventory management. It aims to understand parts of the system and how these parts interact, and to reach knowledge that is actionable. In this thesis project, interviews are conducted as part of case studies, which form the basis of knowledge. The pursued knowledge is qualitative in nature, and the goal is to reach conclusions that can help companies in practice. These statements largely suggest that the approach used in this thesis project can be characterized as a systems approach.

2.2 Research Process

There are three main research processes, according to Kovacs and Spens (2005). These are deductive, inductive, and abductive.

2.2.1 Deductive Process

In the deductive research approach, you start with a theoretical framework. You then draw theoretical conclusions and develop hypotheses or propositions. The third step is to test these hypotheses and finally draw general conclusions depending on the results of the tests. This process either confirms or discards the hypotheses (Kovacs and Spens, 2005).

2.2.2 Inductive Process

The inductive research approach can be seen as the opposite of the deductive approach. It starts with real-life observations from empirical studies and tries to create theoretical conclusions. This process in turn often results in new theory (Kovacs and Spens, 2005).

2.2.3 Abductive Process

The abductive research approach uses prior theoretical knowledge and tries, through empirical studies, to observe real-life situations which deviate from the theory. To close the gap between prior theoretical knowledge and real-life observations, an iterative process of finding new matching theory and conduct more empirical studies starts. The process results in new theory or new hypotheses (Kovacs and Spens, 2005).

2.2.4 Research Process in This Thesis

This thesis studies a relatively new phenomenon and tries to reach new insights. Hence, an abductive research approach is suitable. As seen in Figure 2.1 an iterative process between theoretical studies and empirical studies is the basis for conducting this research.

2.3 Research Strategy

There are four main research strategies when conducting a study: Surveys, Case studies, Experiments, and Action research (Höst et al., 2006). There are situations when all research strategies are relevant as well as situations when some strategies are more attractive to use (Yin, 2003).

2.3.1 Survey

When describing a phenomenon, a survey is useful. Surveys compile and describe occurrences of specified objects by studying individual units from a population. If the population is small, all units can be studied. For a bigger population, only a sample can be studied. The sample can be chosen randomly or systematically.

2.3.2 Case Study

The case study has a distinct advantage when contemporary events are evaluated with "how" or "why" questions. It describes a specific real-life case or set of cases in-depth and aims to cover contextual conditions. However, it does not claim to create general conclusions applicable to other cases. When a series of case studies are conducted, the conclusions have a higher probability of finding a pattern (Höst et al., 2006; Yin, 2003).

2.3.3 Experiments

When trying to find cause-effect relationships as well as explaining what causes different phenomena, experiments are useful. Experiments observe different phenomena by changing variables in a structured way. Compared to surveys and case studies, using experiments is a more structured method of determining causality among variables (Höst et al., 2006).

2.3.4 Action Research

When trying to solve a specific problem, action research is a useful method. Action research uses four steps to improve something at the same time as it

is observed. Firstly, a situation is observed in for example a survey or a case study. Secondly, solutions for improvements are proposed and also carried out. Thirdly, the solutions are evaluated and analyzed. Finally, if the solution works, it should be permanently implemented. If problems still occur, the process is repeated to find a new solution (Höst et al., 2006).

2.3.5 Research Strategy in This Thesis

This thesis aims to describe how e-tailers use inventory management, how it compares to inventory management in retailing, as well as why there are differences. Finally, it tries to describe how inventory management in e-tailing can be improved. Hence, multiple case studies is a suitable research strategy.

2.4 Literature Review

As part of understanding what has been written about the topic of inventory control in e-commerce and to lay a foundation for the rest of the thesis project, a literature review was conducted. Rowley and Slack (2004, p.31) define a literature review as "a summary of a subject field that supports the identification of specific research questions". They further assert that a literature review should include different types of sources, e.g. journal articles, books, and resources on the web. There are five steps to a literature review: scanning, making notes, structuring the literature review, writing the literature review, and building a bibliography. There are four main search strategies for literature reviews, as seen in Table 2.1 (Rowley and Slack, 2004).

Table 2.1: Literature search strategies

Strategy	Description
Citation pearl growing	One or a few sources are used as a starting point to find other relevant sources in a straightforward way.
Briefsearch	By using this approach, a few sources are retrieved in a non-precise way. These can then be used as a starting point for further research.
Building blocks	Taking precise terms and extending them by synonyms and related terms, a thorough search is conducted.
Successive Fractions	Searching within a limited set of sources in order to find relevant ones.

For this thesis project, citation pearl growing, briefsearch and building blocks were used - the search was initiated in a crude way, to get a starting point from which a few relevant sources were retrieved via citation pearl growing. After that, more systematic and relevant searches were conducted by defining search terms, synonyms and other related terms in different combinations. After that, citation pearl growing was used again, in order to further find relevant sources.

For the literature review, the searches were conducted in LUBsearch and Google Scholar. Search terms such as "inventory control" and "inventory management" were used in combination with terms like "e-commerce" and "e-tailer".

2.5 Data Collection

In case studies there are six commonly used sources for data collection: secondary sources such as documentation and archival records, and primary sources such as interviews, direct observations, participant observation, and physical artifacts (Yin, 2003). Primary data is original data collected for a specific research goal, and secondary data is data that was originally collected for a different purpose and is reused for another research question (Hox and Boeije, 2005). To optimize the use of these sources, it is important to use multiple sources, create a case study database, and to maintain a chain of evidence (Yin, 2003).

2.5.1 Secondary Data

Secondary data is data that was originally collected for a different purpose and is reused for another research question (Hox and Boeije, 2005).

Documentation

Documents of different types, for example letters, agendas, administrative documents, and newspaper articles, are relevant in many case studies. They may not always be accurate and can often be biased, which is why they should always be used with care. In case studies, documents can be used to compare with other sources of evidence (Yin, 2003).

Archival Records

Archival records, such as computer files and records, can often be relevant in case studies. In some cases these records can be used for extensive retrieval and quantitative analysis. In general, archival records should be used with

care, as they may have been produced for a specific purpose and for a specific audience. Furthermore, a main difference between documentation and archival records is that the latter often is highly quantitative and precise, and may also have privacy classifications, limiting the accessibility (Yin, 2003).

2.5.2 Primary Data

Primary data is original data collected for a specific research goal (Hox and Boeije, 2005).

Interviews

The interview is an important source of information for the case study. Interviews can fall in three categories: structured, semi-structured, or unstructured. The structured interview follows a predefined list of questions, while the semi-structured interview uses questions as a guide but the order and formulation of the questions can vary depending on how the interview proceeds. The open interview lets the interviewee control the topics and the interviewer makes sure that the relevant area of the research is covered (Höst et al., 2006).

Direct Observations

If the phenomenon of interest is contemporary, observations are possible. Direct observations include observations of events from the outside. Data from observations can provide information that is difficult to obtain from other sources, e.g. behavior of people or how something is actually used (Yin, 2003).

Participant Observation

When a phenomenon is observed from a participant it provides the opportunity to access events that otherwise would not be possible. It is also possible to try different roles in the situation. However, the risk for biased data is higher than in direct observations (Yin, 2003).

Physical Artifacts

A technological device, a tool, or some other physical evidence from the case study site is commonly called physical artifacts. These artifacts have low potential in most case studies but can sometimes reveal useful information (Yin, 2003).

2.5.3 Data Collection in This Thesis

This thesis uses interviews to collect data about how the companies perceive the phenomenon of interest. In addition, archival records such as annual reports are used to gain more information about the companies.

2.6 Interviews

One of the easiest ways to gain information about how a person perceives a phenomenon is by asking questions. To ensure that an interview can be used as a systematic method and that the responses can be used for further analysis, specific requirements must be fulfilled. In science, the most common requirements are:

- Reliable answers
- Valid answers
- Conclusions are possible to critically review (Lantz, 1993).

Interviews do not claim to give statistical knowledge. Furthermore, since the respondent may not always be willing to disclose what they know or have the desired information, interviews are dependent on the level of questioning skills and analysis of the interviewer (Griffee, 2005).

2.6.1 Choosing Type of Interview

The type of interview best suited for a thesis depends on existing knowledge about the phenomenon of interest (Lantz, 1993). Table 2.2 describes the relationship between existing knowledge, interview approach, purpose of interview, problem formulation, type of interview, and conclusion method.

Table 2.2: How pre-existing knowledge affects the interview (Lantz, 1993)

How Much Knowledge Exists About the Phenomena? (by increasing understanding)	Basic understanding that implies how the phenomena should be viewed	Tentative model that comprises some important concepts	Developed model that includes important concepts	Theory that includes concepts with mutual hypothetical relations
Interview Approach	Ideographic - aiming for specific knowledge	Ideographic with some nomothetic elements	Nomothetic with some inductive (see Section 2.2.2) elements	Nomothetic - aiming for generalizable knowledge
Purpose of Interview	Increase understanding of phenomena	Describe and define phenomena	Find relationships between concepts	Verify relationships between concepts
Problem Formulation	What individual importance does factor 1 have?	Does factor 1 provide the possibility of further understanding of factor 2?	Are factor 1 and factor 2 related?	Does an increase in factor 1 lead to an increase in factor 2?
Type of Interview (increasingly structured)	Unstructured	Unstructured Direct	Semi-structured	Structured
Method for Conclusion	Induction			Deduction

Type of Interviews in This Thesis

Existing knowledge in e-tailing inventory management can be viewed as both a tentative model and a developed model. Furthermore, the aim is that the findings will be mostly generalizable (nomothetic) as opposed to specific (ideographic), with some inductive elements, and the purpose of the interview is to find differences and similarities between concepts in e-tailing and retailing, and how the differences affect inventory management. Therefore, the interviews are conducted in a semi-structured manner.

2.6.2 Planning the Interview Content

The purpose of interviews is to empirically study the phenomena of interest. The first step in planning the interview content is to choose relevant concepts, which are in line with the overall background and problem description of the thesis. The next step is to specify the concepts to fit the purpose of the thesis. This can be done either by defining them through theory or by operationalizing them. Operationalizing means that the concept is specified by what is measured. When planning an interview, the gap between theory, concept definitions, and operationalizations should be minimized to keep reality and theory closely matched. The third step is to create questions. It is common to divide questions into five areas: fact, judgment, opinion, attitude, and emotion (Lantz, 1993).

2.6.3 Creating the Interview Guide

The purpose of the interview guide is to contribute with structure and guidance for the interview. It should be a written list of question areas and questions that match the type of interview to be conducted. The first part of the interview guide should describe the purpose and problem description of the thesis, as well as the setup of the interview. The second part of the interview guide should put the interview into context. Questions related to the the respondent and his/her background can help with this. The third and most important part of the interview guide is research questions. It is vital that questions are asked in a logical order for the respondent. The fourth and final part of the interview guide is a conclusion of what has been said. This part helps the interviewer to find out if any crucial part has been forgotten (Lantz, 1993). The interview guides used in this thesis project can be found in Appendix A.

2.6.4 Analyzing Interview Data

In general, analyzing qualitative data means interpreting and synthesizing the data. The raw data from an interview is descriptive in its nature and to derive something more from it, the analysis has to differentiate the experience and find the hidden connections (Lantz, 1993).

One strategy to analyze interview data is to become very familiar with the data. By going over notes many times, analytical categories appear. The understanding for, and interpretation of, what the respondent talks about becomes clearer the more the data is reviewed. By using this strategy, the analytical categories are grounded in the data and bias from the evaluator is therefore minimized. Another strategy is to create categories to use in the interview. Behind these categories and questions, there should be hypothe-

ses. The two strategies work well together. The more knowledge about the interview purpose, the more use of pre-selected categories (Griffee, 2005).

2.7 Ensuring the Quality of the Case Study

In this section, the quality of the case study method is evaluated by reviewing four different aspects, which are commonly used to ensure quality in an empirical study (Yin, 2003):

- *Construct validity*: establishing correct operational measures for the concepts being studied
- *Internal validity*: establishing a causal relationship, whereby certain conditions are shown to lead to other conditions
- *External validity*: establishing the domain to which a study's findings can be generalized
- *Reliability*: demonstrating that the operations of a study - such as the data collection procedures - can be repeated, with the same results

The aspects, paired with case study tactics in different research phases, can be seen in Table 2.3.

Table 2.3: Case Study Tactics for Four Design Aspects (Yin, 2003)

Aspect	**Case Study Tactic**	**Phase of research in which tactic occurs**
Construct validity	Use multiple sources of evidence	data collection
	Establish chain of evidence	data collection
	Have key informants review draft case study report	data collection
Internal validity	Do pattern-matching	data analysis
	Do explanation-building	data analysis
	Address rival explanations	data analysis
	Use logic models	data analysis
External validity	Use theory in single-case studies	research design
	Use replication logic in multiple-case studies	research design
Reliability	Use case study protocol	data collection
	Develop case study database	data collection

2.7.1 Construct Validity

Assuming construct validity can be problematic due to the phenomenon of bringing in subjective views, and an inability to define an operational set of measures, or in other words to define what is actually being studied. Yin (2003) suggests two steps that need to be covered in order to achieve construct validity; if e.g. you are studying change, it is important to select specific types of changes to study, and to demonstrate that the selected measures of this change do indeed reflect the specific types of change that have been studied. In other words, it's important to select parameters for the studied phenomenon, and to show that the data that you have chosen does indeed represent those parameters accurately.

Looking at the first row in Table 2.3, this thesis project includes at least the first and the third tactic, i.e., multiple sources of data are used as multiple companies are interviewed and at least one more source is used in each company, i.e. annual reports; and having key informants such as the LTH supervisor as well as the MYSIGMA supervisor reviewed the draft case study

report, and having the interviewees from the companies review the empiricism.

2.7.2 Internal Validity

Yin (2003) argues that two points need to be made regarding internal validity - first that it is only a concern for so-called causal case studies, where the investigator tries to determine whether or not a certain event led to another event. For descriptive or exploratory studies, this logic is not applicable. Second, there is a concern over making inferences, i.e. concluding that an event that cannot be observed directly was the result of an earlier occurrence. There are four main tactics for ensuring internal validity in a single- or multiple-case design - pattern matching, explanation building, addressing of rival explanations, and use of logical models. *Pattern matching* involves comparing an empirical pattern with one or several predictions. If the patterns match, the findings can be used to strengthen the internal validity of the study. *Explanation building* is similar to pattern matching but has a more specific focus and is more difficult. The tactic is primarily relevant to explanatory case studies, and it involves making hypotheses and iteratively comparing the findings to alternative hypotheses and revising the explanations. *Addressing of rival explanations* is a general analytic strategy where rival explanations are defined and tested against each other. In general you can say that the more rival theories you address, the more confident you can be about your findings. *Logic models* bring events together in cause-and-effect patterns in complex chains over time. Empirically observed events are matched with future predicted events.

The authors' approach for the thesis project mainly uses rival explanations and logic models, as different explanations are sought out and tested against each other, while logically deducting causes and effects of different factors.

2.7.3 External Validity

Simply put, achieving external validity means that the results from the study are generalizable to a broader extent, as opposed to only applicable to the case study in question. One could argue that this is a problem for case studies, since single cases offer a poor basis for generalizing. However, case studies as opposed to survey research do not rely on *statistical* generalization but on *analytical* generalization. Typically, this can be tested by deriving theories and testing them in new environments, and if they produce similar results, this supports the theories. For this thesis project, as multiple cases are studied, the authors will to some extent be able to test theories derived from the case studies in other companies.

2.7.4 Reliability

A case study can be said to be reliable if a later investigator can redo the case study by following the exact same methods and steps and arrive at the same findings and conclusions. In order for this to be possible, it is important to document the exact steps taken (i.e. use a case study protocol). This is especially important when multiple case studies are used, as in this thesis project Yin (2003). For this thesis project and especially the case study, all steps are documented in detail in order to ensure reliability.

2.8 Summary

A summary of the work process can be found in Figure 2.1

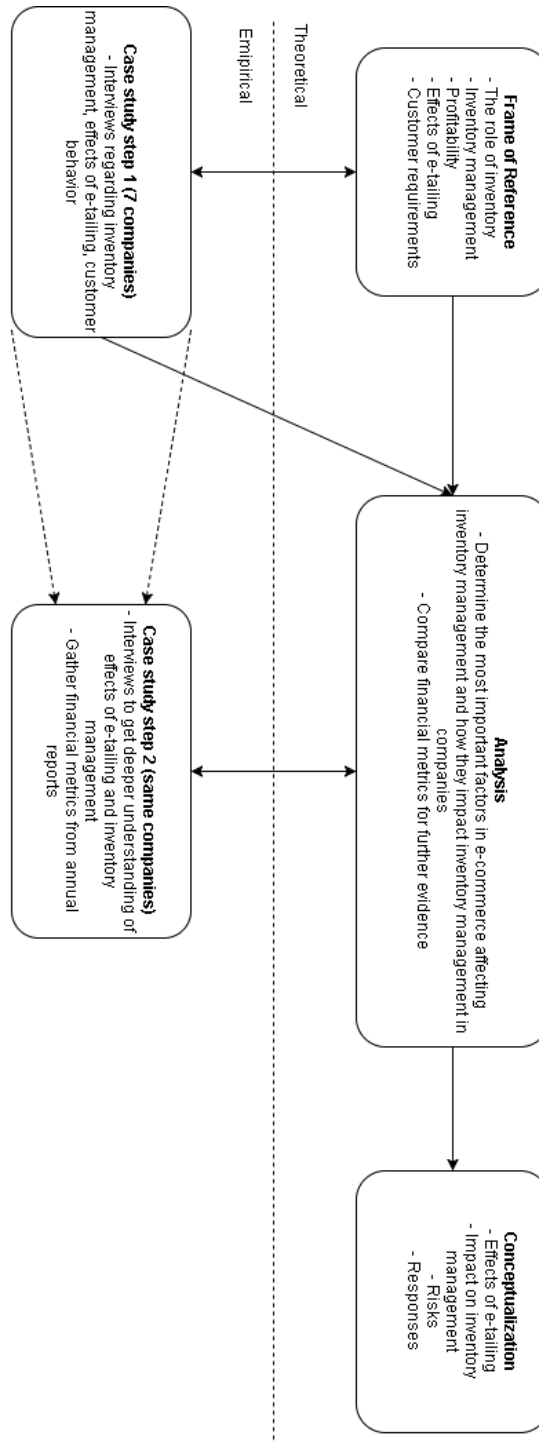

Figure 2.1: Work process

As can be discerned in Figure 2.1, the work process did follow certain steps of theoretical and empirical nature, but it has not been a linear process - rather, it has been an iterative process, which was expected. This may not be entirely clear when looking at the thesis disposition, but that is by design; for ease of reading, the thesis's disposition is, in contrast with the work process, more or less linear. Either way, the following activities have been conducted:

1. Literature was searched for and studied in order to build an understanding of e-tailing and how e-tailing differs from bricks-and-mortar retailing, with regards to inventory management, customer preferences and behavior, profitability, supply chain and more. The searches were conducted via university-provided online databases. General differences between e-tailing and retailing were mapped.

2. Around 15 companies (pure e-tailers as well as so-called clicks-and-mortar retailers) were contacted based on MYSIGMA's preferences and specifications as well as the authors' own ideas, of which eight accepted to participate, and of which seven were included in this report. An interview guide, with specific areas and questions was drafted, and improved upon in consultation with an employee from MYSIGMA. A group of structured questions were also added to the interview guide (see Appendix A). Interviews were conducted, and most of them were performed as audio calls via telephone or using the computer application Skype (with mostly audio calls, except for the first interview with Adlibris which was conducted with video). Also, two were conducted in-person; the first interview with Coolstuff and the first interview with Panduro, both in Malmö. The calls/conversations were recorded and later transcribed.

3. The outputs from steps 1 and 2 were compared and analyzed in order to see what was missing, and in essence what areas seemed most interesting for the next round of interviews. This mainly included analyzing the interviews, and the literature on inventory management and customer preferences. Output from all the interviews were analyzed, on a company by company level. Subsequently, a cross-case analysis was conducted in an attempt to synthesize and generalize the analyses.

4. As a result of the previous steps, focus areas for the second set of interviews were chosen, and a new interview guide was created (see Appendix A). All seven companies previously interviewed were interviewed again, within a more limited scope. The same persons were interviewed, except for the interview with Adlibris, where only one of the two employees that

had participated in the first round of interviews (Sarah Ahnström) participated in the second round. This time, all interviews were conducted as audio calls via phone or via Skype. The interviews were recorded and transcribed, and sent to the companies for approval. Additionally, annual reports were analyzed with regards to e.g. inventory turnover and asset turnover.

5. The output from the synthesis and analyses were integrated in a cross-case analysis. Conclusions were drawn with the aim of helping e-tailers and multi-channel retailers with their e-tailing strategy regarding inventory management. Specifically, the conclusions aim to help e-tailers and multi-channel retailers understand the fundamental differences between e-tailing and retailing and to describe how these differences affect the inventory management. Furthermore, risks and responses to these effects are presented, and further questions specifically for multi-channel retailers are introduced.

A summary of the research methods chosen for this thesis is provided in Table 2.4.

Table 2.4: Choice of methods

	Methods	**Thesis choice**
Scientific approach	Analytical Systems Actors	Systems
Research process	Deductive Inductive Abductive	Abductive
Research strategy	Experiment Survey Case study Action research	Case study
Sources of evidence	Documentation Archival records Interviews Observation Physical records	Interviews Archival records

As Table 2.4 shows, this thesis uses a system approach on the scientific level, an abductive research process, case studies as research strategy, and as sources of evidence, interviews and archival records are used.

Chapter 3

Frame of Reference

Literature and theory are introduced in order to enable an understanding of the rest of the report and establish a basis for the analysis. Firstly, the role of inventory as well as inventory management are presented. This is followed by a comparison of e-tailing and retailing regarding some of the most significant areas. Lastly, a brief analysis is conducted in order to limit the focus for the succeeding chapters, wherein the interview results are introduced and analyzed against theoretical concepts introduced in this chapter.

3.1 The Role of Inventory

All accumulation of products at a node requires an explanation as to why the product flow has been stopped. In general no one wants to keep inventory, but in many cases inventory is kept to mitigate uncertainties in the flow of products. Inventory can be used for several different reasons; for example to meet current demand, to meet future requirements, or as safety in case of reduced supply capacity (Muckstadt and Sapra, 2010).

Customer relations is one of the reasons to keep inventory levels high, as many companies see it as a competitive advantage that the customers always have access to the products when they want them (Lumsden, 2006).

Keeping service levels high often means high inventory levels. Furthermore, logistical efficiency can be described in terms of customer service, logistical costs, and tied up capital. The challenge for many companies is to find a balance between these areas, as improving one can affect another negatively. As an example, decreasing inventory levels reduces tied up capital but can also worsen customer service. Figure 3.1 shows the connections in logistical efficiency, also called the logistical goal mix (Lumsden, 2006).

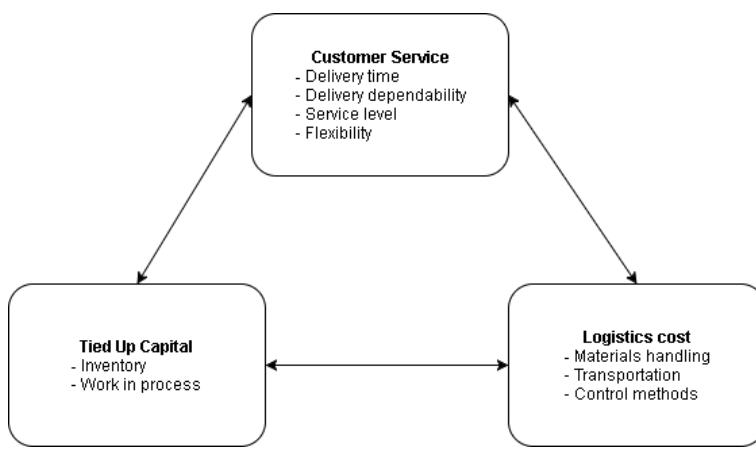

Figure 3.1: Logistical efficiency (Lumsden, 2006)

There are arguments both for increasing and decreasing inventory, and in practice a balance needs to be found. Elsayed and Wahba (2016) argue that the inventory-performance relationship can depend on the organization's life cycle stage. They test four hypotheses: that in the initial growth stage as well as the maturity stage, an increase in inventory levels is negatively correlated with organizational performance (defined as return on assets and return on equity); and that in the rapid growth stage as well as the revival stage (defined as the stage after maturity, where an organization either declines or makes revival

efforts and grows again), they're positively correlated. The results from the study indicate that all four hypotheses are correct. The study seems to suggest that whenever a company considers gaining market shares the highest priority (and thus experience rapid growth), it is important to be able to match the demand by keeping inventory levels high.

3.2 Inventory Management

Managing inventory means balancing a lot of factors, as described in the previous section. One major goal of inventory management is to keep inventory levels down in order to free up capital for other purposes. This is sometimes in conflict with other objectives. A purchaser may for example want to order larger batches to get discounts and keep the unit prices down, and the marketers probably want to keep inventory levels of finished goods high to ensure high service levels to the customers (Axsäter, 2006).

Muckstadt and Sapra (2010) describe inventory management as "determining policies that create and distribute inventories most effectively". Furthermore, they suggest four important questions that need to be answered in connection to inventory management:

1. What items should be stocked in a system?
2. Where should an item be stocked?
3. When should an order be placed?
4. How much should be ordered when an order is placed?

3.2.1 Factors Affecting Inventory Management

In order to answer the above questions, it is vital to understand the underlying factors of inventory policies and models.

Supply Chain Structure

Supply chains often consist of many levels, also called echelons, which make the structure very complex. Furthermore, different economic entities often own the different echelons, making inventory management even more difficult. To ensure inventory is delivered on time and cost-efficiently, inventory policies and information flows should be coordinated across the entire supply chain. As supply chains become global they become affected by national and regional policies, further increasing the complexity (Muckstadt and Sapra, 2010).

Product Characteristics

The characteristics of the products and the number of products are important to consider when creating inventory policies. Having a large number of products with different characteristics makes designing the warehouse difficult, and limits the quantity that can be ordered of each size.

Obsolescence is an important product characteristic to consider. Some products have very short life cycles, affecting inventory management drastically. Products with closely linked attributes create the possibility of substitutions. If a stockout of one product occurs, the customer might buy another instead. Therefore, substitutions make accurate demand planning difficult. Customer requirements for different products can also vary significantly. For some products, the customers require instant access, while for others, they are willing to wait. Another important difference of products is whether they are consumable or repairable. Inventory of these two groups of products will be managed differently since repairable products are dependent on spare parts. (Muckstadt and Sapra, 2010).

Demand

It is very common in most commercial markets that a small part of the products represents a large part of the sales. This is commonly known as the Pareto law, or the 80-20 rule. Specifically, the Pareto law suggests that 20 % of the products stocked account for 80 % of the transactions. The rule applies in many different types of cases, e.g. a small number of customers usually accounts for a large part of a company's revenue (Burrell, 1985). In inventory management, this analysis is important since demand for low-volume products is generally highly variable, leading to larger forecasting errors (Muckstadt and Sapra, 2010).

In order to know how much to produce or order it is necessary to predict future demand, or to forecast. In these predictions, it is necessary to know what kind of variability the system has, and adjust the safety stock thereafter. The forecasting periods are fairly short; usually less than a year. In order to forecast, companies usually either use previous demand data or, when e.g. forecasting a component, making production plans for the final product and in that way obtaining the demand for the considered component. In addition, it is important to consider sales campaigns, competitor entries and similar. The most common approach is however to use historical data to forecast future demand (Axsäter, 2006).

Inventory Costs

The fourth factor affecting inventory management is cost. Purchasing, holding, stockout, and obsolescence costs are accounted for in most models. Purchasing cost refers to the cost of acquiring goods. The holding cost consists of the opportunity cost of not using the capital for other purposes, as well as insurance costs, taxes, and warehouse operation costs. If the inventory on hand is not enough to meet the demand, a stockout cost must be accounted for since lost sales might occur as a result. The obsolescence cost occurs when new products are released, which decreases the value of products in inventory (Muckstadt and Sapra, 2010).

Lead Times

Lead time represents the "lag", or time between an order is placed and the time it is received. Due to this lag, especially if it is relatively long, it can be difficult to respond quickly to variations in demand. It is also not unusual for the lead times to vary, making it difficult to balance the inventory to avoid stockouts (Muckstadt and Sapra, 2010).

3.3 Profitability

One of the main goals of logistics is to maintain or improve the profitability of the organization. A common way of measuring profitability is Return On Assets (ROA) which indicates how efficiently an organization uses its assets to generate profit. Equation 3.1 describes the return on assets closer (Lumsden, 2006).

$$\begin{aligned} \textit{Return On Assets} &= \frac{Profits}{Assets} = \frac{Profits}{Revenue} \cdot \frac{Revenue}{Assets} \\ &= \textit{Profit margin} \cdot \textit{Asset turnover} \end{aligned} \tag{3.1}$$

3.3.1 The DuPont Model

The Du Pont Model uses the income statement and balance sheet to determine the Return On Assets. Both of these parts can be broken down to be as precise as the user wants. This means that every user can create their own version of the Du Pont Model and there is not one universal diagram (Lumsden, 2006). An example of how the Du Pont model can look is shown in Figure 3.2. Since companies can account for their operating expenses in different ways, these fields are empty.

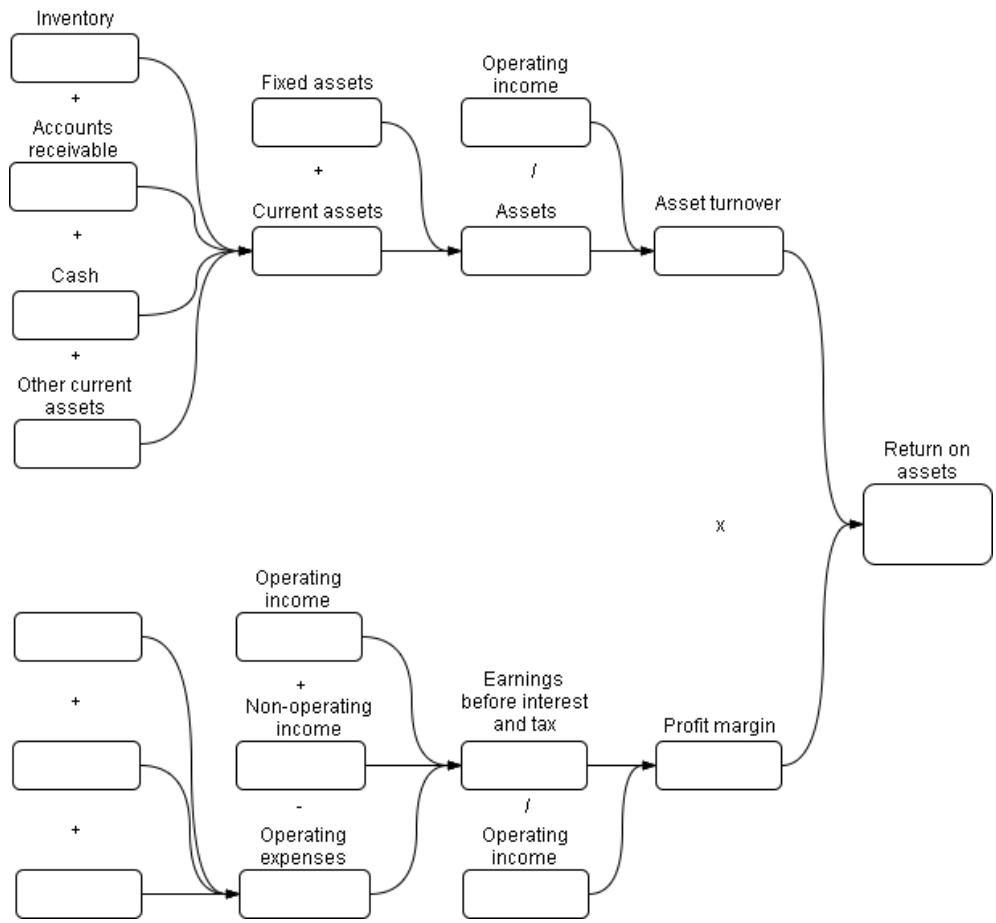

Figure 3.2: An example of the Du Pont model

One of the basic goals of the Du Pont Model is not only to determine the profitability, but also to to look at the efficiency of the organization. By planning the ROA for a given time the organization can break it down into goals for each part of the model. The model can also be used in the opposite way. By starting at each component of the model the company can determine realistic goals for the ROA (Lumsden, 2006).

3.4 Effects of E-tailing

Online retailing as a market channel has created a new set of features and conditions for selling products. Few learning points from traditional bricks-and-mortar are applicable in this relatively new channel (Heinemann and Schwarzl, 2010). Furthermore, e-tailing is becoming more and more integrated with the

traditional bricks-and-mortar retailing. Many retailers are expanding from only selling in physical stores to selling online as well, also called clicks-and-mortar retailing or multi-channel retailing. Today, an increasing amount of e-tailers are opening up physical stores as well (Agatz and Fleischmann, 2008).

3.4.1 Geographical reach

One of the main benefits of e-tailing is the global reach, meaning the possibility to reach customers practically anywhere in the world, whereas traditional retail stores typically serve specific geographical areas. This increases the potential customer base for e-tailers and bring multiple consumers and retailers together (Kumar et al., 2016). Online shopping also means customers can easily compare price, assortment, delivery times, and review other customers' experiences from different companies, creating a tough competitive landscape. The global landscape also makes it difficult for companies to create customer loyalty. To succeed as an e-tailer, customer-oriented practices are important (Heinemann and Schwarzl, 2010).

3.4.2 Assortment

Heinemann and Schwarzl (2010) describe the goal of e-commerce marketing as "preparing an appropriate product range to appeal to customers". They also state that the range of products an e-tailer offer is often broader than in the traditional bricks-and-mortar store. This is made possible by the unlimited space a company has on their website. A store on the other hand has a limited shelf space. E-tailers are limited in what they can keep in inventory but can, depending on strategy, offer products they do not keep in inventory themselves. A broader range of products offered may lead to increased customer loyalty as the e-tailer can emerge as the top-of-mind website for one-stop shopping (Srinivasan et al., 2002).

Many sales and marketing organizations create new products constantly to explore new markets and to meet emerging consumer needs. Because of this it is common that the product portfolio and the assortment mix become more complex over time. This complexity tends to drive up supply chain costs since the company must hold inventory of a wide range of low-volume products, to reach wanted service levels. However, some of the low-volume products have benefits, such as attracting more customers, which can outweigh the increased costs (Glatzel et al., 2011).

Muckstadt and Sapra (2010) show that data from e-tailers indicate that, in general, around 10% of the assortment accounts for 80 % of the demand. This means that a large part of the assortment is low-volume products.

3.4.3 Campaigns and Promotions

An important and common way of attracting customers to the online store is using price promotions. This is in part possible because the costs of selling online are often lower than offline, since no physical stores are used (Peinkofer et al., 2015). As the Internet has increased market transparency, customers can easily compare prices of a large number of companies. Hence, the price pressure has grown large for e-tailers. One way to avoid the direct price pressure is to sell own brands. By being the only one offering a specific brand, it is impossible for customers to find lower prices for that product (Heinemann and Schwarzl, 2010). The fact that e-tailers easily can change prices, compared to bricks-and-mortar retailers, makes the pricing very dynamic. Furthermore, they can use dynamic pricing for the shipping cost as well. Hence, price promotions can be used to create short-term demand impact. The differences between the channels also creates the question whether to use the same price promotions online and in the physical stores, for multi-channel retailers (Agatz and Fleischmann, 2008).

According to Reibstein (2002), low product prices and discounts generally work well for attracting new customers, but the kind of customers that they attract are not very loyal - if they find a better deal somewhere else the next time they are looking for something to buy, they will go for that instead. Recommending products, e.g. by having "Top 100 items" or lists of different categories, is another way to promote products to customers to increase sales. The ease of which e-tailers can change what they promote makes the campaigns more dynamic than in bricks-and-mortar retailing (Schafer et al., 2001). The easy access to customer data also creates the opportunity for customized recommendations in for example e-mails or directly on the website (Agatz and Fleischmann, 2008).

3.4.4 Fulfillment and Distribution

In traditional retailing, consumers buy products in physical stores. For the retailer, this means that every store needs to hold some level of inventory and that the distribution center (DC) needs to replenish the stores. In other words, inventory in retailing is commonly held at multiple levels of the supply chain (Mathien and Suresh, 2015). An example of the retail supply chain is visualized in Figure 3.3.

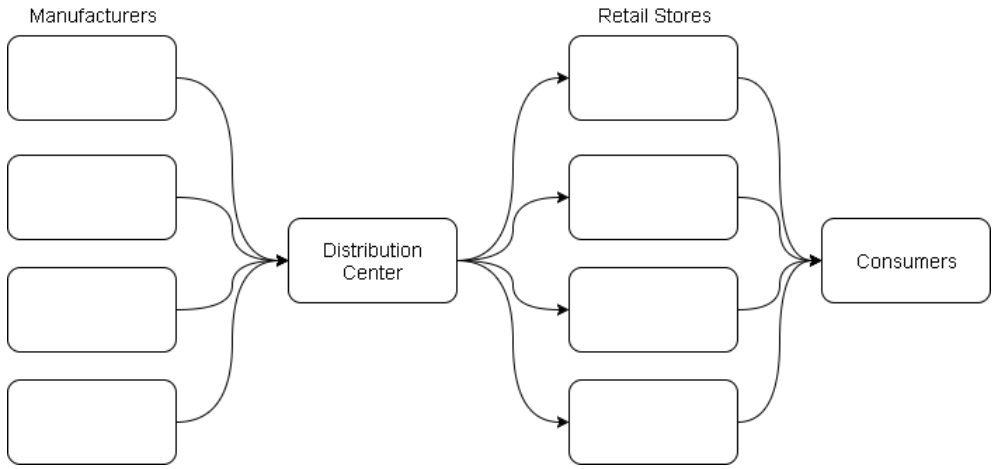

Figure 3.3: The Retail Supply Chain

In e-tailing, the physical stores are substituted with online stores. Instead of buying the products in a store, the customer orders online and recieves the products a few days later. Hence, the e-tailer can centralize the inventory upstream to a distribution center (Mathien and Suresh, 2015). The e-tail supply chain with inventory held at one distribution center is visualized in Figure 3.4.

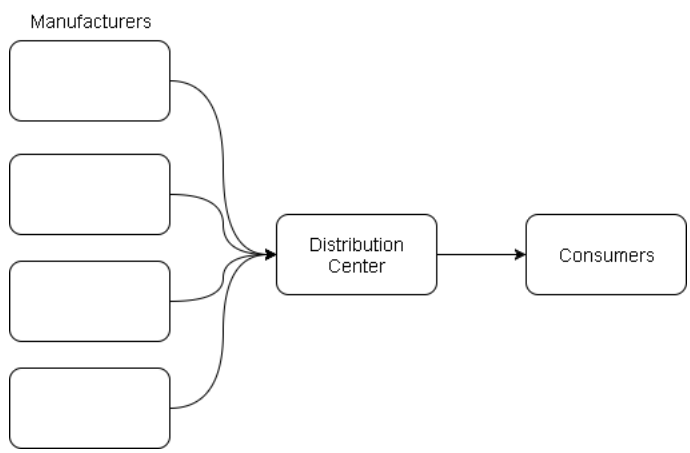

Figure 3.4: The E-tail Supply Chain

By removing the need to keep inventory at several locations near the consumer and replacing it with one level, the total inventory and the cost of inventory handling can be decreased (Mathien and Suresh, 2015).Furthermore,

e-tailing makes it possible to sell products without keeping any inventory. This is most commonly referred to as drop-shipping, meaning that a third party is responsible for fulfilling the orders (Chen et al., 2011).

The significant difference of distribution structures between the channels plays a major role for multi-channel retailers. In this case, the networks can either be integrated, i.e. storing and picking the products in the same distribution center, or separated, i.e. using different DCs. Integrated networks will benefit the inventory management but has higher requirements on the operating solution to achieve the same customer service and efficiency as the separated network (Hübner et al., 2015). Agatz and Fleischmann (2008) also point out the possibility of physical store pick-ups of online purchases, also known as click-and-collect, as another dimension of the multi-channel distribution.

The delivery time is one of the fundamental differences between bricks-and-mortar retailing and e-tailing. When something is ordered online it is to be delivered to the customers within a specified time, an order cycle that usually takes somewhere between 1.5 and 9 days, compared to an in-store purchase where the product is received immediately, and where the total order cycle is around 1-2 hours. In essence, the longer cycle times in e-tailing are due to the extra activities of picking and packing the item for the customer and delivering it to him/her (also known as last-mile delivery), as a result of the physical separation between the customer and the e-tailer (Kumar et al., 2016). The fulfillment and distribution of orders, namely picking, packing and last-mile delivery, are often viewed upon as the biggest cost drivers in e-tailing. (Agatz and Fleischmann, 2008)

In a study by Cardos and García-Sabater (2006), product availability was found to be the most important factor for customers in bricks-and-mortar retailing, and low product availability was a typical example of bad quality (Fleisch and Thiesse, 2007). Hence, the focus can differ between the two supply chains - bricks-and-mortar retailers focus on on-hand availability whereas e-tailers typically focus on delivery time (Li et al., 2015).

3.4.5 Returns

Retailing in general will always include customer returns. The reason for the return can be a defective product, that the product does not meet the expectations of the customer, or simply buyer's remorse. Since buying over the Internet means the customer cannot inspect the product before the purchase, returns in e-tailing are typically higher than in bricks-and-mortar retailing (Guide et al., 2006).

Agatz and Fleischmann (2008) argue that the returns in e-tailing, including reverse last-mile delivery and handling of the products, may also be so costly it

eliminates any economic advantages of the online channel. They also point out a potential cost advantage in multi-channel retailing if customers can return online purchases in the physical stores.

Vlachos and Dekker (2003) discuss the impact of returns on the optimal order quantity. They argue that returns have especially large impact on single period products (items sold during a limited, often short, time period) since returns can occur after the selling period. Furthermore, the time between a product is returned and it is available for sale again is relatively long, leading to possible lost sales due to no availability.

3.5 Customer Requirements in E-tailing

In order to be able to explain what e-tailers can do to improve inventory management whilst not losing customers, the authors argue that it is important to understand what the customers value with e-tailing. Table 3.1 gives an overview of what Swedish consumers see as the biggest advantage of buying things online as compared to in physical stores, and how this has changed from the year 2012 to 2015 (PostNord, 2013, 2014, 2015, 2016a).

Table 3.1: Answer to the question "Which is the single most important reason for buying things online rather than in a physical store?"

	2012	**2013**	**2014**	**2015**
Simplicity	51%	49%	53%	31%
Price	22%	26%	23%	31%
Assortment	21%	15%	16%	21%
Other	6%	10%	8%	17%

The reason (Swedish) consumers buy things online rather than in stores is for its simplicity. More specifically, it's because the consumers can shop whenever they want, in a convenient way that is time-efficient. The other two main reasons for shopping online are a cheaper price and a better/bigger assortment of products. Traditional shopping does however still hold some advantages: the experience is seen as more complete in physical stores, e.g. as you can see and touch the products and interact with sales personnel in the store, as well as instantly getting what you need (or impulsively want). More specifically, among consumers whose latest purchase was in a physical store, one test showed that they mainly did it for "convenience" (30 %), shorter delivery time (29 %), and because they wanted to touch/test the product (27 %) (PostNord, 2016a).

A report conducted by Statista (2016) suggests similar findings as the PostNord reports w.r.t. why customers buy things online; the main reasons have to do with simplicity (it is easy, it saves time, it is always open, it is easy to compare products), lower prices and a larger selection.

Interestingly, when it comes to delivery, customers indicate that the most important aspects are information about the delivery itself (93 %) as well as when the delivery will happen (93 %). Closely following those two aspects are choice of how and where the delivery will take place (88 %), and that returns are free (84 %). Out of the five choices, though still very important, free deliveries were considered the least important (72 %) (PostNord, 2016a).

Another interesting Swedish consumers e-tailing trend is buying from abroad; around 19 % of Swedish e-tailing consumption was from companies outside of Sweden. Also, Swedish companies export abroad, mainly to Nordic countries (PostNord, 2016a).

Furthermore, it appears that the practice of researching products online and then buying them in a physical store (i.e. webrooming) is more common than researching and trying products in physical stores and then buying them online (showrooming). Related to this, customers that engage in shopping via multiple channels tend to spend more money (PostNord, 2016a).

3.6 Concluding Analysis

The authors have identified five areas where e-tailing and bricks-and-mortar retailing experience major differences. Firstly, customers from all around the world can visit an online store, whereas a physical store is limited geographically. Secondly, since there are no physical restrictions, an online store can theoretically offer an almost unlimited assortment. Thirdly, the presentation of a website is easier to change than a physical store (or multiple physical stores), making campaigns and promotions more dynamic and flexible. Also, seeing as the costs of selling online often are lower than in traditional retailing, price promotions can be used more extensively. Fourthly, online purchases mean that the order has to be fulfilled and distributed to the customer, compared to in-store purchases where the customer picks up the product. Lastly, buying online means the product cannot be inspected before the purchase, leading to a larger probability of them being returned.

It seems, however, that geographical reach is closely related to the other effects. For example, the distribution is dependent on how far away the customer is. Furthermore, inventory pooling arises from being able to satisfy the demand of a larger geographical area from one inventory point. Hence, the authors argue that it is more suitable to include geographical reach in the other effects, meaning it won't be researched separately moving forward.

This thesis investigates how e-tailing as a market channel affects inventory management. The goal is then to distinguish, through literary and empirical analysis, factors that e-tailers should focus on in order to improve their inventory management. However, customer requirements need to be taken into consideration when doing this, so that e-tailers do not lose customers, and so that overall profitability can be improved. Figure 3.5 below shows a summary of the effects of e-tailing and the impact on inventory management that were presented in Sections 3.4 and 3.2. Out of the Inventory Management factors, it seems like Supply Chain Structure and Demand are the ones that are most heavily impacted by the effects of e-tailing.

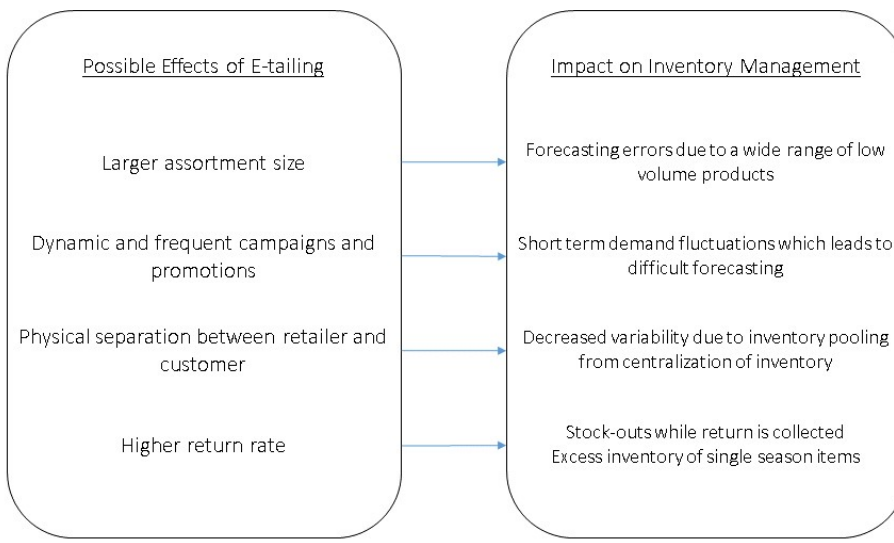

Figure 3.5: E-tailing impacts on Inventory Management according to literature

By comparing the customer requirements and the e-tailing effects, one could draw the conclusion that e-tailers can utilize the effects by increasing their assortment to improve their competitive advantage over bricks-and-mortar retailers. Also, using price promotions so that prices are lower than retailers' prices (or by offering lower prices in general) should be an effective way of attracting customers. However, as Figure 3.5 shows, these decisions have different impacts on inventory management. Also, it is important to provide a hassle-free shopping experience, perhaps by having clear and simple procedures for deliveries and returns.

Chapter 4

Empirical Study

This chapter presents information about the case study companies. The information was gathered in interviews, from the company websites, and from annual reports. For all case studies, the company is presented shortly, followed by the four effects of e-tailing, inventory management and financial metrics.

To gather empirical data, all case study companies were interviewed twice. Both interviews were conducted with the same interviewee. Furthermore, the interviewees have reviewed the compiled information to increase the validity. All interviewees have relevant positions withing their respective company, see Table 4.1, and sufficient competence to deem their information reliable. Furthermore, annual reports were used to create validity. Since several companies are part of the case study, the research validity can be considered relatively high. However, the overall quality of the case study would be improved if several persons were interviewed in each case.

Relevant information about the interviews is gathered in Table 4.1.

Table 4.1: Case study interviews, two per company

Company	**Interviewee**	**Title**	**Length**	**Media**	**Dates (2017)**
Adlibris	Sarah Ahnström & Oskar Gunnnarson (only first interview)	Head of Purchasing and Assortment, CIO	44/32 min	Video call, Voice call	1/3, 7/4
Coolstuff	Kajsa Knapp	Co-Founder	36/24 min	In person, Voice call	23/2, 7/4
Dustin Group	Robert Pap	VP Supply Chain	47/18 min	Voice call, Voice call	1/3, 5/4
Sportamore	Jonas Kolehmainen	Logistics Manager	31/22 min	Voice call, Voice call	6/3, 4/4
Clas Ohlson	Håkan Solarfs	Supply Chain Development Manager	27/24 min	Voice call, Voice call	6/3, 4/4
Panduro Hobby	Björn Johansson	Supply Chain Director	42/18 min	In person, Voice call	15/3, 28/4
Stadium	Daniel Johansson	Logistics Manager	31/16 min	Voice call, Voice call	29/3, 28/4

As described in Figure 2.1, the interview process was divided in two parts. The first round of interviews was conducted to gather general information about the companies and how they work in different areas of supply chain management. Some structured questions about the areas of special interest were also asked. The second round of interviews focused only on getting a better understanding of the effects of e-tailing, presented in Figure 3.5, and

how the companies work with inventory management. The interview guides for the two rounds can be found in Appendix A.

In order to improve the readability, all empirical data are compiled and presented in this chapter. In addition to the interviews, annual reports were used to gather financial data about the case study companies. All annual reports were accessed via the database Retriever Business. The financial information, for each company respectively, is presented under the *financial metrics* sections. The data on revenue and profit margin growth as well as e-tailing growth can be found in Appendix B.

4.1 Adlibris

All information presented below, if nothing else is stated, originates from interviews with Sarah Ahnström and Oskar Gunnarson, see Table 4.1 for more information.

4.1.1 About the Company

Adlibris is a Swedish e-tailer of books, founded in 1997. Since 2005, Adlibris is a part of the Bonnier Group. The company sells books from publishers and distributors in Sweden, Europe, and USA (Adlibris.com/se, 2017). At the moment, growth is more important to Adlibris than profitability, but of course the company wants to always be profitable.

Adlibris has online stores in Sweden, Norway, Finland, and Denmark (via CDON). The biggest market is Sweden.

4.1.2 Assortment

Adlibris keeps about 11 million book titles in their assortment. Furthermore, they sell other products, such as arts and crafts and do-it-yourself material. All in all, Adlibris has about 11.5 million SKUs in their assortment. For books, 75 000 new titles are added every month.

Adlibris mainly sells books (80 % of the revenue), and there are a few fairly large publishing houses that Adlibris buys the books from. This makes the question of what to buy/what products to add to the assortment mix fairly straight-forward - the publishing houses inform Adlibris of what the new titles are, and Adlibris makes the decision of whether or not to buy them and in what quantity. Basically every book offered by the publishers should be available in Adlibris' assortment. Adlibris has noticed that customers in general search for specific book titles as many customers enter their site via Google or other online searches.

4.1.3 Campaigns and Promotions

Adlibris uses continuous campaigns to highlight products. In February for example, when a lot of kids are sick with the flu, children's books are highlighted on the website and in e-mails. Most of the campaigns are based on themes, according to what time of the year it is. Books are in general low margin products, which means Adlibris cannot constantly use price promotions in the campaigns. If they do, it's either to increase sales of a slow mover, or in cooperation with a publisher (this way, the publisher gets exposure and Adlbris gets to purchase the products cheaper). Furthermore, Adlbiris tries to put low prices on the products from the beginning.

4.1.4 Fulfillment and Distribution

Adlibris ships all Swedish and Norwegian online orders from their distribution center in Morgongåva. The Finnish orders are sent from a warehouse in Finland, belonging to one of the distributors (which is also owned by the Bonnier Group). One of the approaches that Adlibris uses in the distribution centers to maximize profitability is to reach a high level of automation.

Quick and timely deliveries are very important to Adlibris, as they see an increasing demand for this. As for service targets, Adlibris works a lot with being transparent and clear with the customers - e.g. making sure that the customers know what day they can expect a delivery. As the demand for quicker deliveries have emerged, Adlibris has noticed that they cannot satisfy the customer need for last minute purchases, such as birthday gifts. In order for the online store to meet this demand, same day delivery is required. Instead, Adlibris's strategy for capturing some of this demand was to open a physical store in Stockholm.

4.1.5 Returns

Adlibris has a very low return rate. Since it is costly and difficult to handle, they have worked to keep it at a minimum. When customers return purchases, the risk increases for Adlibris, since they have to sell it again, especially for slow-moving products. However, the low return rate decreases the challenge.

4.1.6 Inventory Management

Adlibris, with 11.5 million SKUs, cannot keep every article in inventory. Only a few percent of the SKUs are kept in the distribution center. In order to uphold high service levels, they need to make the right decisions as to what products to keep in inventory at any given time. However, the risk is somewhat mitigated by very short lead times from the publishers.

For titles that are expected to sell well, Adlibris can make purchases in advance. They always use sales statistics that are tracked automatically and algorithms from information systems to decide when to replenish and in what quantities. As stated before, the lead times are usually very short - for many books, the publishers can deliver in one day. For non-books, however, it takes a longer time for Adlibris to receive the products. As an example, at the time of the interview (late February 2017), Adlibris (or rather Bamba, one of the subsidiaries of Adlibris Group) is planning its Christmas sales within kids products and toys. This is part of the reason why Adlibris uses forecasting extensively.

The bulk of Adlibris' purchases are made automatically by their in-house created inventory management system. The purchasers are still important to make the right decisions, since a lot of external factors can come into play. In general, Adlibris has very low inventory levels. They have recently chosen to increase the inventory levels to be able to meet the customer demand for faster deliveries. Adlibris also points out that they usually sell the ordered quantity before they have to pay the publisher, making the question of tied up capital less important.

4.1.7 Financial Metrics

The DuPont model of Adlibris for the year of 2015 is presented in Figure 4.1. All assets are averages of the starting date and ending date. Furthermore, Adlibris turned their inventory 16.4 times during the year (the ratio of operating income to inventory). From the year 2012 to 2015, Adlibris saw an average revenue growth of 1.56 % per year and an average (maximum) profit margin of 4.04 % (5.25 %). Online sales of books in Sweden have on average grown by 8.47 % yearly from 2014 to 2016, see Appendix B.

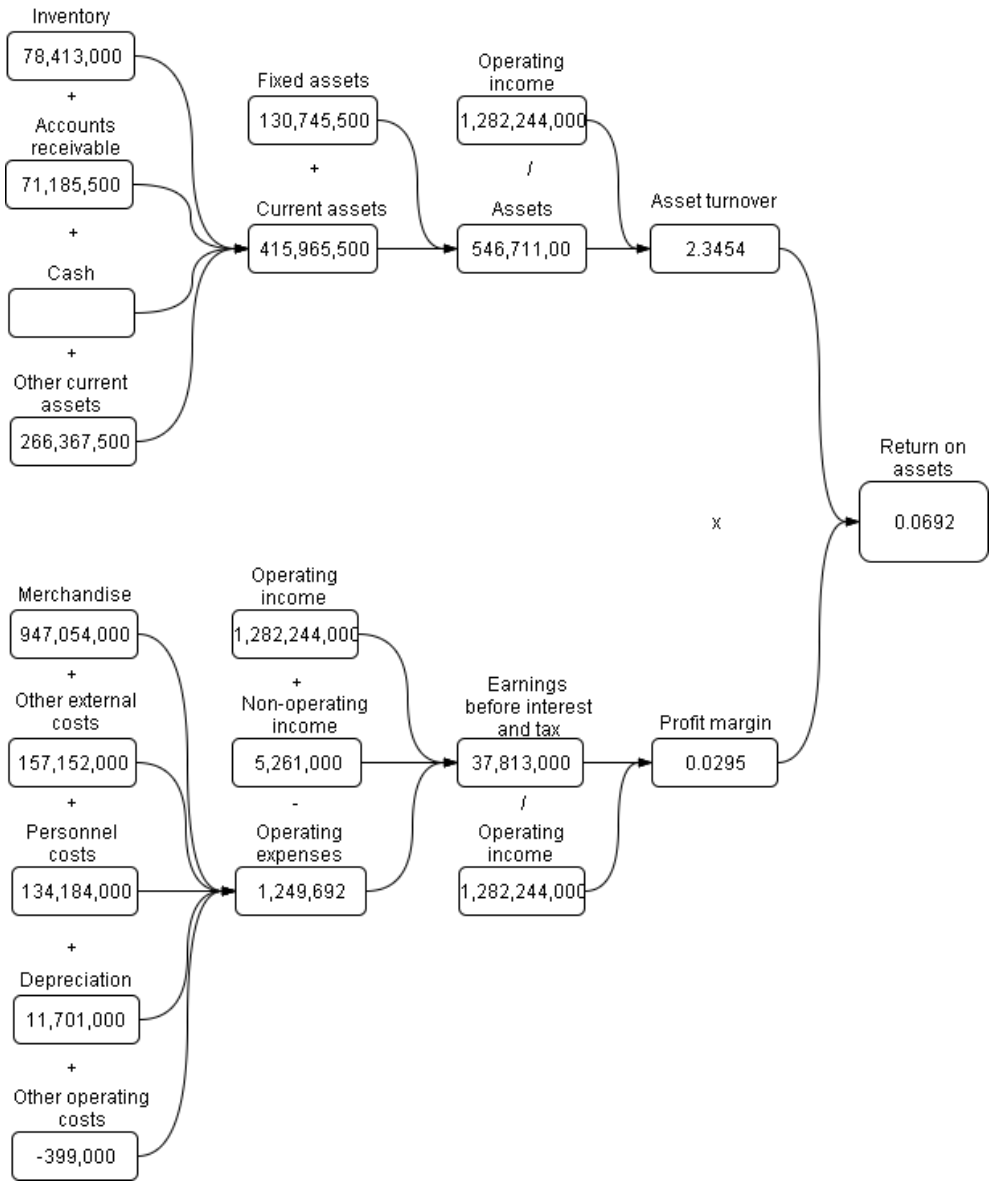

Figure 4.1: A DuPont model of Adlibris

4.2 Coolstuff

All information presented below, if nothing else is stated, originates from interviews with Kajsa Knapp, see Table 4.1 for more information.

4.2.1 About the Company

Coolstuff, founded in 1999, is an e-tailer that sells "cool and innovative" products (Coolstuff.se, 2017). They have continuously increased their revenue over the years, and at the same time remained profitable. Profitable growth is still the main strategic focus of the company.

Coolstuff has online stores for Sweden, Finland, Denmark, Norway, Germany, and a recently opened store for the rest of the world. In other words, Coolstuff has customers from all around the world, but the biggest market is Sweden, followed by Norway and Denmark.

4.2.2 Assortment

Coolstuff believes its assortment constitutes a large part of its value proposition. They want to offer new and selected products, instead of everything they can find within the categories. At the moment, the assortment consists of about 1600-1800 unique SKUs for sale, but it is constantly increasing. Coolstuff has noticed that its sales increase when it increases the assortment.

The assortment is chosen based on what Coolstuff believes the customers will buy. To find these products, Coolstuff uses an internal document in which all employees can add products that they believe should be added to the assortment. Every week, the employees can vote on the products the purchasers should buy. For Coolstuff, this democratic process has proven to be more successful than letting the purchasers make all the decisions. When a product has passed the voting process, Coolstuff orders a sample. About 50 % of the products are then added to the assortment.

A big part of the revenue originates from a small part of the products. Coolstuff believes that most products are still worth having in the assortment since they attract customers, as opposed to shortening the tail, i.e. removing the slow-moving products.

4.2.3 Campaigns and Promotions

Coolstuff uses campaigns in a moderate way. There is a continuous "pay for 2, get 3" promotion on selected products, and Coolstuff also tries to highlight products that fit the season and special occasions. Furthermore, they promote the top sellers and new products on the front page, and sometimes decrease or

remove the shipping cost as a promotion. In order to reduce inventory levels of slow movers they use price promotions during Black Friday, which is their biggest campaign during the year. Coolstuff, having most of their sales during November and December, does not think that price promotions are effective during the slower months.

4.2.4 Fulfillment and Distribution

All Coolstuff's orders are shipped from a warehouse in Malmö. Every order placed before three in the afternoon should be shipped the same day. In stressful times, office personnel help in the warehouse to make this happen. To uphold a high service level to the customers, Coolstuff stores every SKU for sale in their warehouse. Furthermore, Coolstuff believes delivery precision, as well as having delivery options, are growing in importance. Coolstuff has one physical store in Malmö, offering the same assortment as the online stores.

4.2.5 Returns

The return flow at Coolstuff is about 5 % of what they sell. They think this is low but it is still costly to handle. However, they do not believe it affects inventory management in any significant way.

4.2.6 Inventory Management

Coolstuff buys as much as they can from Asian manufacturers, but depending on where they can find the products they want to sell, manufacturers from all around the world can be used. From most suppliers only one specific product is bought, which decreases their importance for Coolstuff. Since many suppliers are based in Asia, the lead times are long. This leads to difficulties in adjusting to variations in demand.

The first time a product is bought, the quantity is mostly based on gut feeling. When replenishing, the forecast is based on sold quantity. However, the purchaser has to compensate for campaigns and other occurrences that could have affected the sale. The system used for inventory management at Coolstuff is Microsoft NAV.

About 50 % of the revenue occurs in November and December. Coolstuff does not think there is a problem deciding inventory levels during these busy months. Nevertheless, they do of course misjudge quantities from time to time, which leads to missing out on sales on some products and to high inventory levels on others. They do not believe ordering too much is a big problem, since they can put a promotional price on the product during Black Friday. They do, however, feel like they miss out on sales due to misjudging demand, more

often than they order too much. Coolstuff tries to analyze the slow moving products in order to improve the order quantities on these, since they have started to accumulate to a substantial number. At the moment, Coolstuff thinks their overall inventory levels are too high.

4.2.7 Financial Metrics

The DuPont model of Coolstuff, from 2015-06-01 to 2016-05-31, is presented in Figure 4.2. All assets are averages of the starting date and the ending date. Furthermore, Coolstuff turned their inventory 7.1 times (the ratio of operating income to inventory) during the year. From the year 2012 to 2016, Coolstuff saw an average revenue growth of 23.02 % per year, and an average (maximum) profit margin of 1.95 % (4.67 %). Online sales of toys and miscellaneous have on average grown by 30.38 % and 19.33 % yearly, respectively, from 2014 to 2016.

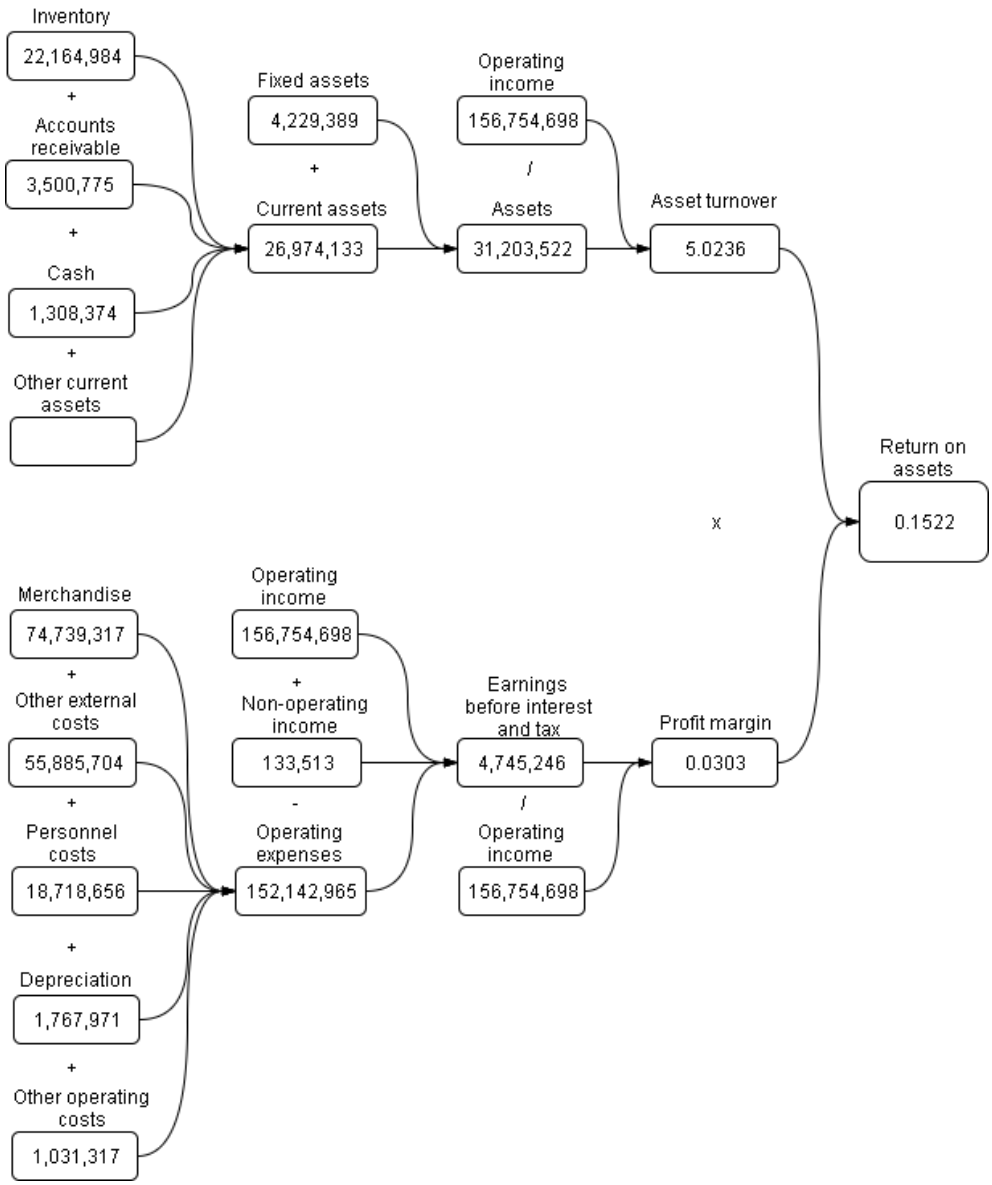

Figure 4.2: A DuPont model of Coolstuff

4.3 Dustin Group

All information presented below, if nothing else is stated, originates from interviews with Robert Pap, see Table 4.1 for more information.

4.3.1 About the Company

Dustin Group started about 30 years ago as a Swedish mail-order company of consumer and business electronics. In the 90s, they began selling over the web. About 5 % of the revenue, 600 million SEK, originates from B2C sales. Since 2015, Dustin Group is publicly traded on NASDAQ Stockholm. Dustin Group has expanded in the Nordic countries, mainly through acquisitions. In 2007, they expanded to Denmark. Three years later, Dustin opened in Norway, and in 2012, they expanded to Finland as well (Dustin.se, 2017). Dustin Group wants to keep growing its businesses, but also increase its profitability.

4.3.2 Assortment

Dustin Group offers products, spare parts, and licenses, for a total of around 220,000 SKUs in their assortment. Since a significant part of their business customers are relatively small and behave like private customers, Dustin has never separated the B2C assortment from the B2B assortment. Dustin Group believes that the assortment is a big part of their competitive advantage; thanks to the large amount of products, they can win a lot of customers. Dustin Group rarely starts selling new products categories. Most of the assortment is based on what products their suppliers release. Event though the vast amount of products is considered a strength, Dustin Group tries to remove the ones that do not contribute a lot to the sales. Furthermore, Dustin believes it can be a problem to have too many similar products, since then they might cannibalize the sales of some of those products.

4.3.3 Campaigns and Promotions

Dustin Group uses continuous campaigns, including price promotions, on their website that are updated regularly. Furthermore, they can increase the impact with a weekend rush or a theme of the week. Promotional prices are only used if the suppliers offer a cheaper price or add extra marketing funds. Similarly, in cooperation with the suppliers Dustin Group tries to decrease the selling price in order to increase the sales without decreasing the profitability. Furthermore, Dustin uses promotional prices on products that do not sell fast enough.

4.3.4 Fulfillment and Distribution

Dustin Group ships all online orders from their warehouse in Stockholm. They want to ship 75-80 % of the orders the same day they are placed. If an order is placed before four in the afternoon, it should be shipped the same day. Dustin thinks that quick deliveries are important, and since most competitors are equally fast today they have to stay at the same level. Since B2C orders are handled online, whereas B2B orders can also be handled via telephone and in one of Dustin Group's physical stores.

4.3.5 Returns

The share of orders that are returned to Dustin Group is unknown. They are, however, fairly generous towards the customers when it comes to returns. Dustin Group thinks the return flow is a challenge. The manufacturers are responsible for defect products, but other than that it is up to Dustin Group to try to sell the returned product. Even though returns are costly, Dustin Group believes it is an integral part of customer service.

4.3.6 Inventory Management

Dustin Group sets a yearly budget for every product category, depending on the last year's outcome, planned project sales and planned inventory levels. The budget is revised every month, based on external occurrences such as a manufacturer doing a clearance sale at the end of a quarter. Hence, the strategic buyers and the category managers receive a new budget containing planned sales and inventory turnover. Dustin rarely starts selling completely new product categories. Most often manufacturers release new models of existing product categories which means sales data from previous models can be used in demand planning. If a supplier releases a product that is expected to be very popular, such as certain gaming consoles or a new iPhone, Dustin buys everything they can to avoid a shortage.

Keeping tied up capital low is important to Dustin. Hence, they only keep around 16,000 unique SKUs in inventory and try to ensure that they are the most suitable SKUs. The SKUs that are not part of the inventory are generally delivered to Dustin shortly after they place an order, but Dustin has also implemented drop shipment from some suppliers. At the moment, Dustin is also conducting a new demand planning project, with the goal to improve the categorization of products.

It is also important to ensure quick deliveries of the products that they do not keep in inventory. For Dustin, it is not difficult to keep a suitable inventory of the popular products. However, it is difficult to combine the

near-optimal inventory levels for certain products with the actual deals they can make with the suppliers. As an example they could get better prices for a certain quantity, but when the possibility to buy a lot of a product for a great price arises, the inventory level for that product will increase, and depart from the calculated near-optimal level. Also, the forecasts may be wrong when new price promotions are introduced. Therefore, when a quarter comes to an end and the suppliers are offering new deals, it is important for Dustin Group to include those in the forecasts.

In summary, making sure the right amount of the right products are kept in inventory is very important. Having suppliers in a close proximity makes this kind of inventory management possible. Some suppliers can deliver to Dustin's warehouse within the same day, but most of them deliver within one or two days. In some cases, drop shipment is possible. It depends on what agreement can be reached with the suppler.

Being an e-tailer, Dustin believes the availability of products is very important. If you cannot ship the product to the customers immediately, they will buy from a competitor instead.

4.3.7 Financial Metrics

The DuPont model of Dustin Group, for 2015-09-01 to 2016-08-31, is shown in Figure 4.3. All assets are averages of the starting date and the ending date. Furthermore, Dustin Group turned their inventory 35.3 times during the year (the ratio of operating income and inventory). From the year 2012 to 2016, Dustin Group saw an average total (B2C) revenue growth of 15.77 % (-2.97 %) per year and an average (maximum) profit margin of 3.79 % (4.28 %). Online sales of electronics have on average grown by 8.83 % yearly from 2014 to 2016.

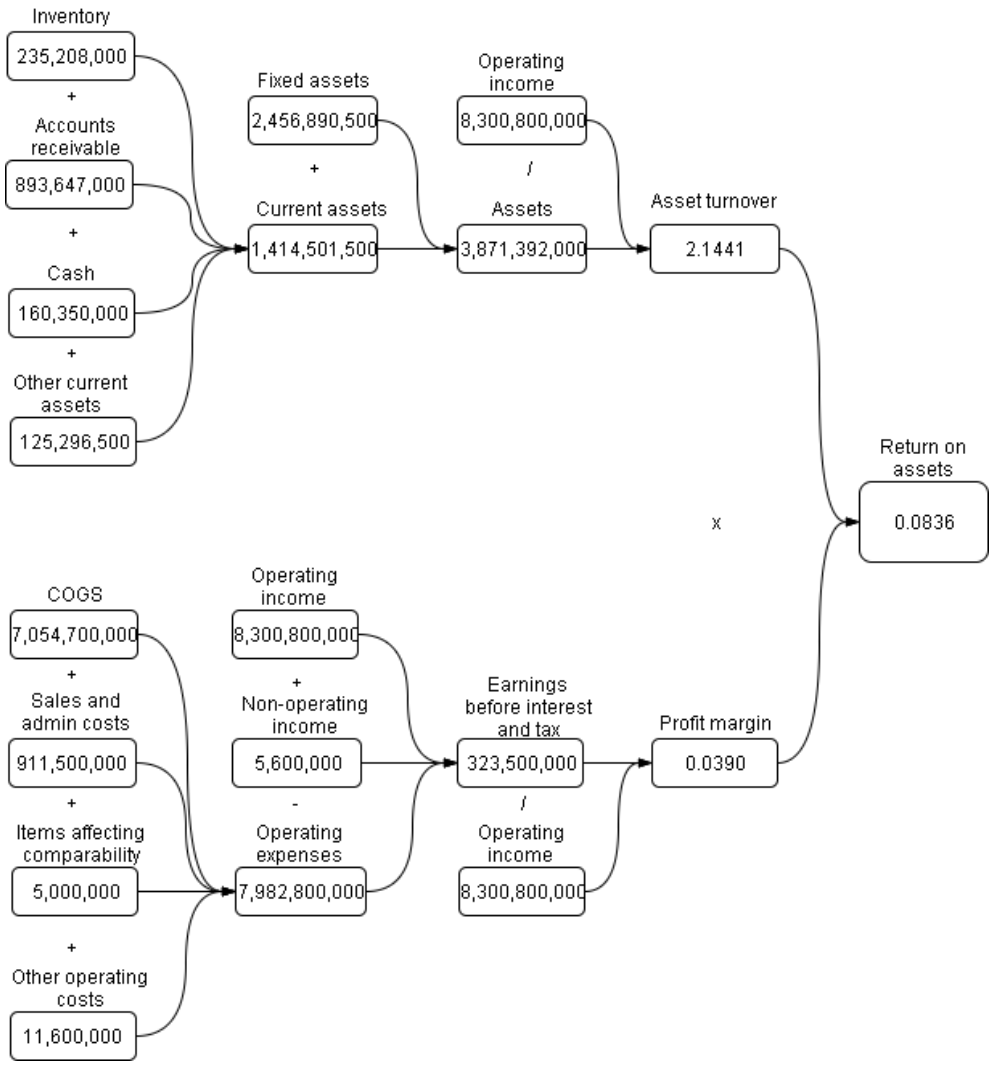

Figure 4.3: A DuPont model of Dustin Group

4.4 Sportamore

All information presented below, if nothing else is stated, originates from interviews with Jonas Kolehmainen, see Table 4.1 for more information.

4.4.1 About the Company

Sportamore is a Swedish e-tailer of sports products, founded in 2010. The idea of Sportamore is to combine a big assortment and great service, in order to stay competitive. By only selling online, Sportamore believes that they can focus on finding the best merchandise and use the best sales terms for the customers. Since the start, Sportamore has been focused on growing the company at a rapid pace. Up until last year, the fast expansion lead to negative results. 2016 was the first year Sportamore was profitable, mainly due to reduced marketing spending.

Sportamore has since its start expanded in the Nordic countries and is today active in Sweden, Norway, Denmark, and Finland. Sweden is by far the biggest market but is not growing as fast as the others.

4.4.2 Assortment

As stated earlier, the assortment is one of Sportamore's main strategic advantages. They want to have the market's widest and deepest assortment, in order to attract as many customers as possible. This has lead to an assortment with about 18,000 products and 62,000 SKUs. Most new products are chosen based on what the suppliers release. Additionally, Sportamore also has some private labels, for which they can decide products themselves. In general, the assortment should contain the newest and best products in the market. When Sportamore adds a new product category, they add a large number of SKUs to make it a complete assortment. Therefore, Sportamore has a lot of slow moving SKUs with high demand variability. According to Sportamore, the assortment follows a 80/20 or 90/10 split, i.e. that 80 or 90 % of the revenue is generated by 20 or 10 % of the SKUs.

4.4.3 Campaigns and Promotions

Campaigns are recurrent at Sportamore. Every Monday they decide what to put in the weekly campaign, depending on several factors. Previous sales, new arrivals, weather and other factors affect what Sportamore decides suitable to put in a campaign. However, since the lead times from suppliers are usually long, the campaigns are based on inventory levels, instead of the other way around. Most campaigns at Sportamore contain price promotions, in order to

attract as many customers as possible. At the end of a season, it is common for Sportamore to use price promotions to sell out what's left of the stock. If a product is still in inventory at the end of its lifetime, it is moved to a separate outlet website.

4.4.4 Fulfillment and Distribution

Sportamore ships all orders from their distribution center in Stockholm. Together with the assortment, maintaining high service levels is Sportamore's most important strategy. The deliveries should be fast and easy. In line with this strategy, Sportamore offers free deliveries, which take between 1-4 days to reach the customer. Most customers in Sweden, southern Norway, eastern Denmark, and southern Finland receive their orders within 1-2 days. In the greater Stockholm area, Sportamore is able to deliver even faster. Sportamore believes that the importance of having many delivery options and a high level of flexibility will grow.

4.4.5 Returns

About 25 % of what Sportamore sells is later returned to the warehouse. This is mainly because of the products they sell - sportswear is size-sensitive, and to some extent also fashion-sensitive. According to Sportamore, the high return rate does not increase the need of planning (including adjusting the purchasing quantities) as long as you are aware that you need to sell the product more times. Furthermore, the high return rate is costly to handle. Last year, Sportamore decided to outsource the return handling, which has lead to higher quality and reduced costs.

4.4.6 Inventory Management

When it comes to order quantities, the purchasers look at growth targets and previous sales and try to make the right decision. To do this, they also have to factor in the type of product, if Sportamore is the only retailer of the product, and so on. There are a lot of factors affecting the purchaser's decision. Sportamore does not use any sophisticated inventory management system, which means that there is a lot of manual work.

Furthermore, the purchasers have a cap on how much capital they are allowed to tie up as compared to how much revenue they contribute to - if they increase the revenue, they can tie up more capital. Sportamore wants to turn its inventory about four times per year.

About 70 % of the expected sales is ordered 6-8 months in advance. The rest can be accessed closer to the selling date since some of the more fa-

mous brands have distribution centers in a closer proximity. Sportamore has about 300 suppliers, which they argue is a high number that decreases the chance of achieving great inventory management. For Sportamore, the inventory management decisions are greatly affected by the suppliers' capabilities, e.g. through limits on the amounts that the suppliers can deliver, which makes it difficult to fully optimize the amounts.

4.4.7 Financial Metrics

The DuPont model of Sportamore, for the year 2016, is presented in 4.4. All assets are averages of the starting date and the ending date. Furthermore, Sportamore turned their inventory 6.7 times during the year (the ratio of operating income and inventory). From the year 2012 to 2016, Sportamore saw an average revenue growth of 46.28 % per year and an average (maximum) profit margin of -4.60 % (2.59 %). Online sales of sporting goods and clothes/footwear have on average grown by 28.17 % and 10.15 % yearly, respectively, from 2014 to 2016.

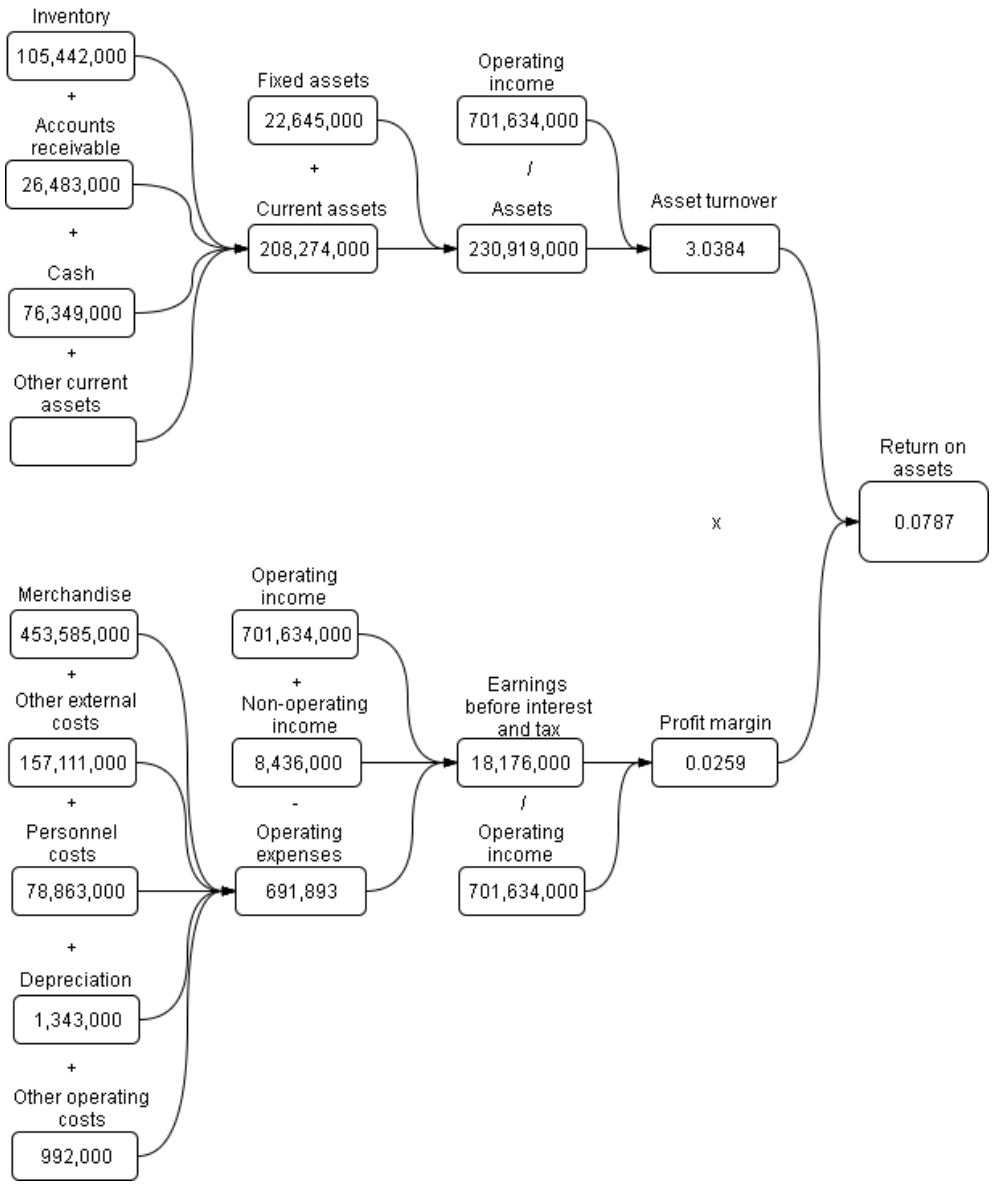

Figure 4.4: A DuPont model of Sportamore

4.5 Clas Ohlson

All information presented below, if nothing else is stated, originates from interviews with Håkan Solarfs, see Table 4.1 for more information.

4.5.1 About the Company

Clas Ohlson, founded in Sweden in 1918, is an international retailer of hardware, leisure, home, and multimedia products. Originally Clas Ohlson was a mail order company but has since expanded into bricks-and-mortar retailing and e-tailing as well (Clasohlson.com/se, 2017). Today, about 2 % of the revenue originates from the online channel and Clas Ohlson believes this number will increase. They are also aiming at expanding their offline presence in their newer markets, such as Germany and Great Britain. Clas Ohlson is publicly traded on NASDAQ Stockholm.

Clas Ohlson are active, both online and offline, in Sweden, Norway, Finland, Germany, the United Kingdom, and in Dubai. One strategy to grow the company has been by expanding geographically.

4.5.2 Assortment

In Clas Ohlson's assortment there are about 15,000 SKUs, of which 2,000 are substituted every year. Keeping the number of articles constant, at 15,000, is a way for Clas Ohlson to always keep the assortment up to date and relevant. If they want to add new articles, they have to think about what they can remove. The process of adding new products is fairly rigorous. A control group evaluates every possible addition, to determine if it fits the market development and customer requirements. For Clas Ohlson, it is important to always renew the assortment, in order to stay competitive on the market. The same full assortment is offered both in the physical and the online stores, with the exception of spare parts, where the online assortment is larger (however, stores can order these from the DC). Furthermore, Clas Ohlson has opened a few smaller stores, where only a subset of the assortment is offered physically and the rest can be ordered directly from the store. The store assortment is dependent on the location.

4.5.3 Campaigns and Promotions

Clas Ohlson makes a campaign plan for every year. First they plan when to use campaigns, then they decide what products should be used. On top of planned campaigns, Clas Ohlson uses continuous price promotions both online and in the stores. However, there are also promotions for members of the Clas

Ohlson customer club. To create a larger impact, they also use campaigns on social media. Clas Ohlson believes it is important to plan the campaigns thoroughly in order to ensure availability in inventory, and also that having campaigns puts pressure on the forecasts, which need to be well done.

4.5.4 Fulfillment and Distribution

All online orders, as well as the replenishment for the stores, are shipped from the distribution center in Insjön. However, picking online orders is separated from picking store orders - a part of the distribution center is dedicated for the handling of online orders only. This part is replenished from the bulky, mini-load and so-called high bay storage, just like a physical store. The reason for operating the warehouse like this is that online orders contain a lot of single item picks, whereas store orders are of larger quantities. The flow of products from the distribution center to the stores is highly automated, while the online order fulfillment is highly manual. As Clas Ohlson grows, one of the challenges is being able to deliver everything from the same distribution center. Furthermore, Clas Ohlson has a continuous internal flow of products carrying loading boxes and similar items from the distribution center to the stores, and the reverse, where returns are also included.

Clas Ohlson has noticed that different segments of their customers require different things - as an example, the younger segment is much more focused on quick deliveries than the rest. Hence, it is important to capture the distribution needs of all customers. Furthermore, the precision of the deliveries is important for Clas Ohlson. If the delivery is scheduled within one to four days, and it arrives after three days, the customer will be pleased, but not impressed.

Finally, Clas Ohlson see many advantages of having a good omni-channel strategy, where physical and online stores can complement each other.

4.5.5 Returns

The returns from online purchases are close to zero. This is, according to Clas Ohlson, mainly because of the product characteristics. Since Clas Ohlson has a continuous flow of products from the distribution center to the stores, they can easily transport the in-store returns back to the warehouse. Returns in the stores are mostly repairs. Customers from Clas Ohlson's web shop have the possibility to return goods bought online in the physical stores.

4.5.6 Inventory Management

When the assortment controlling group has decided what products to add, they also forecast sales, decide order quantities, and plan the order replenishment. When deciding what products to remove from the assortment, Clas Ohlson looks at the sales. They always try to shorten the so-called tail, or products with low demand.

Clas Ohlson works closely together with the suppliers to reduce the purchasing cost. About 65 % of the suppliers are located in Asia, and therefore Clas Ohlson has a purchasing office in China.

The biggest challenge for inventory management is unexpected sales increases due to external events; as an example, the launch of the smartphone game "Pokemon Go" inflated the demand for portable chargers, and such events can force solutions such as flying in stock from China. For products that have been in the assortment a long time, there is a lot of historical data available which simplifies forecasting.

4.5.7 Financial Metrics

The DuPont model of Clas Ohlson, from 2015-05-01 to 2016-04-30, is presented in Figure 4.5. All assets are averages of the starting date and the ending date. Furthermore, Clas Ohlson turned its inventory 4.7 times during the year (the ratio of operating income and inventory). From the year 2012 to 2016, Clas Ohlson saw an average revenue growth of 4.97 % per year and an average (maximum) profit margin of 7.67 % (9.05 %). Online sales of home improvement products and furniture/interior design products have on average grown by 34,16 % and 29.10 % yearly, respectively, from 2014 to 2016.

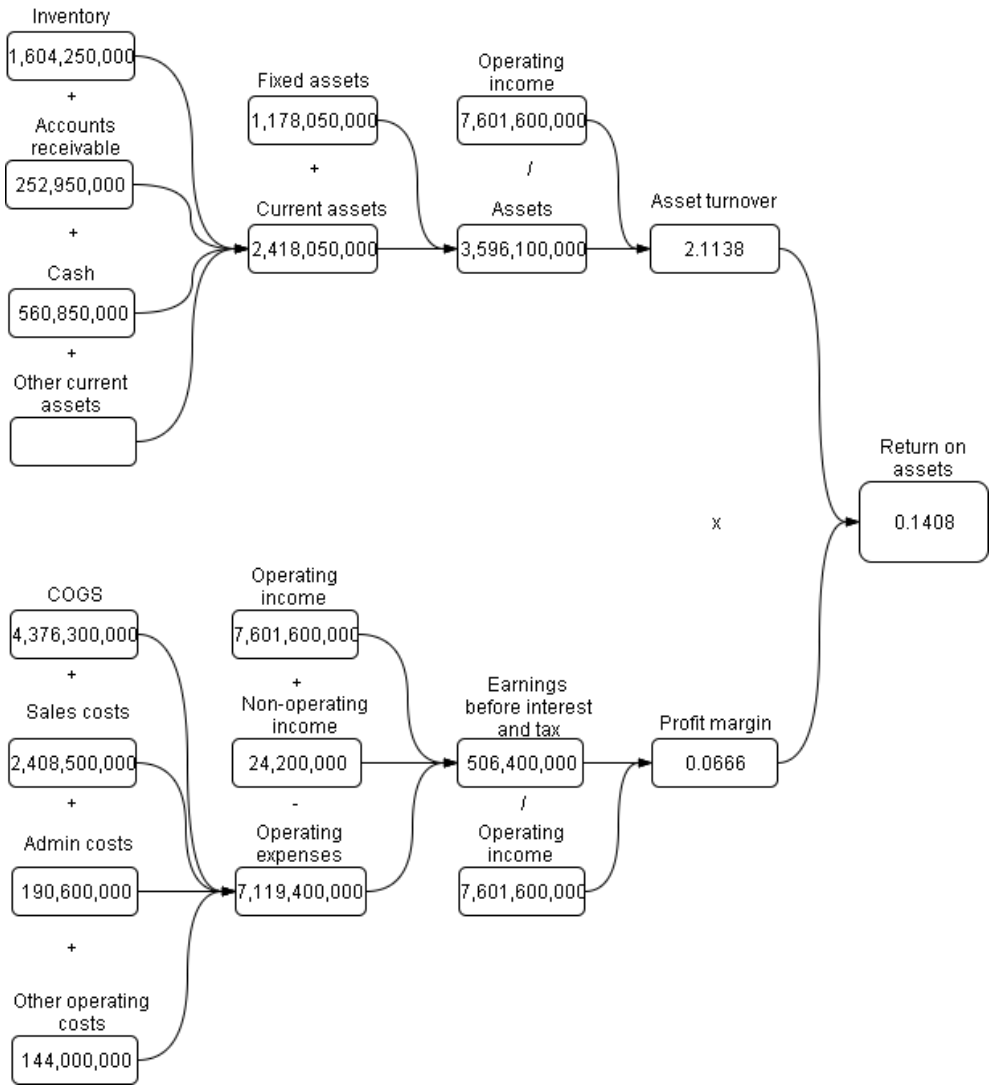

Figure 4.5: A DuPont model of Clas Ohlson

4.6 Panduro Hobby

All information presented below, if nothing else is stated, originates from interviews with Björn Johansson, see Table 4.1 for more information.

4.6.1 About the Company

Panduro Hobby (Panduro for short) is Europe's biggest retailer of hobby and do-it-yourself (DIY) products. The company was founded in Denmark in 1955 and later expanded to Malmö, Sweden, where the headquarters is located today. Historically, Panduro sold its products in bricks-and-mortar stores, as well as by mail order. Today, they use 110 physical stores as well as e-tailing to reach the customers (Pandurohobby.com, 2017). The online sales account for about 5-10 % of the total revenue, and Panduro plans to grow this going forward.

Panduro has physical stores in Sweden, Norway, Denmark, Germany, the Netherlands, and Belgium. Furthermore, they sell through other retailers in Finland, France, the UK, and Iceland. Panduro also sells online in all mentioned countries.

4.6.2 Assortment

Panduro has about 11,000 to 13,000 SKUs in their assortment, of which around 25 % are replaced every year due to seasons and trends. Some of the stores have complete assortments, but in general, stores have around 6,000 to 8,000 SKUs, and the online store has around 5,000 more. Panduro considers the assortment large and one of their biggest competitive advantages. In their headquarters, Panduro runs its own product development. A large part of the assortment is made up of Panduro's own brands and the rest of the products are developed in cooperation with external designers. As for the revenue, around 20 % of the SKUs make up around 65 or 70 % of it, which Panduro considers unusual - assortments typically follow the "80/20" principle, but for Panduro to reach 80 % of their revenue they have to include around 33 % of their assortment. This is believed to be due to the nature of the purchases - people usually buy several items, or kits, rather than single items, as you usually need several items for DIY projects (which constitutes a significant portion of Panduro's sales).

As stated in the previous paragraph, around 25 % of the SKUs are replaced every year, which in part is due to items being replaced - e.g. if they bring in 100 sets of cloth during the fall season, they remove 100 sets that were new a year ago. Also, items are replaced due to poor performance.

4.6.3 Campaigns and Promotions

As for campaigns, Panduro works with so-called Content Planning processes, where plans are made for each quarter (four focus areas per year). These plans work as bases for purchase planning with room for changes during the quarter, based on sales figures and updated forecasts. The campaigns can be theme-based or occasion-based, such as promoting yellow chickens during Easter, or pure price promotions, such as 30 % off on face paint. Furthermore, they have more or less continuous "buy 3, pay for 2" promotions.

Panduro also uses an outlet section on their website, where price promotions are used to sell slow-moving products as well as last season's articles.

4.6.4 Fulfillment and Distribution

All store replenishments, as well as all online orders, are shipped from the distribution center in Malmö. One challenge that Panduro faces with regards to online sales is achieving short delivery times. At the moment, Panduro believes that they are relatively slow in this regard. The alternatives for customers are buying products for home delivery at a price premium (unless the order exceeds 600 SEK, which makes delivery free of charge), and ordering to a (local) store for free, which is usually delivered the next day as most of the stores are replenished on a daily basis.

4.6.5 Returns

Panduro's online return flow is around 1-2 %. Returns are not considered a problem, since the volumes are so small, and they believe that the low volumes are in part due to the customers having a pretty good grasp of what they want and need.

Customers can either return products via mail or leave them at a local Panduro store. Due to the fact that most of the stores only have a subset of the online assortment, customers sometimes return articles that are not part of the store's regular assortment. In this case, the store usually sends the article in question back to the DC. However, for returns in the Norwegian market, all returns are sent to one specific store in Norway, and not to the Swedish DC.

4.6.6 Inventory Management

Panduro uses a purchasing system, called Bison, loosely based on Wilson's formula/the Economic Order Quantity (EOQ) formula since one year. Products that urgently need to be ordered are prioritized (pushed forward) by the system, and quantities are suggested. A purchaser goes through all the articles, and this is done on a regular basis, e.g. every week or more frequently if

the need arises. Recently, Panduro has implemented a classification/priority system, where all the articles are given an ABC-priority along with a number priority between 1-5. Articles with high priorities are then given higher service target goals. Part of the assortment follows certain selling seasons, and for these products, the lead times can be as long as six months - as an example, planning for the Christmas season starts around March.

Panduro considers their general inventory levels as being too high, and so they are working hard to improve their inventory management. The high levels are in part due to the fact that 50 % of the revenue comes from products bought from suppliers in Asia. The lead times can come close to 3-4 months (1-2 months in production and 6-8 weeks in transportation). This leads to big batches being ordered, which can take a long time to sell. Panduro experiments with different solutions to decrease lead times for these products, e.g. sending them from Asia via train, which is faster. The other 50 % of the revenue comes from products bought from suppliers in Europe, with lead times of around one week.

Panduro has recently tried to lower the cost of ordering, and thereby getting a smaller optimal order quantity (based on the EOQ formula). This in turn means that Panduro has to order more frequently, and this should decrease the inventory levels in the Malmö DC. The focus for this test has been on the European suppliers.

4.6.7 Financial Metrics

The DuPont model of Panduro, for the year 2015, is presented in 4.6. All assets are averages of the starting date and the ending date. Furthermore, Panduro turned their inventory 4.2 times during the year (the ratio of operating income and inventory). From the year 2012 to 2015, Panduro saw an average revenue growth of 4.12 % per year and an average (maximum) profit margin of 4.69 % (10.63 %). Online sales of furniture/interior design products and miscellaneous have on average grown by 29.10 % and 19.33 %, respectively, from 2014 to 2016.

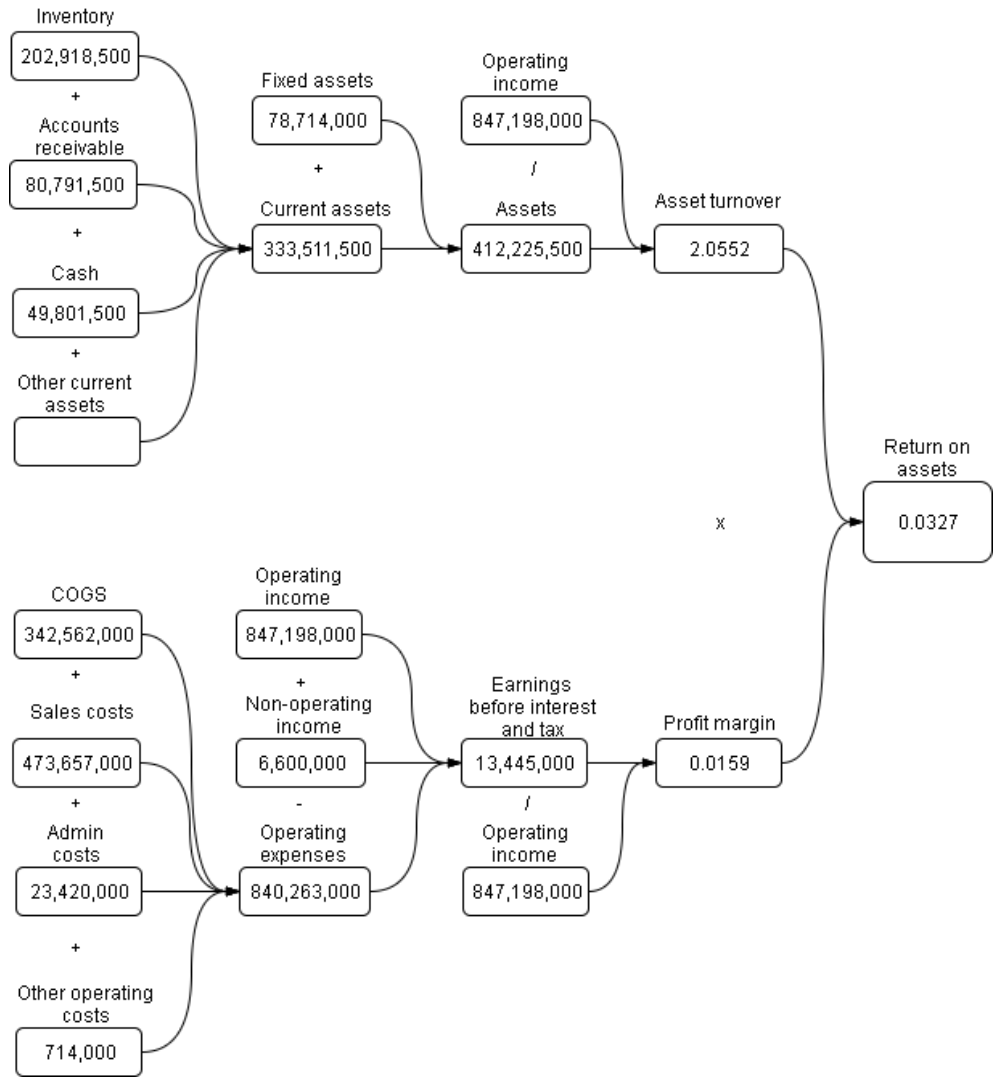

Figure 4.6: A DuPont model of Panduro Hobby

4.7 Stadium

All information presented below, if nothing else is stated, originates from interviews with Daniel Johansson, see Table 4.1 for more information.

4.7.1 About the Company

Stadium is a retailer of sports products, with 30 years experience of bricks-and-mortar business. The first store opened 1987 in Stockholm. In 2007, Stadium opened its first online store (Stadium.se, 2017). Today, Stadium wants to expand its bricks-and-mortar presence geographically, as well as making sure that the customer experience is great, independent of channel.

In the early 2000s, Stadium expanded with physical stores in Denmark and Finland. In 2009, online stores were opened in the same countries. In 2014, the first physical store in Germany was launched (Stadium.se, 2017).

4.7.2 Assortment

Stadium has about 18,000 SKUs in their assortment. All of these are offered online, and the stores offer subsets of the assortment. Only about 20 % of Stadium's assortment is fixed/long-life, so about 80 % of if changes, however the total number of SKUs remains relatively flat. The latter strategy - having a fixed total number of products - has been implemented during the last few years, and in part by simply being critical against having many SKUs that are almost identical. Hence, the assortment is wide but not very deep. Around 50 % of the items are from private labels (which Stadium designs but which are produced abroad), and the other 50 % are from famous brands. Both online and in the stores, the SKUs follow the "80/20" principle, i.e. around 20 % the SKUs represent 80 % of the revenue. The online store probably sells more bulky articles, as the customers don't have to get the articles home by themselves when ordering online.

For introducing new products, the purchasing department needs to be able to show that there is a demand and forecast how much and how often the products will have to be ordered. The purchasing department collects and presents information, but the sales department controls the financial means and therefore makes the final decision, based on what the purchasing department has reported. When new products are introduced, old ones need to be removed from the assortment.

4.7.3 Campaigns and Promotions

In the physical stores, Stadium uses four seasonal campaigns. Furthermore, campaigns can be triggered by weather or excess inventory, and they also employ "buy 3, pay for 2" offers. Campaigns are used more often online, however as they try to offer the same experience online and in stores, they try to keep the campaigns more or less aligned.

For Stadium, low prices are not seen as the main competitive focus area even though it is important, but rather the width of the assortment, availability, and lead times. For those customers that do want low prices, Stadium does offer a separate outlet section both on an online platform and in stores. This means that Stadium does not typically use price promotions when products have been in stock for too long, but rather move them to the outlet sections. Costs related to price promotions became less of a problem after Stadium built a central warehouse about ten years ago, which increased their control of the goods.

4.7.4 Fulfillment and Distribution

All online orders, as well as all store replenishments, are fulfilled in the distribution center in Norrköping. Around 50 % of customers buying online choose to have the items shipped to a Stadium store and pick it up from there. This delivery choice is free of charge, while normal online purchases must exceed a specified sum for shipping fees to be excluded. Stadium replenishes each store every weekday.

One of the main challenges of Stadium's online business is to find new solutions that can handle fast expansions but also reduce the lead times in order to serve the customers faster, which is a need that Stadium has identified. Also, they have identified a demand for flexible delivery choices and keeping what's been promised, w.r.t. delivery times.

In total, Stadium has 161 physical stores and three online stores. For the foreign customers, an extra day is added for delivery (this mostly applies to customers in Germany and Finland).

4.7.5 Returns

A large part of Stadium's return flow goes through the physical stores, where both offline and online purchases can be returned. Only a small percentage of the purchases are returned to the distribution center. The total (online + offline) return flow is around 20 %, and even though online purchases can be returned to the physical stores, it is easy to trace those returns. If a product

is returned at a store where it is not part of the store's regular assortment, it creates a problem since it needs to be shipped to the distribution central.

4.7.6 Inventory Management

Stadium employs different teams for handling e-tailing and retailing. Both types of purchases are however picked from the same warehouse, where a subset of the inventory is reserved for the online purchases. The reason for this is to prioritize the online purchases, and to make sure that the website does not run out of products and look empty (which can happen if they run out of stock for products, as only products that they have in stock are shown in the online store).

Many of Stadium's suppliers and producers are based in the Far East (China), which means that the lead times are relatively long, especially for new products when factoring in the time for coming up with new ideas and designing them. Due to the long lead times, Stadium only makes one order per SKU (i.e. no replenishment), delivered on multiple occasions, which works for Stadium since they have accurate forecasting. The famous brands do however often have central warehouses in Europe as well, which gives Stadium more flexibility with regards to those products.

Stadium believes service is more important than tied up capital, since availability is one of the main competitive advantages. They do however also think that their inventory levels are reasonable at the moment.

4.7.7 Financial Metrics

The DuPont model of Stadium, for the period 2015-09-01 to 2016-08-31, is presented in Figure 4.7. All assets are averages of the starting date and the ending date. Furthermore, Stadium turned their inventory 4.5 times during the year (the ratio of operating income to inventory). From the year 2012 to 2016, Stadium saw an average revenue growth of 4.19 % per year and an average (maximum) profit margin of 3.47 % (4.38 %). Online sales of sporting goods and clothes/footwear have on average grown by 28.17 % and 10.15 %, respectively, from 2014 to 2016.

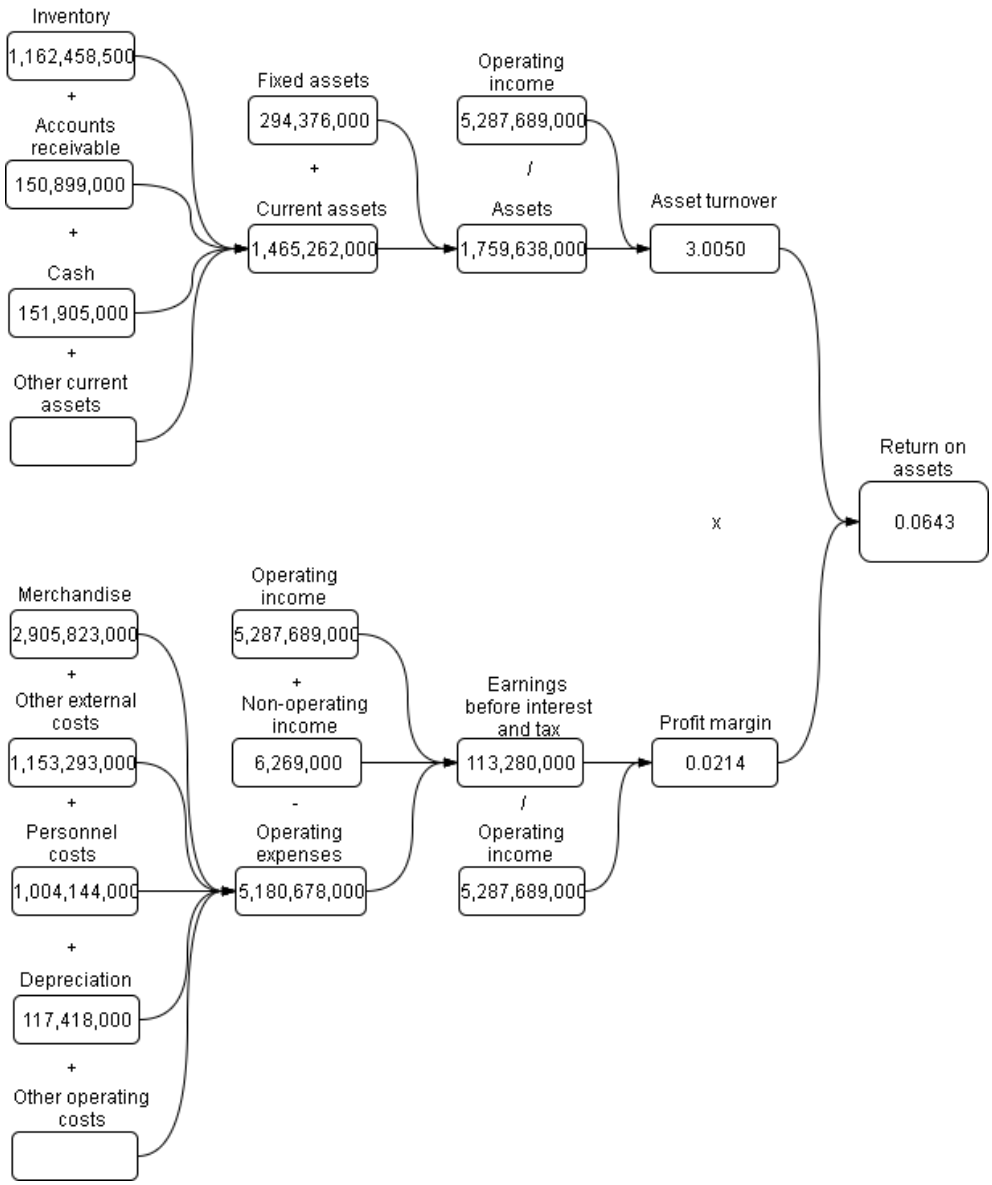

Figure 4.7: A DuPont model of Stadium

Chapter 5

Analysis

In this chapter, all cases are analyzed to see if the differences between e-tailing and bricks-and-mortar retailing described in Chapter 3 correspond to what the case companies are experiencing. Furthermore, the connection between these areas and inventory management is analyzed. For all companies, the following areas are discussed: Assortment, Distribution, Campaigns, and Returns.

5.1 Adlibris

The main part of Adlibris' assortment consists of books, and therefore the focus (unless specified otherwise) in this analysis is on exactly that. A summary of the findings from the case study with Adlibris can be found in Table 5.1.

Table 5.1: Summary of the Adlibris case study

Output of researched areas	Approach to Inventory Management	Financial Metrics (2015)
11.5 million SKUs - Mostly book titles - Limited number of suppliers Mostly well-planned campaigns and highlighting lists Two DCs - One physical store Low return rate - However, returned books stay in Adlibris' inventory	Short supplier lead times Small part of assortment in inventory Systematic forecasting and automated purchasing Own developed Inventory Management system	Inventory turnover = 16.4 Asset turnover = 2.35 Profit margin = 2.95 % Return on assets = 6.92 %

5.1.1 Assortment

As was noted in Chapter 4, Adlibris' total number of SKUs is quite high; 11.5 million, and the bulk (approximately 11 million SKUs) of their assortment is book titles. This is consistent with what Heinemann and Schwarzl (2010) said, that it puts an online retailer such as Adlibris in stark contrast with its physical counterparts. The latter would have a hard time listing millions of book titles in an easily accessible manner; the assortment can be considered far superior in that the search for specific items that are not part of the regular assortment (e.g. books that are not available in the store, that you have to get them to order) is facilitated greatly. Purchases can be expected to lack substitutes (as most customers look for specific titles), and therefore Adlibris can be expected to profit from, and carry, a large assortment. For some retailers and e-tailers, the number of suppliers can be expected to increase as the number of SKUs increases - however, since Adlibris orders from large publishers, they do not have to deal with a large number of suppliers. Due to this, Adlibris probably

has the possibility to order small quantities of individual SKUs (since the total shipment will still be large), which otherwise could be a problem when a large number of products is offered.

Since customers usually look for specific book titles, the issue of customers buying substitute items in the case of a stockout (and thus impacting the demand for other articles) can be considered negligible. This implies that for Adlibris, demand planning does not become significantly more complex as the number of SKUs increases.

In general, Adlibris does not have to choose which products to bring into their assortment - they simply offer what the publishers offer. As mentioned before, one of Adlibris' challenges is instead to decide upon which SKUs to keep in inventory and in what quantities. However, since many of their suppliers are based in Sweden, the lead times are often short enough to allow Adlibris to quickly request and receive new deliveries, and be able to deliver to customers quickly. This increases Adlibris' flexibility and thus decreases the complexity of Adlibris' inventory management.

5.1.2 Campaigns and Promotions

The types of campaigns that Adlibris implements are generally not very complex and fairly well-planned; continuous campaigns with different selected products that are easy and quick to implement (via the website). This corresponds well with what Schafer et al. (2001) stated about the ease of having dynamic campaigns online. They also have price promotions in cooperation with the suppliers. Adlibris' general strategy of keeping low prices compared to competitors seems to be in accord with what Heinemann and Schwarzl (2010) argued for; low prices are important since customers can easily search for the lowest price online. Adlibris does not seem to have to implement price promotions on the slow-moving products in order to lower inventory levels, which could be due to good systems for forecasting. There should not be any significant effects on demand complexity nor supply chain complexity due to the campaigns and promotions that Adlibris implements.

5.1.3 Fulfillment and Distribution

Adlibris aims for quick and timely deliveries, and they have taken certain specific actions in order to achieve this: keeping stock in Finland to ensure short delivery times to the customers in Finland, as well as increasing inventory levels overall. Also, the publishers are located close geographically, decreasing Adlibris' lead times. They do manage to deliver quickly - for many books, they can deliver the next day, and this is in the lower part of the interval mentioned by Kumar et al. (2016) (relating to speed of delivery).

One of the specific problems with e-tailing, based on its basic properties, is not being able to satisfy customers that want their products instantaneously, which Adlibris clearly identified. As an attempt to solve this, they opened a physical store in Stockholm. Complex supply chain structures (with more echelons) can increase the inventory levels and costs according to Mathien and Suresh (2015), but since this is just one store, it should not affect it heavily.

5.1.4 Returns

Since the return rate is very low for Adlibris, the handling of returns cannot be considered a challenge for them. The issue for Adlibris is related to having to keep the returned items in inventory, especially if the returns are books that belong to the "tail" of the inventory, i.e. slow-moving inventory. Today Adlibris does not see returns as a challenge for their inventory management, but they could potentially become a problem for Adlibris since they offer so many products, which inevitably leads to a large number of "tail items", but only if the return rate increases. Also, Adlibris' products are very far from being "single period", i.e. products that go out of fashion or similar after a period, in which case, according to Vlachos and Dekker (2003), inventory management can be heavily affected by returns.

5.1.5 Synthesis

Adlibris has a very large assortment, works on a regular basis with campaigns (mostly highlighting) and modestly with promotions, centralizes the inventory, and has a relatively low rate of returns. Furthermore, Adlibris keeps inventory levels low by only keeping a small part of the assortment in stock (the fastest-moving part), while securing fast supply of the slow movers. In general, it seems like Adlibris' strategy does not make their inventory management especially complex - no tough decisions regarding what to buy, and suppliers close-by enabling fast deliveries, but they have to decide what articles to keep in stock.

During the last couple of years, Adlibris has experienced modest revenue growth of around 1.5 % per year (as compared to online sales of books and media which have grown by 8.47 % the last two years, but then Adlibris does not offer media solutions nor media products), and a stable profit margin average of 4 % during the same time. In the latest annual report, Adlibris had an ROA of around 6.9 %.

5.2 Coolstuff

A summary of the findings from the case study with Coolstuff can be found in Table 5.2.

Table 5.2: Summary of the Coolstuff case study

Output of researched areas	Approach to Inventory Management	Financial Metrics (2016)
1 600 - 1 800 SKUs Dynamic campaigns and promotions - Moderate use of price reductions - Continuous 3 for 2 offers One DC - One physical store Low return rate	Long supplier lead times Forecasting based on sold quantity and gut feeling Recurring forecasting errors Overall inventory level considered too high	Inventory turnover = 7.1 Asset turnover = 5.02 Profit margin = 3.03 % Return on assets = 15.22 %

5.2.1 Assortment

Coolstuff has a relatively small assortment (1 600 - 1 800 SKUs). They do grow their assortment in order to keep growing their revenue, but at a relatively slow rate. Any new products need to have the right quality and match the rest of the assortment in order to be added. If they would find a large amount of products they feel confident about, they would include them in the assortment. Hence, the restriction seems to have nothing to do with physical space. This corresponds to what Heinemann and Schwarzl (2010) state about e-tailing assortment, i.e., physical space is not a limit for e-tailers' assortment sizes.

Coolstuff has noticed that their inventory of slow movers is starting to accumulate to a substantial amount. To get better control of the inventory and to better determine the order quantities, they have begun analyzing these products. Furthermore, the slow movers have positive effects, according to Coolstuff, since they attract customers to the website. What Coolstuff experiences is in line with what Heinemann and Schwarzl (2010) describe, i.e. that the demand for low-volume products is highly variable. However, seeing as Coolstuff has a relatively small assortment, the impact of having an unlimited assortment size cannot be analyzed. Coolstuff states that they misjudge demand relatively often, and they also base the quantity of first time orders on

gut feeling. This seems to indicate a poor forecasting process, rather than an impact of e-tailing.

5.2.2 Campaigns and Promotions

Coolstuff uses a variety of promotions and campaigns in order to drive sales and attract customers. They do, however, use price promotions moderately. This may be due to the fact that their products are quite unique and are probably difficult to find anywhere else, which according to Heinemann and Schwarzl (2010) is a way to avoid direct price pressure. Removing (or decreasing) the shipping cost as a promotion, like Coolstuff sometimes does, is another way of increasing sales. If the promotion includes all products, it does not affect the demand of specific products, but it should increase the overall demand. However, it most likely decreases the average value per order since there is no longer an extra delivery cost for low value orders. Coolstuff also uses product recommendations on the front page, which as Schafer et al. (2001) state is a way to increase sales of specific products. Coolstuff notices the effects of price promotions mainly around Black Friday. During this time they can sell out products they have had in inventory for too long.

Campaigns and promotions seem to be effective ways for Coolstuff to affect the demand, both overall and product-specific. It is also evident that they can be very dynamic and flexible in choosing what promotions to use at specific times. These mentioned ways of affecting the customers should, however, make forecasting demand more difficult. Even though Coolstuff tries to account for campaigns when determining order quantities, which according to Axsäter (2006) is necessary to do, they do it manually. It is reasonable to assume that all the different types of campaigns and promotions affect the short-term variation of demand to the point where it is extremely difficult to estimate manually. Furthermore, the fact that Coolstuff has to sell out excess inventory during Black Friday indicates that there are products that stay in inventory for quite some time and that forecasting errors are recurrent.

5.2.3 Fulfillment and Distribution

Coolstuff operates a supply chain with relatively low complexity. Opening a physical store does however mean adding another echelon to the supply chain structure. All customer orders are shipped from Coolstuff's distribution center in Malmö, and the physical store is served from there as well. Hence, the offline and online networks are integrated, which according to Hübner et al. (2015) benefits the inventory management but complicates operations. However, since they only operate one physical store, the effect on warehouse operations should not be difficult to handle. In conclusion, it is evident that

Coolstuff centralizes the inventory in one distribution center and because of that could reach an inventory turnover rate of about seven times last year. Furthermore, there is no doubt they prioritize delivery time over fulfillment costs, since office personnel sometimes help in the warehouse.

5.2.4 Returns

Coolstuff's return rate of about 5 % seems quite low. The reason for this is probably that the type of products they sell do not really depend on inspection, and also due to the focus on choosing the right products for the assortment. Even though 5 % is relatively low, it is still costly to handle. However, Coolstuff does not believe that the return flow has any major impact on their inventory management. This is probably due to the low return rate, and also because most products in the assortment can be sold during multiple cycles.

5.2.5 Synthesis

Out of the four effects of e-tailing as a market channel, Coolstuff experiences dynamic campaigns and promotions as well as centralization of inventory in the distribution center. The campaigns and promotions, more specifically the price promotions, seem to have a large impact on short-term demand. However, most of this impact happens during the period around Black Friday, which is why price promotions are not used continuously during the rest of the year. Despite having a relatively undeveloped inventory management approach and some problems forecasting demand, Coolstuff reached an inventory turnover rate of 7.1 times during 2016. This strongly suggests that the pooling effect from centralizing the inventory is a great advantage for e-tailers.

Coolstuff has a yearly average revenue growth of about 23 %, which indicates that they are able to match the online market growth. Furthermore, they are able do so while staying profitable, reaching a ROA of about 15 % in the latest annual report.

5.3 Dustin Group

For this analysis, it is important to remember that Dustin Group mostly sells B2B. This analysis, however, focuses on the B2C activities. A summary of the findings from the case study with Dustin Group can be found in Table 5.3.

Table 5.3: Summary of the Dustin Group case study

Output of researched areas	Approach to Inventory Management	Financial Metrics (2016)
220 000 SKUs Frequent campaigns and promotions - No price reductions from decreases in own margins One DC for B2C orders Low return rate	Small part of assortment in inventory Short supplier lead time Systematic forecasting and demand planning Focused on keeping tied up capital low	Inventory turnover = 35.3 Asset turnover = 2.14 Profit margin = 3.90 % Return on assets = 8.36 %

5.3.1 Assortment

Dustin Group has a large assortment, with around 220 000 SKUs. They believe that having a vast amount of products is a good way of attracting customers, just as Glatzel et al. (2011) describe. It also seems like Dustin agrees with Srinivasan et al. (2002); that the broad range of products makes the website a so-called "top-of-mind" store, i.e. a store that customers automatically think of. However, Dustin tries to remove products that do not contribute significantly.

As Glatzel et al. (2011) describe, a complex assortment mix can lead to a high total inventory level of low-volume products when trying to reach the target service levels. Dustin's large assortment would certainly imply a lot of slow movers in inventory if they kept all products in their distribution center. As described earlier, Dustin Group only keeps about 16 000 SKUs in their own warehouse, and they order the rest from the suppliers when the need arises. In this case, the large assortment, made possible by the lack of physical space limits, evidently affects inventory management. Having 220 000 SKUs in the distribution center would not only imply keeping a lot of slow movers in inventory, but also a more complex warehouse management. For Dustin, not keeping all products in inventory means that they have to

determine how many and which SKUs to keep in stock. This is why Dustin tries to improve the categorization of products. It seems like Dustin Group benefits from having a large assortment by attracting a lot of customers, while being able to avoid the downside of having to forecast slow movers.

5.3.2 Campaigns and Promotions

Dustin Group uses a variety of promotions and campaigns. However, they rarely use promotional prices if it means that their own profit margin decreases. Dustin can use its buying power to decrease the purchasing price and then use a discounted selling price to attract customers, just as Reibstein (2002) states.

Dustin's approach to campaigns seems relatively proactive, working together with the suppliers. If they misjudge demand and buy too much, they can be reactive as well and use price promotions to sell off the products. Hence, it seems like Dustin can be very dynamic in the approach of affecting demand; they can use the cooperation with the suppliers to affect demand long term by e.g. decreasing the price permanently, and a variety of campaigns and promotions to affect it short term.

5.3.3 Fulfillment and Distribution

Dustin Group's B2C segment is exclusively handled online. All orders are shipped from the distribution center in Stockholm, leading to fast deliveries in most parts of the Nordic countries. For the SKUs not kept in inventory, however, the delivery time is one to two days longer, since Dustin has to order them from the supplier first. From the customer's point of view, this might be a deal breaker, but for Dustin, this trade-off between tied up capital and service level has to be made. Aiming at shipping 75-80 % of the orders the same day seems reasonable to the authors. To uphold this level, as stated before, it is very important for Dustin to keep the right products in inventory. Furthermore, Dustin's distribution capabilities depend on the locations of the suppliers. It would be impossible to use this strategy without suppliers in close proximity. In some cases, Dustin can use drop shipping, which alters the supply chain structure and postpones the inventory even further upstream. Dustin seems capable of centralizing the inventory, which shows in their inventory turnover rate of about 35 times last year. However, buying products from the suppliers last minute, when the demand occurs, also seems to affect the purchasing price, since cost of goods sold equals about 85 % of the operating income.

5.3.4 Returns

Dustin does not seem to monitor the return rate. The reason might be that it is low and that they believe it is a necessary part of the customer service. They are, however, aware that it is a challenge to handle returns in an effective way. Dustin does not seem to suggest that the returns specifically affect inventory management, but it is considered a general challenge. However, not knowing the return rate would imply difficulties knowing how the inventory levels will move. This might, as Vlachos and Dekker (2003) suggest, lead to lost sales or excess inventory of single cycle items.

5.3.5 Synthesis

Dustin uses a large assortment, dynamic and frequent campaigns and promotions, and centralization of inventory in the distribution center. Furthermore, they have developed clear procedures for inventory management. In order to avoid keeping low-volume products in inventory, Dustin Group uses suppliers located in a close proximity which leads to short lead times. Furthermore, they are able to cooperate with suppliers in planning campaigns and promotions. This approach resulted in an inventory turnover rate of 35.3 times last year, meaning they tie up very small amounts of capital in inventory relative to their operating income. In conclusion, Dustin seems to be able to mitigate the downsides of large assortments and excessive campaigns and promotions, and at the same time using the upside of inventory pooling to reduce tied up capital in inventory. However, Dustin has high costs of goods sold, and ties up vast sums of capital in fixed assets, resulting in 8.4 % return on assets. Lastly, it is also important to consider the fact that Dustin, while growing their total revenue, has seen a negative average development in the B2C segment over the past five years. This means they have been outperformed by the online consumers electronic market.

5.4 Sportamore

A summary of the findings from the case study with Sportamore can be found in Table 5.4.

Table 5.4: Summary of the Sportamore case study

Output of researched areas	Approach to Inventory Management	Financial Metrics (2016)
62 000 SKUs Frequent campaigns and price promotions One DC High return rate	Long supplier lead times Forecasting based on growth targets Purchasers have a cap on tied-up capital - Can be increased if the purchased products increase the revenue Manual and ad hoc forecasting No Inventory Management system Outlet site for getting rid of obsolete inventory	Inventory turnover = 6.7 Profit margin = 2.59 % Asset turnover = 3.04 Return on assets = 7.87 %

5.4.1 Assortment

Sportamore focuses on creating the market's widest and deepest assortment, and they want to be viewed as a complete store for all product categories they offer. Just as Heinemann and Schwarzl (2010) state, this can attract a broad range of customers and make the website appear as a one-stop shop. However, it leaves them with a lot of slow moving SKUs. It is quite evident that Sportamore is willing to hold inventory of many slow movers in order to attract customers. The benefits of low-volume products can outweigh the increased costs, according to Glatzel et al. (2011), and it seems like Sportamore agrees with that statement. However, the large amount of slow movers leads to a lot of products with high demand variability. This should lead to large forecasting errors and unbalanced inventory levels.

5.4.2 Campaigns and Promotions

Campaigns are an important tool for Sportamore to increase sales. They use mostly weekly campaigns, consisting of themes and usually price promotions. Peinkofer et al. (2015) suggest that using campaigns is a common tool for online retailers to attract customers, and this fits with what Sportamore does. Furthermore, price promotions are useful for Sportamore to sell out stock at the end of a season. This indicates that they usually buy too much inventory or simply that they want to avoid stockouts at any cost. The price promotions seem to be both a marketing strategy for maintaining rapid growth and a response to poor inventory management. However, when determining order quantities, the extreme use of price promotions is probably making it more difficult to forecast demand, making the inventory management even worse.

A downside of continuous discounts, as Srinivasan et al. (2002) points out, is that it attracts disloyal customers. Having a campaign strategy that attracts disloyal customers and an assortment strategy that increases loyalty, see Section 5.4.1, seem to contradict each other. On the other, the assortment may compensate for the decreased loyalty of price promotions.

5.4.3 Fulfillment and Distribution

As Sportamore ships all orders from one distribution center close to Stockholm, the supply chain complexity is relatively low. Sportamore is very focused on keeping the delivery times low, which Li et al. (2015) suggest as a common measurement of service level in e-tailing. However, since they order the majority of the inventory 6-8 months in advance, delivery time and availability are closely related. The centralization of inventory seems to be beneficial for Sportamore's inventory management, leading to an inventory turnover rate of almost seven last year, which is good considering Sportamore has not implemented an inventory management system.

The geographical location of the distribution center allows Sportamore to uphold quick deliveries in most parts of the Nordic countries; they can even deliver the same day within the greater Stockholm area. They cannot, however, use same day deliveries anywhere else. This indicates that the location of the distribution center is quite important, since it determines which geographical area will have the fastest deliveries.

5.4.4 Returns

Sportamore's return rate, around 25 %, shows what not being able to inspect products pre-purchase can result in. According to Sportamore, because they are aware of the return rate, the returns do not affect their inventory manage-

ment. This reasoning indicates that having a high return rate increases the need to monitor and know the exact number. By doing so, it should be easier to anticipate the inventory levels. However, since Sportamore sells many fashion-sensitive items, which are usually sold during a short time period, one could assume that they experience excess inventory at the end of the selling period due to returns, which is a problem that Vlachos and Dekker (2003) discuss. This assumption is supported by the fact that they use an outlet site to sell products from previous seasons. Furthermore, since Sportamore does not increase the order quantity to compensate for returns, some stockouts should occur late in the selling season when inventory levels are low and customer returns are yet to arrive in inventory. Outsourcing the return handling, may be a way for Sportamore to reduce the recovery and collection time of returned products.

5.4.5 Synthesis

Out of the proposed effects of e-tailing, Sportamore uses a large assortment, dynamic and frequent campaigns and promotions, ships all orders from one distribution center, and experiences high return rates. Their approach to inventory management seems ad hoc, since the purchasers have to manually (in Excel) decide order quantities based on several factors. Furthermore, the supplier lead times are generally long and information from the interviews indicate that Sportamore's purchasing power is relatively weak. Combining the impact of e-tailing and the undeveloped inventory management, it is reasonable to assume that Sportamore's inventory turnover rate would be low. Surprisingly, they turned their inventory 6.7 times during 2016. Moreover, Sportamore has largely outperformed their market in revenue growth since 2012. However, they have also averaged a negative profit margin. Hence, the large assortment and the excessive use of campaigns and (price) promotions seem to attract a lot of customers, but it also affect the profit margin negatively.

5.5 Clas Ohlson

A summary of the findings from the case study with Clas Ohlson can be found in Table 5.5. For the analysis below, it should be remembered that only around 2 % of Clas Ohlson's revenue comes from online sales, i.e. Clas Ohlson is mainly a bricks-and-mortar retailer, with some online sales.

Table 5.5: Summary of the Clas Ohlson case study

Output of researched areas	Approach to Inventory Management	Financial Metrics (2016)
15 000 SKUs - Static size Planned campaigns, continuous price promotions - Same in both channels One DC - Separated warehousing Low return rates in both channels	Long supplier lead times Systematic forecasting Keeping complexity low by not expanding the assortment	Inventory turnover = 4.7 Asset turnover = 2.11 Profit margin = 6.66 % Return on assets = 14.08 %

5.5.1 Assortment

Clas Ohlson's policy to substitute around 2000 SKUs every year but maintain the same total number can be assumed to have developed from the fact that Clas Ohlson had physical stores before the online store, where space was limited and consequently the assortment size as well. Seeing as most of the products stay in the assortment for more than a year, one can assume that obsolescence (due to products going out of fashion or similar) is not a major problem for Clas Ohlson. The common phenomenon of a small subset of the assortment representing a large part of the revenue, as discussed by Muckstadt and Sapra (2010), may not apply to Clas Ohlson since products are removed based on sales. This should mean that the tail of Clas Ohlson's assortment is shorter than for other companies, especially compared to pure e-tailers. Also, one can assume that forecasting is easier for Clas Ohlson, since they can rely on historical data for many products (except for the products that are newly added to the assortment).

Clas Ohlson has chosen not to expand its assortment in the online store. Srinivasan et al. (2002) describes how a broader range of products may lead to the store becoming a top-of-mind vendor. However, it is very possible that

Clas Ohlson's offline presence has lead to great customer loyalty and that they are already one of the top-of-mind online stores in their market. Furthermore, Clas Ohlson has a few stores with assortments that are dependent on the location of the store. This suggests that they can manage to keep only fast moving SKUs in these stores. If a customer wants a product that is not part of the store assortment, they can order it directly from the store or online. Hence, this is a way of centralizing inventory of slow-movers. The authors argue that this is a good example of how the two channels can complement each other.

5.5.2 Campaigns and Promotions

Clas Ohlson does not seem to implement campaigns and promotions just to reduce inventory levels due to risk of obsolescence, but rather has a relatively proactive attitude, and they plan the campaigns every year. Price promotions are used continuously, both for members of their loyalty program and for other customers. Both campaigns and price promotions are planned ahead of time in order not to risk having bad availability, but this is something that Clas Ohlson does see as a challenge - implementing campaigns puts a pressure on forecasts - if they aren't done properly, it's difficult to satisfy the customers.

The approach to campaigns and promotions in the online and offline channel seems mostly integrated at Clas Ohlson. This probably leads to less short term demand impact than if they would have used the dynamic properties of the online store more aggressively. Furthermore, it may not cause a great increase in the rate of new customers, but due to the special promotions for members in the customer club, it should increase the customer loyalty.

5.5.3 Fulfillment and Distribution

Clas Ohlson's fulfillment and distribution network can be seen as relatively uncomplicated, as all orders are picked and sent from the distribution center in Insjön. The online orders are fulfilled from a separate part of the warehouse but the close proximity to the bulk storage means extremely short replenishment lead times. Hence, the e-tailing part of the warehouse can operate with very low safety stock levels. As Hübner et al. (2015) discuss, this integrated fulfillment network should lead to lower inventory levels than if the networks were separated. On the other hand, fulfillment integration may complicate the warehouse operations, which Clas Ohlson agrees with. In the future, when the amount of online orders grow, they see the ability to deliver everything from the same distribution center as a major challenge.

As Clas Ohlson has expanded, they have started selling in countries like Germany and the United Arab Emirates. However, they have not opened other

distribution centers, which reasonably make lead times long and uncertain for customers there. This is especially true for the products that Clas Ohlson orders from Asia (where 65 % of the suppliers are based).

5.5.4 Returns

As return rates are usually higher for online stores than for bricks-and mortar retailing according to (Guide et al., 2006), it is not surprising that Clas Ohlson (with mainly physical stores) has low return rates. Furthermore, there is only a small difference between the channels, probably due to the nature of the products. The fact that Clas Ohlson keeps the assortment fresh and popular may also contribute to diminishing return rates, especially for online customers.

As a multi-channel retailer, Clas Ohlson accepts returns of online pruchases in the physical stores. Agatz and Fleischmann (2008) argue that this policy can decrease the cost of return handling, which usually drives large costs for e-tailers. However, the authors argue that it is important to quickly get the returned product back in inventory to minimize the risk of shortage. However, since Clas Ohlson has a continuous flow of products between the stores and the distribution center, as well as basically the same assortment online and offline, this should not be a problem.

5.5.5 Synthesis

Since Clas Ohlson is not a pure e-tailer (only 2 % of the revenue comes from the online sales), one could to some extent expect them not to have taken full advantage of the possibilities of e-tailing. They have not enlarged the assortment, nor excessively implemented campaigns, partly because they want to offer the same experience online and offline. Therefore, e-tailing thus far should not impact their inventory management, except for, as was pointed out earlier, creating challenges regarding integration of the fulfillment and distribution network.

When comparing Clas Ohlson's average overall revenue growth the last few years (4.97 %) to the online sales of home improvement products and furniture/interior design products (34.16 % and 29.10 %), there seems to be room for more aggressive online expansion for Clas Ohlson. However, Clas Ohlson's profit margin last year was relatively high (6.66 %) and their ROA was 14.08 %, so they could also argue that business as usual works fine.

5.6 Panduro Hobby

For the following analysis, it is important to remember that Panduro's online sales only accounts for 5-10 % of the total revenue. A summary of the findings from the case study with Panduro can be found in Table 5.6.

Table 5.6: Summary of the Panduro Hobby case study

Output of researched areas	Approach to Inventory Management	Financial Metrics (2015)
11 000 - 13 000 SKUs - Static size Planned campaigns - Continuous 3 for 2 offers One DC - Integrated warehousing Low return rates in both channels	Long supplier lead times Systematic forecasting Classification of products into different service level targets Outlet site for getting rid of obsolete inventory	Inventory turnover = 4.2 Asset turnover = 2.10 Profit margin = 1.59 % Return on assets = 3.27 %

5.6.1 Assortment

Panduro has around 11 000-13 000 SKUs online, which clearly is more than they do in physical stores (around 6 000 - 8 000), which seems to support the idea that it's easier for e-tailers (or the e-tailing part of multi-channel companies) to increase their assortment (Heinemann and Schwarzl, 2010). Around 25 % of the assortment is seasonal and gets renewed every year. Around 33 % of the products make up 80 % of the revenue, which is quite different from the ratio that Burrell (1985) argued for. This could on the one hand be, as Panduro states, due to the fact that customers usually buy product kits. This means that Panduro cannot completely cut the "tail", due to the possibility that these kits consist of both fast movers and slow movers. This does more or less correspond with Glatzel et al. (2011): carrying low-volume products can have benefits that outweigh any increased costs that they incur. On the other hand, the low-volume products belonging to kits could create confusion as to what products the customers actually demand. Specifically, one could assume that it is not entirely clear what products the customers are told that they need (i.e. products in the same kit or products needed e.g. for a specific remodelling job), but they don't necessarily want (in the sense that they didn't go to the store to buy them). Furthermore, it could create problems with re-

gards to what should be stocked in specific stores - if you want to send a small number of SKUs to a certain store, this might lead to decisions regarding other SKUs as well, belonging to the same kits. All things considered, this could complicate Panduro's inventory management. It should also be noted that Panduro does prioritize the service levels of what they consider to be the most crucial products, so logically this should mean that the inventory management of the prioritized articles is better than the lower-priority articles.

5.6.2 Campaigns and Promotions

Panduro uses campaigns and price promotions alike both in the physical stores and now online. In general, Panduro seems to work mostly with themes and highlighting in their campaigns. They use price promotions on the main website relatively restrictively (except for the "buy 3, pay for 2" promotion which are used continuously). Instead, Panduro pushes old and slow-moving products through the outlet site. There, products are discounted, and the site should thus be able to keep obsolescence levels low (that is, they should at least not have to throw away items). Due to these factors, campaigns and price promotions should not impact Panduro's inventory management significantly; neither the demand volatility nor the supply chain structure seems to be impacted by Panduro's strategy.

5.6.3 Fulfillment and Distribution

As Panduro, which started out as a bricks-and mortar retailer, has begun selling online, they've experienced challenges in achieving short lead times. This is consistent with the fundamental challenges that e-tailing pose, according to Kumar et al. (2016). Since Panduro fulfill and distribute all orders (both online and store replenishment) from the same distribution centers, they might have difficulties achieving short lead times due to insufficient warehousing solutions. The integrated networks should, however, lead to lower inventory levels (Hübner et al., 2015).

5.6.4 Returns

The returns online are 1-2 %, and the online sales are such a small part of the total revenue that the returns cannot currently be considered a factor that significantly affects Panduro's inventory management; it should e.g. not make forecasting more difficult. The only issue, which may have more to do with transportation, is that customers that have bought something online and want to return it can leave it in a Panduro store. Specifically, this can become a problem if the returned article is not part of the store's regular assortment,

because the article then needs to be sent to Panduro's DC. However, if the integrated flows leads to quicker collection and recovery of returns was not disclosed during the interviews.

5.6.5 Synthesis

Panduro has used the e-tailing channel as a way to offer a full assortment; the online store offers almost twice the number of articles as their average physical store. They have not used campaigns excessively, but they have an outlet site where they can get rid of inventory that is going obsolete or out of fashion. Therefore, e-tailing probably both simplifies the inventory management and makes it more complex for Panduro, because it offers a way to get rid of excessive stock but increases the number of SKUs that Panduro can have.

Panduro's revenue from online sales accounts for 5-10 % of their total revenue, and the total revenue increased by around 5 % per year from 2012 to 2015. From 2012 to 2016, online sales of furniture/interior design products and miscellaneous products have increased by around 29 % and 19 % per year, so Panduro could possibly benefit from increasing their online presence. Furthermore, Panduro's latest profit margin and ROA were 1.59 % and 3.27 %, respectively, which can be considered low.

5.7 Stadium

It is important to remember that Stadium is mainly a bricks-and-mortar retailers. The revenue contribution from the online channel is unknown to the authors but the interviewee indicated that it accounts for a considerable part. A summary of the findings from the case study with Stadium can be found in Table 5.7.

Table 5.7: Summary of the Stadium case study

Output of researched areas	Approach to Inventory Management	Financial Metrics (2016)
18 000 SKUs - Static size Planned campaigns, and unplanned campaigns reactive to shifts in weather Moderate use of price promotions One DC - Integrated warehousing High return rates in both channels	Long supplier lead times Systematic forecasting Prioritized stock for online channel Outlet site for getting rid of obsolete stock	Inventory turnover = 4.5 Asset turnover = 3.01 Profit margin = 2.14 % Return on assets = 6.43 %

5.7.1 Assortment

Stadium has about 18,000 SKUs. All of them are offered online but only subsets can be found in the physical stores. Just as Heinemann and Schwarzl (2010) suggests, the assortment is often larger online than in bricks-and-mortar stores. Stadium does not want to expand its assortment but instead keeps changing it. This indicates that Stadium should be able to keep the assortment complexity relatively low by constantly removing slow-moving SKUs. Thus, they do not have to forecast these SKUs again. Furthermore, this could potentially lead to a more uniform demand pattern over the assortment, i.e. a smaller low-volume part. Nevertheless, only 20 % of stadiums items account for 80 % for the sales. Whether or not this distribution would change with a different assortment strategy is unknown. Since Stadium believes their forecasting works well, it is reasonable to assume that the constant assortment is helpful in this regard. Also, as described earlier, Stadium forecasts quite thoroughly before introducing new products.

5.7.2 Campaigns and Promotions

Campaigns and promotions are used in about the same frequency in the online and offline channels at Stadium. Just as Agatz and Fleischmann (2008) describe, the use of multi-channels creates the question of whether to use the same campaigns and (price) promotions in both channels or not. Stadium has evidently chosen to keep the channels more or less aligned since they want to create a similar customer experience. This probably leads to fewer campaigns and promotions than in a single-channel e-tailer case since the physical stores, which are less dynamic than the online stores, work as constraints. However, from an inventory management perspective, this approach leads to less short-term demand impact which should make it easier to balance the supply and demand.

In order to remove products from the assortment, Stadium usually starts selling them at a reduced price in the outlet stores instead of using price promotions in the regular stores. Doing so in the offline channel is reasonable since the new products need the space, and since Stadium wants to keep the channels similar, they use a separate online outlet store as well. However, as Peinkofer et al. (2015) state, price promotions are important to attract customers to the website, which means that Stadium might decrease the traffic to the main online store.

5.7.3 Fulfillment and Distribution

With 161 bricks-and-mortar stores and three online stores, Stadium operates a relatively complex supply chain. However, they are able to fulfill all orders from the same distribution center, making inventory management easier. Having a large amount of online orders that are picked up in physical stores is probably a great advantage for Stadium. Since they replenish most stores every weekday, it is easy to include online orders in the deliveries. This should increase the delivery reliability and keep the delivery times low for online orders. However, Stadium believes the lead time for online orders is too long. This can be an effect of integrated fulfillment networks, and Stadium believes it have to be reduced. This seems to correspond with Li et al. (2015); focusing on on-hand availability in bricks-and-mortar stores and delivery times in e-tailing. A way for Stadium to decrease the delivery time for online orders would be to allow click-and-collect orders to be fulfilled directly from the store inventory. This could make it possible for customers to pick up the order in only a few hours. However, it would result in more demanding inventory management of the physical stores in order to avoid stockouts. Also, since the physical stores don't offer the full assortment, it would only be possible for some products.

5.7.4 Returns

Being able to return online orders in the physical stores probably decreases Stadium's costs of returns and increases customer satisfaction, since in-store personnel can check the return right away.

Depending on the product, in-store returns can have different degrees of impact on the inventory management. If a product that is not part of the store's regular assortment is returned, it has to be transported back to the distribution center. If there are frequent transfers between the distribution center and the store, e.g. every weekday, it is reasonable to believe that this leads to a shorter time until the product can be sold again, compared to regular online returns. This might be especially true if the state of the returned product is checked directly in the store at the time of the return. Furthermore, if the returned product is part of the store's regular assortment, it stays in the store inventory. Hence, the store replenishment can be decreased. This means that the return is put back in to inventory directly, almost eliminating the return time. If the time between the product is returned and it can be sold again can be decreased, the risk of a stockout also decreases, as discussed by Vlachos and Dekker (2003).

Since Stadium's return rate is relatively high, these differences in handling returns, compared to the case of pure e-tailers, could have a significant impact on the inventory management.

5.7.5 Synthesis

Stadium offers a larger assortment online than in the physical stores, but they keep the assortment size relatively constant. Campaigns and promotions are used moderately and in almost the same way regardless of the channel. Furthermore, the fulfillment and distribution networks are integrated. Stadium also experiences higher return rates from online orders.

Stadium's approach to inventory management seems structured and well-developed. They are satisfied with their forecasting and current inventory levels, even though the inventory turnover rate during 2016 was only 4.5. The interviews show no indications of inventory management problems linked to e-tailing, which might be due to the moderate use of the assortment and campaign/promotion possibilities. However, the unsatisfactory lead time of online orders might originate from the integrated fulfillment and distribution networks. This indicates that the level of integration between the channels affects all parts of the logistical efficiency. Furthermore, Stadium reserves a part of the stock for online orders, meaning they can experience stockouts in the physical stores while still having inventory in the distribution center.

Stadiums's average revenue growth since 2012 of 4.19 % is significantly

lower than the growth of the online market in their product categories. This is not surprising since bricks-and-mortar retailing still accounts for most of the revenue. Furthermore, Stadium focuses on creating a similar experience in both channels, which probably prohibits rapid growth of the online channel.

Chapter 6

Cross-case Analysis

In this chapter, the general takeaways from the case study analysis are aggregated with the purpose of finding common themes, conflicting views, and actionable conclusions. The main findings are summarized in figures that touches on the most important differences between e-tailing and traditional retailing and their impact on inventory management.

6.1 Effects of E-tailing

For this analysis, Adlibris, Coolstuff, Dustin Group and Sportamore are referred to as pure e-tailers, even if some of them also operate one physical store.

6.1.1 Assortment

Based on Table 6.1, it appears that the pure e-tailers, with the exception of Coolstuff (i.e. Dustin Group, Adlibris and Sportamore) have taken advantage of the claim that there is no physical limit to how large e-tailers' assortments can be, judging by the fact that those three have the most SKUs in their assortments. Furthermore, the e-tailers' assortments seem to keep growing.

It's especially interesting to compare Sportamore and Stadium, as they're active in the same industry, i.e. sporting goods of mostly well-known brands. Sportamore, the e-tailer, carries more than three times the number of SKUs that Stadium, the multi-channel (although mostly bricks-and-mortar) retailer, carries. Also, Sportamore and Stadium have almost equally wide assortments, as they sell products of the same categories as each other, but Sportamore has a much deeper assortment. Another aspect to consider is that all the pure e-tailers studied, with the exception of Coolstuff (which as mentioned carries relatively few SKUs) sell commodity goods. Those types of companies can be expected to compete with large assortments, since competitors can easily get access to the same products. It should be noted that most of the companies studied also have private labels.

Table 6.1: Assortment sizes and assortment in inventory

Company	SKUs in assortment	SKUs in inventory
Coolstuff	1,800	1,800
Dustin Group	220,000	16,000
Adlibris	11.5M	100,000-400,000
Clas Ohlson	15,000	15,000
Sportamore	62,000	62,000
Panduro	10,000	10,000
Stadium	18,000	18,000

The companies with mostly bricks-and-mortar retailing, i.e. Clas Ohlson, Panduro and Stadium, have all set a maximum level for the assortment size, and instead focus on making sure that the best-selling products are part of the assortment. This is assumed to be a practice that's been developed due to the physical area constraints in bricks-and-mortar retailing. Interestingly, both

Stadium and Panduro Hobby offer a larger assortment in the online channel than in the physical stores. However, they use a relatively constant assortment size, as compared to the growing sizes of pure e-tailers. Clas Ohlson has also tried to operate physical stores with a subset of the total assortment. By only offering a part of the assortment in the physical stores, multi-channel retailers should be able to centralize inventory of slow-moving SKUs in the distribution center. By pooling the demand of these products, they can decrease the inventory levels. This seems to be a good way of using the two channels to achieve synergy effects.

E-tailers that add a lot of SKUs to their assortment, according to the companies studied, also need to consider which ones they want to keep in stock. It seems that when the assortment grows to a certain level, it is no longer possible (or reasonable) to keep all the products in inventory. Tactics that have been mentioned are for instance to only store the top 10-20 % fastest-moving products and securing short lead times on the slower-moving products, e.g. through faster deliveries or keeping suppliers closer geographically. Both Dustin Group and Adlibris have chosen a Source-to-Order strategy for these products, i.e. only purchasing products from the suppliers when a customer order is received.

In general, the slow-moving products seem to be the hardest to manage, as the demand is more volatile and increases the overall complexity of the inventory management. However, the e-tailers that have been interviewed generally see the tail of the products as necessary and good for the overall revenue and growth. This is partly due to companies wanting to have "complete" assortments; e.g. if Sportamore decides to sell golf products, they would bring in a whole range of products in order to be able to meet any demand from customers looking for golf products. As described in Section 3.5, the assortment is one of the main reasons that consumers choose the online channel. Hence, multi-channel retailers might lose customers to the e-tailers if they don't expand their online assortment. However, letting the assortment size grow continuously might bring more problems than benefits. If no assortment strategy and limits are chosen, there are few incentives for phasing out products that do not contribute to the customers, and the amount of slow movers in the assortment and possibly in inventory keeps growing.

6.1.2 Campaigns and Promotions

Campaigns and promotions, meaning both price promotions and highlighting products, are used to drive sales as well as bring customers to a website or store.

According to the interviews, price promotions are used more extensively by pure e-tailers than by multi-channel retailers. Of course, this depends on

what kind of products the e-tailer sells, but when comparing e.g. Stadium and Sportamore, it is obvious that Sportamore uses price promotions more regularly than Stadium. Also, as was noted in Chapter 3, price promotions like the ones that e-tailers use mainly attract disloyal customers, so the outcome should look a lot different for e-tailers and retailers. Attracting disloyal customers could then mean that you have to try to reach many customers instead of strengthening relations with your existing ones.

Furthermore, larger e-tailers with a lot of leverage such as Dustin do not carry the marginal loss of cutting product prices, but rather collaborates with suppliers when planning price promotions. Adlibris claimed that they can work out deals with publishing houses as well. Thus, Adlibris gets discounts and doesn't have to decrease its margins during price promotions, and in exchange the publishers get publicity. Furthermore, Adlibris wants to offer low prices constantly as a competitive advantage over the physical book stores, whereas the other case study companies seem more inclined to use price promotions.

E-tailers and multi-channel retailers alike, specifically those that sell products that follow trends, tend to move last season's products to outlet sites. This can be seen as an alternative to constantly pushing price promotions on certain products (there are also rules on how long and often you can keep price promotions on any single product that limit this behavior). The multi-channel retailers studied in this thesis are focused on keeping campaigns and promotions similar in both channels, in order to create a seamless experience for the customers.

Campaigns and promotions, especially price promotions, generally seem to be a way for pushing products and getting rid of excess inventory. This is done either to free up space or to make sure that the inventory doesn't get obsolete, which means that it should not affect the inventory management complexity too much. However, if price promotions are used a lot for certain products, depending on how the inventory management system works, it may distort the historical data for those products. Furthermore, e-tailers seem to use clearance sales more dynamically - specifically, they do not wait until the end of the season to implement them. Also, as e-tailers do not use shelf space to display products (as compared to physical stores), a product running out of stock may be all right, as it won't be noticed as much as an empty shelf would be for customers visiting a store. However, stockouts increase the risk of losing customers. Campaigns and promotions can also be used for other reasons than reducing inventory levels. During holidays, special occasions, or simply when it is deemed useful, they are used to attract customers to the website. Reducing or removing the delivery price has also been mentioned as a way to drive sales. In general, e-tailers appear to be more flexible and dynamic in deciding when to start a campaign or promotion. This is reasonable since it

is easier to change the appearance of a website than of physical stores. Being dynamic in the online channel makes it possible to affect short-term demand a lot. However, it also seems to create a propensity to not optimize the order quantities. The possibility to initiate successful campaigns and promotions without much long-term planning gives the impression that ordering too much is not a problem. Especially when supplier lead times are long, which is the case for Sportamore and Coolstuff, campaigns and promotions seem to depend more on inventory levels than the other way around. When lead times are short, which is the case for Dustin Group and Adlibris, it appears possible to plan inventory levels with regards to upcoming campaigns without losing the dynamic part.

6.1.3 Fulfillment and Distribution

Coolstuff, Dustin and Sportamore distribute all orders from one distribution center, while Adlibris uses two. However, Adlibris chose to use the second distribution center because it is owned by another subsidiary of Bonnier Group and it had unutilized capacity, making it possible to decrease the delivery times in Finland. Hence, it looks like the e-tailers are able to satisfy the demand of several markets from a single point of inventory, which eliminates the question of where to keep inventory and should decrease the inventory levels drastically.

The multi-channel retailers on the other hand have to fulfill and distribute both online and offline orders. All of them are able to do so from an integrated network, i.e from a single distribution center. However, there are challenges related to multi-channel fulfillment. Clas Ohlson indicates that growing further would create a challenge in delivering everything from the same distribution center, and Stadium, as well as Panduro, has identified that reducing lead times for online orders is a major challenge. The fact that the online channel only accounts for a small part of the total revenue, in all of these companies, indicates that this challenge will increase in importance. Hence, before deciding the level of network integration, one must consider the impacts beyond reduction of inventory levels.

Multi-channel retailers also face the challenge of whether to prioritize availability in the physical stores or online. For example, Stadium reserves some of the inventory for online orders. The multi-channel can also make it possible for the customers to pick up orders in a physical store, which is the case for all interviewed multi-channel retailers. In this situation, a decision about where to pick the order from is created. The order can either be fulfilled in the distribution center and shipped to the store or be fulfilled directly from the store inventory. For retailers, it seems that new questions regarding the fulfillment and distribution structure arise when they start selling online.

6.1.4 Returns

Coolstuff, Dustin and Adlibris all have low return rates, while Sportamore has the largest of all companies studied. Furthermore, some of the predominantly bricks-and-mortar retailers (Clas Ohlson and Panduro Hobby) only show small differences between return rates online and offline. Stadium and Sportamore have the largest return rates by far. This indicates that the return rate is more dependent on the products than on the channel, even if returns of online orders are more probable than in bricks-and-mortar retailing.

Coolstuff and Sportamore agree that returns are costly to handle, and Dustin Group points out that they are a necessary part of the customer service. Furthermore, some companies indicated an impact on inventory management. Sportamore mentioned the importance of knowing the return rate when planning purchases. In the case of Adlibris, it happens that SKUs that are not part of what they usually keep in inventory are returned, in which case they can end up with slow movers in inventory that they don't normally keep in stock. For Stadium, Clas Ohlson, and Panduro Hobby, in-store returns create a possibility to decrease the time until the product can be sold again (as compared to regular online returns), decreasing the risk of stockouts.

The multi-channel seems to create synergy effects for costs, customer service, and inventory management with regards to returns. However, the authors argue that the requirements on procedures and information systems are high in order for the effects to be achievable.

6.2 Financial Metrics

The financial metrics of the case study companies are compared to gain some more insight into the overall analysis.

In Table 6.2, the return on assets, asset turnover and profit margin can be found for all case companies. The highest return on assets can be found at Coolstuff, where almost all revenue comes from e-tailing. They are, however, closely followed by Clas Ohlson, the revenue of which comes mostly from bricks-and-mortar retailing. Interestingly, these high return on assets are acquired in two different ways. Coolstuff has the highest asset turnover, while Clas Ohlson has the highest profit margin.

Table 6.2: Profit margin, Asset turnover and Return on assets

Company	Profit margin (%)	Asset turnover	Return on assets (%)
Coolstuff	3.03	5.02	15.22
Dustin Group	3.90	2.14	8.36
Sportamore	2.59	3.04	7.87
Adlibris	2.95	2.35	6.92
Clas Ohlson	6.67	2.11	14.08
Stadium	2.14	3.01	6.43
Panduro	1.59	2.06	3.27

Coolstuff, Sportamore and Adlibris have similar profit margins, while Dustin Group is outperforming them slightly in this metric. Stadium and Panduro have the lowest profit margins and Clas Ohlson, as stated previously, has the highest. Hence, the mainly bricks-and-mortar retailers account for both the lowest and highest profit margins. It is important to remember that the listed figures are for the whole organizations (including online and offline, and B2C as well as B2B). Analyzing only the B2C online section would most likely produce different results. Nevertheless, it is interesting to compare the results.

Table 6.3: Inventory turnover based on operating income

Company	Inventory turnover
Dustin Group	35.3
Adlibris	16.4
Coolstuff	7.1
Sportamore	6.7
Clas Ohlson	4.7
Stadium	4.5
Panduro	4.2

In Table 6.3, the inventory turnovers for all companies are listed. Not surprisingly, Dustin Group and Adlibris, with only a small part of the assortment in inventory, reach the highest numbers. More interesting is the fact that the companies with mostly bricks-and-mortar retailing have the lowest inventory turnover rates. This indicates that inventory pooling in e-tailing impacts the inventory levels quite significantly.

Breaking down the costs shows that for Coolstuff, Sportamore and Adlibris, the biggest operating expense is merchandise, followed by other external costs and personnel costs. For Dustin Group, the biggest operating expense, following another annual report structure, is cost of goods sold (COGS, which

e.g. includes merchandise and direct labor such as warehousing personnel), followed by sales and administration costs. Clas Ohlson follows the same order as Dustin, with COGS being the highest, while for Panduro, the sales costs actually exceed the COGS.

Table 6.4: Merchandise, other external costs, and personnel costs as a percentage of operating expenses

Company	Merchandise (%)	Other external costs (%)	Personnel costs (%)
Coolstuff	49.1	36.7	12.3
Sportamore	65.6	22.7	11.4
Adlibris	75.8	12.6	10.7
Stadium	56.1	22.3	19.4

In Table 6.4, the cost of merchandise, other external costs, and personnel costs are presented as a percentage of the total operating expenses (for the companies using this structure in the annual reports).

Both the share of merchandise and other external costs seem to vary a lot. However, Coolstuff's, Sportamore's and Adlibris' share of personnel costs are lower than Stadium's. This is not surprising since Stadium has a lot of personnel in their physical stores, whereas the e-tailers have no physical stores (granted, Coolstuff and Adlibris have one store each).

Table 6.5: COGS and Sales & admin costs as a percentage of operating expenses

Company	COGS (%)	Sales & admin costs (%)
Dustin Group	88.4	11.4
Clas Ohlson	61.5	36.5
Panduro Hobby	40.8	59.2

In Table 6.5 the cost of goods sold and the sales & admin costs are presented as a percentage of the total operating expenses (for the companies using this structure in the annual reports).

The impact of bricks-and-mortar retailing compared to online retailing is more distinct for these companies. The bulk of Dustin Group's operating expenses originate from COGS, while Clas Ohlson and Panduro Hobby spend a much larger part on sales & admin costs. This shows that e-tailers don't have to spend as much on selling the products but instead can track most of the expenses to getting the products to the point of sale. Hence, in e-tailing, it is important to focus on the COGS. The cost of merchandise share,

as shown in Table 6.4, can vary a lot. However, the rest of the COGS are most likely connected to operating the warehouse. As described in Chapter 3, the fulfillment and distribution in e-tailing can be very expensive since small quantity orders have to be handled. This is especially important to consider in the multi-channel case. Integrating the networks have inventory management benefits, but the COGS probably increases in both channels. Hence, for integrated networks to be a good option, it appears to be very important to find a warehousing solution that supports both channels.

6.3 Approaches to Inventory Management

In general, it seems that the approach to inventory management is less structured for the e-tailers with the largest revenue growth, in this case Sportamore and Coolstuff. Assortment size, campaigns and promotions, and returns should logically increase the complexity of the inventory management, but the mentioned companies mostly use more or less arbitrary methods for managing the inventory which seem to work well enough, at least when comparing inventory turnover and return on assets to the multi-channel retailers. As suggested by Elsayed and Wahba (2016), an increase in inventory levels and an increase in return on assets are positively correlated in a rapid growth stage. However, the authors doubt this is the case for Sportamore and Coolstuff. For both of these companies, with their current procedures for inventory management, it would be very difficult to consistently reach specific service level goals, and aiming at a higher service level (which is what an increase in inventory levels means) would make little difference. Sportamore obviously prioritize high service levels over tied up capital, but they do not use any system for inventory management. Therefore, it is reasonable to assume that they use higher inventory levels than necessary in order to provide the service level they target. The frequent use of campaigns and promotions to reduce stock levels indicates that this is the case. Furthermore, the excessive use of price promotions decreases the profit margin, which has a negative effect on the return on assets. Hence, ordering too much could lead to increased assets, and a decreased profit margin, which would lead to a decreased ROA. However, campaigns and promotions seem to be very effective tools for e-tailers to reduce stock levels and to attract new customers, and for that reason they might ignore problems of suboptimal order quantities and safety stocks. Even though Coolstuff and Sportamore do not focus much on inventory management, they are able to perform quite well when it comes to return on assets. It is also reasonable to suspect that when revenue growth is no longer as important as it is today, they could improve the ROA even more.

When it comes to quantities ordered, the consensus from the interviews

suggests that the companies value keeping service levels high over keeping tied-up capital low. In other words, they value being able to keep the delivery times low (e-tailers) and availability high (bricks-and-mortar retailers). In general, one of the biggest problems related to inventory management seems to be keeping service levels high for slow-moving products, regardless of whether they are kept in inventory or not. Complexity in inventory management is in general greatly reduced by having suppliers close by, assuming that the suppliers have ample inventory of the desired products. The reason is that this lowers the need for ordering large quantities in advance and thus allows companies to be more flexible and more capable of handling volatile demand. In general, the suppliers may make it harder for the companies to optimize the inventory levels/manage their inventory. This can be the case if it's impossible for the companies to order exactly the amount that they want, or if the offered price levels incentivize other purchasing amounts than the calculated optimal quantities.

For bricks-and-mortar retailers, it is evident that inventory management is more demanding, and the addition of the online channel creates some new challenges. However, as the traditionally bricks-and-mortar companies studied have developed inventory management policies for the physical stores, they seem to handle the integration of online stores fine. That is at least what the interviewees communicated. Also, this may in part be due to the fact that the multi-channel companies studied all have relatively small parts of their revenue coming from online sales. For example, Clas Ohlson's revenue is around 2 % online-based, and Panduro's is 5-10 %. The corresponding number for Stadium was not provided, but is assumed to be comparable to the other two.

Bricks-and-mortar retailers that are adding online retailing have to make two major decisions with regards to inventory management policies. Firstly, the networks can either be integrated, as is the case for the studied companies, or separated. Secondly, one of the channels can be prioritized to ensure availability, as is the case for Stadium where a part of the stock levels are only available for online orders.

6.4 Concluding Analysis

When concluding the analysis, it is evident that out of the four researched effects of e-tailing, one provides a big advantage for inventory management and the other three make traditional policies and procedures more difficult to design and implement.

By selling online instead of in stores, the retailer and the customers are physically separated from each other. E-tailers thus operate a single-echelon

system where inventory can be centralized in distribution centers, see Figure 6.1. By satisfying the demand of several geographical areas from one point of inventory, the total demand variability decreases and stock levels can be reduced.

From the multiple case study conducted in this thesis, this change appears to have a very large impact on inventory management, making it easier to match the supply and demand. Furthermore, the physical separation creates a challenge in multi-channel retailing. In order to achieve the full inventory management benefits from the online channel, the fulfillment of online orders and store orders needs to be integrated. However, if the warehouse operations cannot adequately handle the two different types of orders, the integration will most likely lead to increased costs and decreased efficiency. The multi-channel retailers interviewed in this thesis project use integrated fulfillment and distribution networks and all of them have problems reaching satisfactory lead times to the customer.

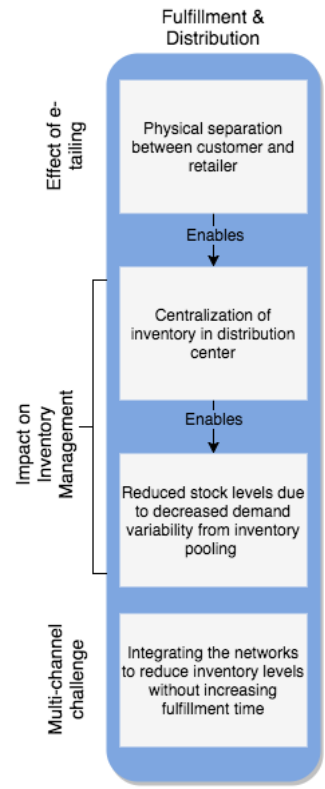

Figure 6.1: The impact of fulfillment and distribution on inventory management

Furthermore, click-and-collect orders can be fulfilled in the physical store if the ordered product is part of both the online and the offline assortment. This leads to decreased delivery times, which is great for customer service. However, it also decreases the positive effects from inventory pooling, since less inventory can be centralized in the distribution center. Evidently, the level of fulfillment and distribution integration in the multi-channel has a large impact on inventory management.

Both literature and empirics show that e-tailers of commodity goods tend

to carry large assortment sizes (both wide and deep) as a competitive advantage, see left column in Figure 6.2. This leads to a lot of low-volume SKUs in inventory, which are prone to have volatile demand. This in turn can lead to difficult forecasting for many products. The case study companies indicate that high service levels are prioritized over tied up capital, which logically should lead to higher order quantities for the low-volume SKUs. The risk associated with the large assortment size lies in tying up a lot of capital in the low-volume SKUs, which eventually become obsolete. The main reactive responses to this risk, as identified in the interviews, are the use of campaigns and promotions to reduce stock levels, and moving the excess inventory to an outlet site when the product is phased out of the assortment. Furthermore, a proactive approach to mitigate the risk is to implement a Source-to-Order policy, i.e order the product when a customer orders it, from suppliers in close proximity. This response makes it possible to only keep fast movers in inventory, but it also increases the delivery time for slow movers. Lastly, the possibility of unlimited assortment size in the online channel leads to a new decision for multi-channel retailers. The assortment in the different channels can either be more or less the same, or be larger in the online channel than in the physical stores. This decision impacts the fulfillment and distribution; for example, an online order can be fulfilled in the physical store if the assortments are aligned in both channels. It also impacts the campaigns and promotions; e.g., having different assortments makes it possible to discount different products in different channels (which on the other hand might confuse the customer). Furthermore, it is possible to sell the full assortment in the online store and only sell fast movers in the physical store. This implies less total inventory of low-volume SKUs.

Campaigns and promotions are used more frequently and dynamically online than in physical stores, see the middle column in Figure 6.2. This can lead to more difficult forecasting due to large short-term demand impact. Furthermore, this causes suboptimal order quantities and unbalanced supply and demand. Reactive responses can include using further campaigns and promotions to reduce inventory levels and moving products to an outlet site in an attempt to remove excess stock at a cheaper price. However, none of these alternatives deals with stockouts. Proactively, it is important to balance short-term gains, by e.g. using price promotions for a specific product category to reduce inventory, with getting a long-term understanding of the demand, e.g. by using information systems and well developed procedures for demand planning and forecasting. Furthermore, the empirics indicate that coordination with suppliers can lead to better availability and the possibility to use price promotions without a profit loss. Finally, campaigns and promotions create a decision for the multi-channel retailers. The use of campaigns and promotions

can either be aligned across the channels or be more frequently used in the online channel. A more frequent use online might lead to more customers in both channels. On the other hand, if the assortments are identical in the channels, a price promotion in one channel would most likely lead to cannibalization.

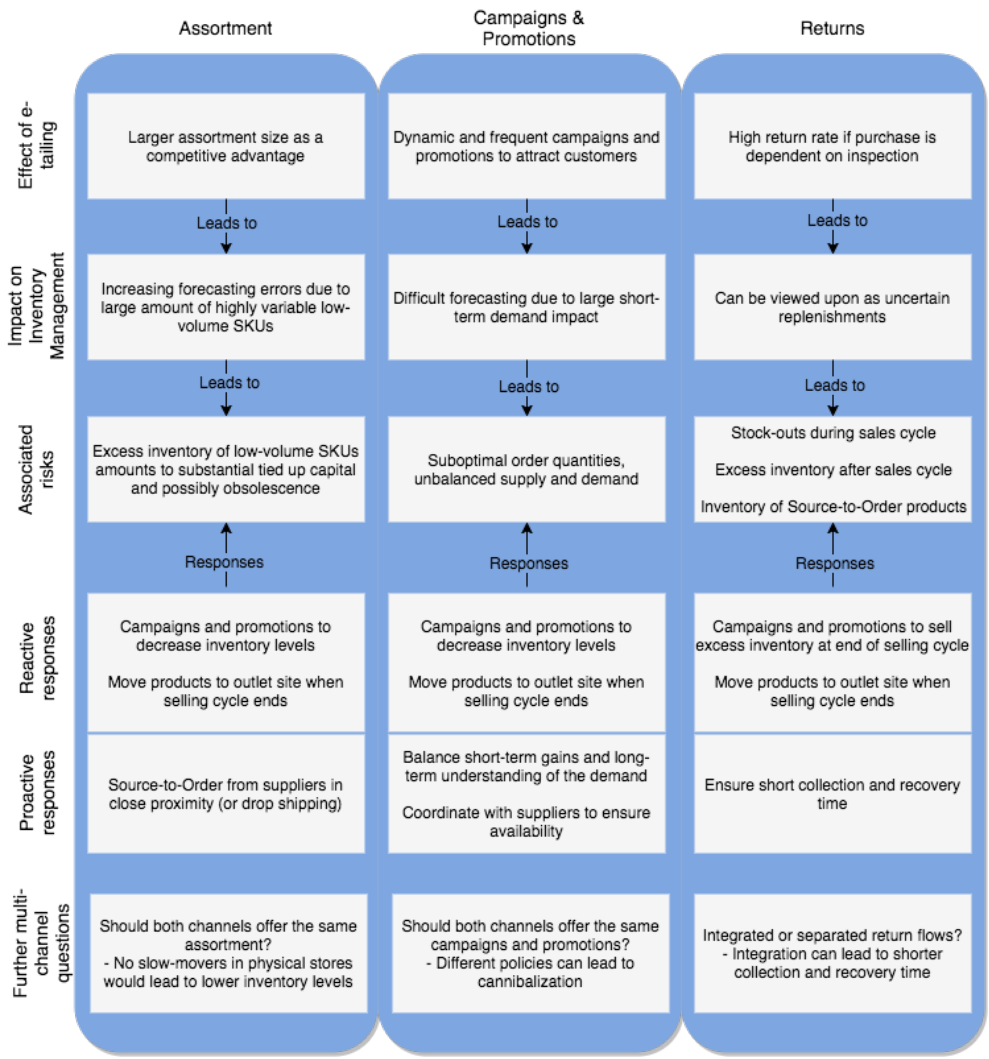

Figure 6.2: Effects of e-tailing that make inventory management more difficult

Return rates in e-tailing are often higher than in bricks-and-mortar retailing. The empirics indicate, not surprisingly, that this is especially true when the consumer purchase is dependent on inspecting the product, see right column in Figure 6.2. From an inventory management perspective, the returns can be viewed as replenishments. If return rates are not monitored, the un-

certainty of how much will be returned and when it will occur is likely to be high. When inventory levels are low, e.g. before a replenishment or when a product is in the process of getting phased out, high return rates may lead to stockouts while the returns are getting collected and recovered. Returns can also occur after a product has been discontinued, leading to excess inventory. Furthermore, if a Source-to-Order strategy is used, returns of these products lead to stock of products not originally kept in inventory. However, the empirics indicate that this strategy is mostly used for low-volume products, which would only lead to a few returns. Once again, campaigns and promotions can be used to reduce stock levels, and products can be moved to an outlet site to remove excess inventory. However, to be proactive, it is important to ensure short collection and recovery times in order to quickly be able to sell the product again. For multi-channel retailers, integrating the return networks, i.e. allowing customers to return online orders in the physical stores, might just be a way to reduce the time until the product can be sold again.

Chapter 7

Discussion

In this final chapter, the fulfillment of purpose, contributions to the field, and limitations are discussed. Furthermore, suggestions for future research are proposed.

7.1 Fulfillment of Purpose

Impacts of e-tailing on inventory management in companies have been studied throughout this thesis project. Important differences between e-tailing and bricks-and-mortar retailing were found to be assortment size, campaigns and promotions, returns, and fulfillment and distribution. For pure play e-tailers, inventory pooling seems to reduce the complexity enough to enable them to implement various activities that attract customers, but also increase the inventory management complexity. The more mature e-tailers, studied in this thesis, have well-developed procedures to ensure high inventory turnover rates. E-tailers focusing on growth seem less concerned about how their activities potentially affect the complexity of inventory management.

In a multi-channel setting, the online channel creates a new set of inventory management-related decisions. High degrees of integration in fulfillment and distribution, as well as the return flow, should generate synergy effects in inventory management. Furthermore, multi-channel retailers seem to prioritize keeping the channels aligned when it comes to both assortment and promotional activities. This probably reduces the inventory management complexity, compared to using a larger assortment and more frequent campaigns and promotion. However, for these conclusions it should be remembered that the multi-channel retailers that have been interviewed in this thesis all have relatively small online revenues, as compared to the total revenues. All multi-channel retailers that have been studied started as bricks-and-mortar retailers before entering the online channel. Hence, they most likely had well-developed procedures and information systems that could be adapted to fit e-tailing as well.

7.2 Contributions to Theory

This thesis attempts to widen the knowledge of inventory management in online business-to-consumer retailing. Arguably, the construct validity, external validity and generality of the results are reasonably good, since several companies in different industries and with different levels of maturity have been studied. The findings can be used by e-tailers, and multi-channel retailers, to learn what potential impact decisions regarding the researched areas can have on inventory management complexity.

It can also be argued that some of the results and actions discussed in this thesis could be used to reduce the environmental impact of some actors. As an example, multi-channel retailers can batch the delivery of e-tailing orders with their regular store replenishments by offering and promoting the click-and-collect option. That way, one could expect to reach higher fill rates for

the vehicles delivering the products. Also, offering customers the alternative to return products in the store reduces the need for transporting items from the customer to a distribution center and back. Lastly, by having accurate forecasts, companies are more likely to buy correct quantities, possibly reducing the number of items that are scrapped due to having bought too much (assuming that the products' life cycles are short).

7.3 Limitations and Suggestions for Future Research

This thesis has limitations in that the sample size of companies is relatively small, and that the thesis is mostly qualitative in its nature. The authors believe that future research should focus on quantitatively measuring the impacts discussed in this thesis. For example, in multi-channel retailing, the level of integration in fulfillment and distribution affects all parts of the logistical efficiency. It would be interesting to investigate, e.g. using simulations, how integrated fulfillment networks affect tied up capital, logistical costs, and customer service. Future research could also examine how reorder points, safety stocks, and order quantities should be determined in e-tailing. Furthermore, this thesis indicates that e-tailers without a particular focus on inventory management actually reach the same return on assets as those with a structured focus. Hence, it would be useful to statistically research if an increased, systematic focus (preferably using some sort of "best practices") on inventory management actually leads to improved return on assets in pure play e-tailing.

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Appendix A

Interview Guides

A.1 Interview Round 1

The interviews were conducted in a semi-structured way. First a few predefined (structured) questions were asked in order to ensure information about some areas. Then some further areas of interest were covered more loosely.

A.1.1 Structured Questions

- What are your most important strategic goals of 2017?
- What are your return rates?
- Is the return flow creating any problems or challenges regarding inventory management?
- How many unique items do you have in the assortment?
- Is the assortment size creating any problems or challenges regarding inventory management?
- How many campaigns/campaign seasons do you use?
- Is the amount of campaigns creating any problems or challenges regarding inventory management?
- What alternative best describes your current inventory levels?
  - Too high
  - Too low
  - Adequate
- Are you currently using any inventory management system?

A.1.2 Further Areas Covered

- Marketing and Sales:
  Demand pattern, Campaigns and Promotions, Customer requirements, Connection between marketing activities and inventory management
- Operations:
  Fulfillment and Distribution, Delivery times, Return flow
- Purchasing:
  Assortment, Order quantities, Supplier lead times, Replenishment, Tied up capital
- Measurements:
  Tied up capital, Performance measures in inventory management, General key performance indicators
- Business Model:
  Value proposition, Partners, Market channels, Costs, Revenue

A.2 Interview Round 2

In this round, a more in-depth understanding of some areas were acquired. Furthermore, some additional questions to round one were asked. The interviews were conducted in a semi-structured way. The covered areas were:

- Inventory Management:
  Challenges, impact of e-tailing, differences between multi-channel and single-channel
- Assortment:
  Assortment strategy (depth and breadth), slow-movers, differences between channels
- Campaigns and Promotions:
  Planning, Types of activities, Reasons for using campaigns and promotions, Connection to inventory management
- Fulfillment and Distribution:
  Delivery time and precision, capacity, differences between multi-channel and single-channel.

Appendix B

Quantitative Data

	2016	2015	2014	2013	2012	Revenue change	Average	Average, %	Max
Coolstuff	156755	128681	104596	94826	71221	2,20	1,218	**21,80%**	
EBIT margin	3,03	4,67	4,6	-3,52	0,97	1,95			4,67
Sportamore	701634	542319	369797	274479	153219	4,58	1,463	**46,28%**	
EBIT margin	2,59	-6,9	-3,18	-6,01	-9,72	-4,64			2,59
Dustin	8300800	7933463	7370893	5565639	4620822	1,80	1,158	**15,77%**	
EBIT margin	3,92	3,02	4,28	3,64	4,1	3,79			4,28
Dustin B2C only, revenue	597,5	606,6	753	652	674	0,89	0,970	**-2,97%**	
Adlibris	N/A	1282244	1142027	1128761	1223913	1,05	1,016	**1,56%**	
EBIT margin	N/A	2,95	4,09	5,25	3,89	4,05			5,25
Clas Ohlson	7601600	7329800	6807700	6518900	6260000	1,21	1,050	**4,97%**	
EBIT margin	6,69	8,16	7,82	6,63	9,05	7,67			9,05
Panduro	N/A	847198	603853	793728	752631	1,13	1,040	**4,02%**	
EBIT margin	N/A	1,61	10,63	0,69	3,54	4,12			10,63
Stadium	5453251	5287689	5048377	4840147	4626875	1,18	1,042	**4,19%**	
EBIT margin	3,26	2,18	4,38	4,15	3,4	3,47			4,38

Figure B.1: Revenue and EBIT Margin data

	2012	2013	2014	2015	2016	Change from 2012 or 2014 to 2016
Total revenue	31,6	37	42,9	50,1	57,9	16,35%
Electronics	7,6	8,8	10,3	11	12,2	12,56%
Clothes/footwe	6,7	7,2	7,5	8,4	9,1	7,95%
Books and med	3,2	3,3	3,4	3,6	4	5,74%
Home improvement			2	2,8	3,6	34,16%
Interior design	1	1,2	1,5	2	2,5	25,74%
Sporting goods	0,8	1	1,4	1,8	2,3	30,21%
Toys			1	1,4	1,7	30,38%
Miscellaenous	12,3	15,5	15,8	19,1	22,5	16,30%

Figure B.2: Revenue change for different E-commerce industries, for the Swedish market