International Master’s Programme in Strategy and Culture

“The Effects of Technology-Based Self-Service on Grocery Retail - A Swedish Case”

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**Title**  The Effects of Technology-Based Self-Service on Grocery Retail - A Swedish Case

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**Abstract**

Technology based self-service (TBSS) used in supermarket self-scanning checkouts is a relatively new phenomenon in Sweden. Studies on TBSS as a self-checkout device have been formerly carried out but with focus on the customer perspective. The authors therefore saw a challenge in covering the self-scan checkout concept, from a company perspective. The purpose of this research paper is to investigate, through a management perspective, the changes brought about by implementing an innovative TBSS system in Swedish supermarkets, and its effect on the
competitiveness of the company. This is done by presenting and linking the theoretical framework and empirical study in the research. The theoretical framework of the paper includes the following topics: role and importance of innovation in a business context and TBSS as innovation as well as product life cycle connected to innovation; competitive advantage theory and complementary concepts, value chain theory, and finally the importance of customer relationship management in the ‘new’ self-service economy. The empirical study consists of two Swedish supermarkets in the city of Linköping, Coop Forum and ICA Maxi. Results of the research paper mainly include the following: Changes brought about by implementing technology-based self-service systems in supermarkets must be discussed in the view of short-term and long-term perspectives separately. Changes involve the value creating activities of supermarkets and include increased quality of services to customers. It has been further found that TBSS can add to the competitiveness of supermarkets. However, positive financial results can only be expected in the long-term which in the case of Swedish supermarkets offering TBSS services is not yet apparent. The empirical findings have shown that Coop Forum and ICA Maxi had to carry out changes and make adjustments to their value activities and customer relationship management in order to operate TBSS checkouts successfully. Competitiveness between them has been also affected due to the TBSS service offering.

Nyckelord
Keyword
technology-based self-service, grocery retail industry, selfscanning, competitive advantage, Swedish supermarkets, Peter Gustavsson
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Chapter 1.

INTRODUCTION

The introductory chapter opens with a presentation of the background to the idea of the research paper, by which the authors hope to prompt the curiosity of the reader. Once the idea is described, a more specific problem focus is outlined. From the background and outline of the problem focus, research questions are formulated. The theoretically and empirically focused research questions result in the explicitly defined purpose. The purpose is followed by a further description of the aim and scope of the paper, as well as the paper’s limitations. The chapter ends by addressing the target readers of the paper and explains how the topic contributes to extending the relevant body of knowledge.

1.1 Background

“Just as mass production transformed manufacturing, self-service can allow services to be delivered at low costs and in large volumes with higher perceived quality.”

Self-service is an old phenomenon, coined in Memphis, Tennessee in 1916 by an American entrepreneur called Clarence Saunders. Saunders introduced the self-service concept to American customers in his newly opened Piggly Wiggly supermarket. Self-service made it possible for customers to collect chosen items by themselves and to pay at the counter instead of having store-clerks pick each item off the shelves for them.

1 The Economist, Sept 18th-24th 2004
The concept of self-service can be viewed as the ultimate outsourcing idea since the customer does the work once done by an employee but without getting paid.2

With the technological advances that have taken place during the past two decades the concept of self-service has evolved into new forms and has been transforming the traditional idea of service. Traditionally it is perceived that “provider-client interaction is an essential feature of service delivery”3; however, this does not seem to hold true in all cases today. Service has shifted from human interaction to machines substituting service employees and ‘anywhere-anytime’ electronic services have become commonplace4.

Technology-Based Self-Service (TBSS) is based on hard technology offered by service providers. Customers either directly or indirectly operate it in order to receive service.5 These self-service technologies enable customers to perform entire services independently without the need for direct assistance from employees. Self-scanning checkouts in grocery retail stores are an example of TBSS and are the focus of this research paper.

“Self-scanning checkout”, also called “self-checkout” is an automated process that enables shoppers to scan, bag, and pay for their purchases without human assistance. Typically, a self-scanning checkout lane looks very much like a traditional checkout lane except that the shopper interacts

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2 The Economist, Sept 18th-24th 2004
3 Prendergast and Marr, 1994
4 Dabholkar, P. A. 2003
5 Anselmsson 2001
with a computer user interface instead of a store employee\textsuperscript{6}. The shopper carries out the whole checkout process independently, by simply scanning items and paying for them at the end of the process without coming into contact with store personnel\textsuperscript{7}.

ATMs\textsuperscript{8} and grocery self-checkouts were introduced more than 20 years ago. Even though ATMs were not received with enthusiasm when initially introduced, today they are of major significance. The vital use of self-checkouts by customers in grocery stores remains to be realized. In fact, as Dabholkar (2003) et. al. argues, “self-scanning in retail stores represents a classic case of a technology-based self-service that failed on its first inception.” This presents a problem to be dealt with. Nonetheless, supermarkets in the USA are rapidly expanding and transforming their businesses through the implementation of self-service checkouts. According to a survey done in the USA, a self-service kiosk can handle the workload of two-and-a-half employees at a fraction of the cost.\textsuperscript{9} This implies that ultimately TBSS systems can deliver services cheaply on an immense scale. As a result, companies can save money by replacing human workers with automated self-service systems and customers can concurrently gain more choice and control as well as a faster service.

The implementation self-service checkouts in Swedish supermarkets is a relatively new phenomenon and therefore studies conducted relating to the

\textsuperscript{6} SearchCRM Techtarget Website
\textsuperscript{7} The step-by-step self-service checkout process implemented in Swedish supermarkets - being the focus of this research – is presented in the ‘empirical findings’ chapter of the paper.
\textsuperscript{8} ATM = Automatic Teller Machine; for example, bank ATMs.
\textsuperscript{9} The Economist, Sept 18\textsuperscript{th}-24\textsuperscript{th} 2004
topic are few\textsuperscript{10}, but needed, since the number of supermarkets implementing self-service checkouts in Sweden are on the rise\textsuperscript{11}.

The effect of technological innovation and new practices on the competitiveness of businesses and industries is apparent from previous academic research\textsuperscript{12}. Since self-service checkouts in Swedish supermarkets are a relatively new phenomenon, the topic of TBSS in Swedish grocery retailing is a highly interesting and relevant topic to conduct research on. Given the possible economic efficiencies for retail businesses as well as increased convenience for customers it is expected that most supermarkets in the future will embrace this concept. The introduction of a new form of ‘service’ based on the use of a new technology has important implications and suggests future transformations within the grocery retail industry as a whole. The authors of the research paper therefore find it essential to conduct an up-to-date study on this highly interesting and increasingly important phenomenon.

\subsection*{1.2 Problem Focus}

Since innovation is necessary for competitiveness and future survival, the implementation of technological innovations such as TBSS systems represent a way for retailers to stay competitive. Implementing innovative systems has a transformative effect on many factors within the company. For instance, the company’s value chain has to be rearranged to ‘fit’ this new

\textsuperscript{10} A cited Swedish source is Anselmsson, 2001
\textsuperscript{11} The empirical part of this research contains discussion and references related to this.
\textsuperscript{12} Among others, Porter, 1990; Lengnick-Hall, 1992; Weerawardena, 2003.
shopping service within the chain’s activities and the way customer relationships are managed also have to be reconsidered.

This paper deals with the theoretical problem as alluded to above and is complemented by an empirical study conducted by the authors. Particular focus is given to the Swedish grocery retail supermarkets ‘Coop Forum’ and ICA Maxi in the city of Linköping. The empirical study investigates the effect of TBSS systems and provides further insight concerning the theoretical assumptions as they occur in practice.

1.3 Research Questions

In order to address the problem presented in the above background discussion, the following research questions were formulated, both in theoretical and empirical terms, to lead to the purpose of the research paper:

- From a management perspective, what changes does implementing technology-based self-service systems bring about?

- Does the introduction of TBSS shopping have an effect on the competitiveness of a company? Furthermore, does it have implications for the company’s future survival?

- What changes did Coop Forum and ICA Maxi carry out in their value activities and customer relationship management when TBSS was implemented?
• Has the implementation of the TBSS system had an effect on the competitiveness of Coop Forum and ICA Maxi?

1.4 Purpose

The purpose of the research paper is to investigate, through a management perspective, the changes brought about by implementing an innovative TBSS system in Swedish supermarkets, and its effect on the competitiveness of the company.

1.5 Limitations

Theoretical Limitations

The theoretical part of this paper describes the role of innovation in sustaining a competitive advantage. It is important to emphasise that in referring to ‘innovation’, this research paper considers only ‘innovation’ as the strategic implementation of innovative processes and devices. It does not concern the innovation of products and processes invented by the company itself rather the use and implementation of a new concept, more specifically, here the focus is on the use and implementation of TBSS systems.

Empirical Limitations

TBSS exists across all industries today. Examples include telephone-based information lines, banking by telephone, ATMs, pay-at-the-pump gas
terminals, movie ticket kiosks, bill-paying kiosks, automated hotel checkout, and Internet transactions such as online shopping and brokerage services. The research focuses on TBSS checkouts in grocery retailing. More specifically, two Swedish retail supermarkets situated in the city of Linköping, Coop Forum and ICA Maxi. The research concentrates on self-service checkouts directly operated by customers in the store, it does not include sales conducted by telephone or online.

1.6 Audience and Contribution

Audience
A wide range of readers will find this paper of interest. It entices those curious to understand how technological advances and trends change the way customers are served by retail stores and affect retail firms’ business operations and performance. Management teams of supermarkets and other retail businesses\(^{13}\) looking into the implementation of technology-based self-checkouts can furthermore benefit from this study. In Sweden, where TBSS systems in retailing are still a relatively new phenomenon, a study detailing the effects of TBSS on “pioneer” users of this innovation can be of future use. Finally, academics conducting research on related topics might also gain interesting insights and information on relevant sources throughout this report.

Contribution

\(^{13}\) Bookstores and music-stores for example.
As a contribution to the body of knowledge, the research presents theoretical and empirical information on the importance of technological innovations and the effect they have on transforming business operations and competitive advantage of companies.

The effects of implementing self-service checkouts in retail grocery stores have been much investigated by scholars. They have predominantly dealt with the way and degree to which customers perceive technology-based self-checkouts to be better than ‘traditional’ service offerings and the type of customer most likely to prefer technology-based solutions compared to employee interaction in grocery stores. The effect of TBSS implementation from a management perspective, that is, the effect it has on more efficient operations of businesses, is a less explored topic. This study, therefore, aims to contribute knowledge in identifying and clarifying issues important from both a management and company perspective. The empirical findings of this paper comprise new and insightful knowledge on the consequences of TBSS systems in the operation and performance of two Swedish retail supermarkets.

1.7 Structure of the Paper

The structure by which the chapters of this research paper are organised is presented in a diagram seen on the following page. The diagram is to give the reader a clear overview of the themes presented in this paper and their sequence.
Diagram 1. Structure of the Research Paper

Chapter 1
INTRODUCTION

Chapter 2
SCIENTIFIC APPROACH

Chapter 3
METHOD

Chapter 4
THEORETICAL FRAMEWORK

4.1 INNOVATION
- In a business context
- TBSS as innovation
- Product Life Cycle

4.2 COMPETITIVE ADVANTAGE THEORY
- Porter’s Competitive Advantage
- Path Dependencies
- Dynamic Capabilities

Innovation as key to competitive advantage

4.3 VALUE CHAIN THEORY
- Porter’s Value Chain Theory
- Stabell and Fjeldstad: Value Network Model

TBSS’s effect on the value chain & network

4.4 CUSTOMER LOYALTY AND COMPETITIVE ADVANTAGE

Chapter 5: EMPIRICAL STUDY
- Coop Forum
- ICA Maxi

Chapter 6: ANALYSIS
- TBSS effects: Theory vs. Practice

Chapter 7
CONCLUSION
Chapter 2.

SCIENTIFIC APPROACH

The authors of this research paper aim to contribute to the body of knowledge of the chosen area, however, perceptions of what knowledge and science are and how they are ‘embodied’ differ among researchers. Therefore, this chapter presents a discussion of the authors’ understanding of knowledge and science and how this influences the way in which the topic of the paper is scientifically approached and discussed.

2.1 Philosophy of Science

To contribute to scientific understanding within different fields is the main aim of academic researchers. Philosophy of Science deals with the different forms of scientific understanding and is divided into three main categories: Natural Science, Value Science and Knowledge Science. Natural Science aims to understand human beings, society and the universe; Value Science deals with understanding morals, aesthetics and ethics; while Knowledge Science questions where knowledge comes from, how it is created and what true knowledge is. By presenting a discussion on Knowledge Science, the researchers aim to specify to the reader their understanding of what

14 Positivism homepage
‘knowledge’ is and how knowledge is believed to be created, and therefore how this paper aims to contribute to the body of scientific knowledge through the research.

2.1.1 Knowledge and Truth

Since the findings of the paper aim to contribute to the body of knowledge on the topic of effects of technology-based self-services in grocery retail, it is necessary to elaborate on how knowledge can be defined and how it is understood.

According to Lars Lindkvist, knowledge is an opinion that is ‘true’\(^{15}\). The researchers are interested in true knowledge of some generality, but the question is: what is ‘truth’ in the context of this paper? Within the empirical science ideal there are three independent criteria of truth: the Correspondence Criterion, the Coherence Criterion and the Pragmatic Criterion\(^{16}\). The ‘Correspondence Criterion’, in which reality supports theory, implies that what corresponds to outcomes of observation is true. The problem here is that there is often disagreement on what facts are and how facts should be interpreted and understood. Nevertheless, this criterion will be used when interpreting both theoretical and empirical findings of the research. This is done in order to see whether the assumptions used are supported during the observation and whether the knowledge created is in accordance with earlier research results or if it questions and falsifies them.

\(^{15}\) Lars Lindkvist’s lecture on Knowledge of Science at Linköping University, 2004

\(^{16}\) Positivism homepage
2.2 Scientific Approach

Extending the above thought, using scientific methods to gain knowledge is seen to result in more reliable knowledge\textsuperscript{17}, known as ‘scientific knowledge’. Therefore, by choosing a specific scientific approach to address the topic of technology-based self-service in supermarkets, the aim is to contribute scientific knowledge to this field of research. The scientific approach chosen for this paper is described in the following.

2.2.1 Rationalism and Empiricism

Rationalism and empiricism are two scientific approaches that are related to how knowledge is created and what knowledge can be considered true knowledge\textsuperscript{18}. Rationalism stresses that knowledge and theories formed through logical thinking and analysis is superior to knowledge gained from experience. Empiricism in contrast states that all knowledge derives from experience gained from observable phenomena\textsuperscript{19}. Logical empiricism is also known as positivism\textsuperscript{20}. According to positivism, knowledge is found when based solely on raw observable data and when knowledge is objective and presupposes freedom of preconceived opinions. Data is something that is there to be studied the researcher just has to collect and systemise it.\textsuperscript{21}

The researchers do not entirely agree with either of the approaches described above, since it is nearly impossible to be totally rational nor is it possible to

\textsuperscript{17} Patel and Tebelius, 1987 and Eriksson and Wiedersheim-Paul, 1997
\textsuperscript{18} Lars Lindkvist’s lecture on Knowledge of Science at Linköping University, 2004
\textsuperscript{19} Lecture of Lars Lindkvist on Knowledge of Science at Linköping University, 2004
\textsuperscript{20} Encyclopaedia Britannica
\textsuperscript{21} Alvesson, 1994
rely solely on experience and collected data. Therefore, the authors attempt to gain ‘true knowledge’ by fitting logical thought and analysis of theories with insights gained from observed phenomena. This concept is called Hermeneutics.

### 2.2.2 Hermeneutics\(^{22}\)

Following the discussion above on scientific approach to create knowledge, the authors have found the hermeneutic approach the most appropriate approach to address the topic of the paper. It is particularly fitting, since the research paper is designed as a qualitative study and hermeneutics is the underlying approach to most qualitative research being carried out\(^{23}\). The hermeneutic approach uses a qualitative method to interpret texts and other material, such as interview material, to provide an understanding of different phenomena, with the findings of central importance to the research. The method questions what is found and what the consequences of the findings are.\(^{24}\) Furthermore, the hermeneutic viewpoint is characterised by an openness towards the new object of interpretation and also encourages questioning its own pre-understanding\(^{25}\). This has direct implications for increasing the reliability and validity of the research, which provides a further reason to carry out the research according to the hermeneutic approach. In conclusion, the traditional methods of research, for example rationalism and empiricism, present one-sided processes with fixed rules whereas the hermeneutic interpretation process is more like a puzzle where

\(^{22}\) Alvesson, 1994  
\(^{23}\) Qualitative studies will be described further in Chapter 3.  
\(^{24}\) Lundahl & Skärvad, 1999  
\(^{25}\) Hermeneutics homepage and Positivism homepage
the researchers have to consider how the different pieces of written material and interviews can be put together to form a meaningful whole. This is the way the research problem will be addressed.

2.2.3 Critical Research

One must have a critical stand towards one's own work in order to reach a high level of reliability and validity. It is therefore very essential in a hermeneutic research to specify which data the interpretation is based on, which explanations have been used and which tests of the interpretations have been carried out. Furthermore, the researcher has to state pre-understood influences and their influence on the research process as a whole.

The results of a hermeneutic research can only be judged through a critical analysis of, and dialogue about, the arguments presented in the hermeneutic process. Furthermore, the research result is never definitive but conditional, meaning that others or the writers themselves can always continue the research process where it was left off. This is due to the fact that hermeneutics is historically time-bound and therefore new times bring new questions that must be addressed and explored.²⁶

Having to consider all the critical aspects of the hermeneutic approach described above is a way of improving the validity of the research, which is attempted throughout the paper. The specific design and method used to address the topic of this research is presented in the following chapter.

²⁶ Alvesson, 1994
Chapter 3.
METHOD

The specific design of the research paper is presented in this chapter. The authors have chosen a qualitative approach, using a theoretical framework as the basis of the paper, followed by an empirical study of two Swedish supermarkets in Linköping that have implemented TBSS checkouts. The approach is discussed in a critical manner in this chapter as well as the collection and interpretation of the material used.

3.1 Research Design

3.1.1 A Qualitative Study

The purpose of the study determines whether a quantitative or a qualitative method is used. The quantitative method concentrates on numeral presentations of a phenomenon and records large amounts of data in a statistical manner. Qualitative research on the other hand is generally used in descriptive studies to give correct analysis and interpretations of a research topic.27

Characteristics that define qualitative research and thus differentiate it from quantitative method include: subjectivity, a holistic view, a concern about
validity, the analysis being close to the data gathered, the process being
given great importance, the use of practical case studies, a uniqueness of the
study, and interests in specific individuals. The qualitative approach aims at
explaining and understanding a phenomenon instead of creating
generalisations in the most reliable and objective way possible.²⁸

Widely understood, the qualitative method can include all data gathered
and/or analysed in any other way than using statistical methods²⁹. The
reasons for a researcher to choose this type of research over the
mathematical analysis and numerical data can include preference of the
researcher, the nature of the problem, when for example subjective data is
needed concerning feelings, ideas and thoughts about a certain topic, or
when the area studied is unknown and detailed information about
perceptions and processes is needed.³⁰ The researchers have chosen to
investigate the effects of technology-based self-service in grocery retail
using a qualitative approach, since it is believed that in the case of the
chosen topic it would not be sufficient to only consider numerical data and
statistical analysis would not answer all the research questions. Moreover,
the researchers attempt to explain and understand the effects of technology-
based self-service for which an empirical study is needed, including
subjective information and a process description.

²⁷ Hussey, 1997
²⁸ Bergström, 1994
²⁹ Strauss & Corbin, 1998
³⁰ Strauss and Corbin, 1998
3.1.2 The Qualitative Research Process

Qualitative research consists of three main components: data, procedures and reporting. Data can be gathered from already existing information in literature, documents, documentaries, or gathered for a specific research using interviews, observations or questionnaires. These two types of data are called secondary and primary data respectively. For this research it is important to use both types of data to explain the effects of technology-based self-services from a business perspective. Secondary data can usually be obtained both time and cost efficiently, however, the validity and reliability of the texts has to be controlled. The collection of primary data is very useful since it ensures that information interpreted is not outdated, and specifically refers to the given topic.\textsuperscript{31}

Procedures of a research are the interpretation and organisation of data. These procedures can include categorising and reducing data, coding of the findings, elaborating and relating data in making it a complete view of the research area.\textsuperscript{32} The aim is to organise the secondary data, which mainly consists of theories connected to the research topic, and primary data and the outcome of the conducted interviews, in a way that make comparisons between theory and practice possible as well as contribute new thoughts to the subject. Therefore the interpretation and reflection on the chosen topic should lead to up-dated generalisable conclusions on the effects of technology-based self-services in two Swedish supermarkets.

It is found important by the researchers to emphasise the role of ‘reflection’ when organising and analysing in qualitative research. While interpretation

\textsuperscript{31} Emory, 1985
\textsuperscript{32} Strauss, 1998
was a description of material and processes made by the researcher, reflection focuses more on critical analysis. Reflection therefore in a way is an ‘interpretation of the interpretation’ as well as self-testing of own interpretations of empirical material. Reflection serves its purpose if the researcher constantly re-thinks the different basic dimensions presented in the research, making the research somewhat more qualified and less biased. However, as also is the case for interpretation, intellectual and cultural traditions and pre-understandings as well as language will nevertheless influence the process of reflection.33

In the case of this paper this is emphasised even more, since both authors contribute different sets of interpretations and reflections. This can benefit the research, since the ideas can be checked and balanced against each other. Moreover, the different contributions in many cases facilitate further discussion at a higher level, leading to a clearer argumentation. As explained above, the different academic and cultural experiences of the authors have formed pre-understandings and thereby influence both interpretations and reflections.

Some research, not all, aims to theorise issues. Forming systematic statements of relationships means the actual theorising of the research. Theories intend to predict future events and offer guidelines to actions as well as promote understanding of the subject as a whole.34 From this it is clear, that ‘theorising’ is done to some extent in this research paper, since the aim is to increase the understanding of the subject, particularly in the Swedish context.

33 Alvesson and Sköldberg, 1994
34 Strauss, 1998
During the process of theorising the basic methods of analysing data are asking questions and making theoretical comparisons. Questioning can lead to productive conclusions for instance when questions raised during the analysis process lead to relations discovered between data categories. The questions can aim at a better understanding of forces or actors involved in the researched area, which issues and persons are involved, what their involvement is and how the situation is perceived. Some questions are of theoretical nature such as how do the situations change over time, how issues are related to each other and what specific relationships and backgrounds have led to the given situation.

3.1.3 Method of Conclusion: Induction and Deduction

Within Empiricism one can use experience and thereby through induction build general theories. Induction is where the researcher approaches reality, without any preconditions, to see which theories might appear from experience. Other empiricists choose to set the findings up against real life in order to verify or falsify theories. This way of testing theory is called deduction. Deduction is having a number of set conditions from which a ‘new’ conclusion is drawn. In other words, deduction is used to calculate a theory’s consequences.\(^\text{35}\) A conclusion made purely on deduction is valid if it is logical. Its conclusion on the other hand it is not necessarily true just because it is logical.\(^\text{36}\) The weakness of the deduction method stems from

\(^{35}\)Lecture of Lars Lindkvist on Knowledge of Science at Linköping University, 2004
\(^{36}\)Alvesson, 1994
this, since it can be criticised as ‘subjective theorising’ facing the danger of merely being pure speculation, only loosely coupled to empiricism.\(^{37}\)

In this research predictions are made based on theories already there, in other words the researchers intend to use the deductive approach in the quest to add to the body of knowledge. This further leads to the possibility, by introducing an empirical study, of refining, specifying or refuting the theories being used.\(^{38}\)

### 3.2 Data Selection

#### 3.2.1 Theoretical Framework

In the theoretical framework first different definitions of innovation are given as well as a categorisation of TBSS systems, to clarify the role of innovation in a business context and to place the specific TBSS system used by supermarkets investigated in this paper.

Since the aim is to describe the effects of technology-based self-service from a business perspective, the researchers chose to include the classical theory on competitive advantage, which can be attributed to Michael E. Porter. Porter’s theory on competitive advantage is however, not the only theory used, other researchers’ work on the subject, for instance that of Day and Wensley; and Hunt and Morgan is also referred to\(^ {39}\). It is emphasised that although Porter’s work is considered a classic in business literature, it has

\(^{37}\) Alvesson, 1994  
\(^{38}\) Keating, 1995  
\(^{39}\) Day and Wensley, 1988 and Hunt and Morgan, 1995
also attracted criticism and complementary concepts have been suggested.
Two complementary concepts affecting and important to competitive advantage are mentioned, the concept of path dependency and dynamic capabilities of which Teece and Pisaro write in their study\textsuperscript{40}. Since technology-based self-service is a type of innovation for supermarkets, the significance of innovation for companies and how the implementation of innovation can affect competitive advantage is also made explicit. This constitutes the main theme of the paper.

The theoretical section refers to Porter a second time, through the description of the value-chain theory. Value-chain theory constitutes a crucial theoretical link to the topic of the paper. Porter’s value-chain theory represents the basic concept used, however, it is also found important to complement it with the more current Value-Network model of Stabell and Fjeldstad, which the researchers consider more useful when investigating the operations of service firms.\textsuperscript{41} Value-chain theory and the value network model are important for the topic of this paper since these concepts present the different activities of a company where value can be configured and added through TBSS systems. This model allows the researchers to investigate the different activities of companies on which the implementation of technology-based self-service as an innovation can have an effect. The aim is therefore to identify shifts in importance of different activities and their drivers due to the introduction of the new type of service.

\textsuperscript{40} Teece and Pisaro, 1994 in Wonglimpiyarat, 2004
\textsuperscript{41} Stabell and Fjeldstad, 1998
In the theoretical frame of reference it was also found important to mention the role of customers and customer relationship management, even though a customer focus is not the aim of the paper. In the case of analysing technology-based self-service it is inevitable to mention the customer since the customer becomes a part of the service delivery process, and companies have to pay more attention to customers if they want to implement technology-based self-service successfully. Customers are however only referred to from the company’s point-of-view; therefore this paper will not deal directly with customers and their perceptions.

The researchers consider the theories selected in the theoretical framework essential to discuss the effects of technology-based self-service from a company perspective, and hope to contribute new insights by linking these theories to an empirical study.

### 3.2.2 Choice of Company

In the empirical study the researchers investigate the effects of technology-based self-service in two Swedish supermarkets, Coop Forum and ICA Maxi. The choice of supermarkets was confined to the city of Linköping, where the research was carried out. In Linköping, only two supermarkets have introduced technology-based self-checkouts, Coop Forum and ICA Maxi. Coop Forum is the ‘pioneer’ of the two; it implemented self-checkouts in 2002, while ICA Maxi’s self-checkout service has only been in operation since the autumn of 2004.

Since TBSS in Swedish supermarkets is a relatively new phenomenon, especially in the case of the city of Linköping, it is believed that this
investigation and findings of these supermarkets will provide the possibility to refine and/or expand the concepts and theories that are referred to in the theoretical framework.  

The fact that only these two supermarkets were available in Linköping to conduct the research on could have caused a serious problem if the store managers had chosen not to cooperate or take part in the research. However, luckily the responsible managers did agree to take part in the interviews and provided us with information. Nevertheless, the fact that the authors chose these companies did pose the problem of having to convince the store managers of the importance and seriousness of the research. This might have caused some loss of important information, since if the companies had chosen the authors to carry out the research then probably access would have been given to more information, sources and people within the company.

To describe the two supermarkets, Coop Forum and ICA Maxi, and their ‘Shop Express’ processes, secondary data was obtained from their official websites, as well as the Shop Express brochures that are available to all customers in the respective supermarkets. From these sources the researchers were able to give an exact description of the Shop Express process at each of these supermarkets. The primary information gained from the interviews conducted provides specific information on the effects of Express Shopping on the competitiveness and value-chain of both Coop Forum and ICA Maxi. This information is crucial to the further analysis

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42 Atkinson and Shaffir, 1998
where an attempt is made to compare the theories presented in the theoretical framework and the empirical findings.

### 3.2.3 Choice of Interviewees

Respondents can be contacted by organising personal interviews, telephone interviews or by using written questionnaires.\(^{43}\) ‘Sampling’ of interviewees can be done in many ways, for instance, by using a random selection or more specific selection criteria. Natural selection is a term used to describe a situation where only certain people have experience in the research area and in that way they are naturally chosen as respondents. Judgemental sampling on the other hand means that the researcher determines that certain respondents would be beneficial to the research due to their strength within the area of interest.\(^{44}\) This research combines judgemental and natural sampling in the way that the respondents were the store manager at Coop Forum and the manager responsible for Self-Scanning Shopping at ICA Maxi during the time period in question and were considered to have the experience and knowledge needed to answer the specific questions. The contact numbers of the managers were found by first calling the respective supermarkets, and then the store managers asking them if they would answer our specific questions concerning TBSS checkouts. In the case of Coop Forum the store manager is the one directly responsible, whereas for ICA Maxi a manager other than the store manager is wholly responsible for the Self-Scanning Shopping system. The respective managers were then

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\(^{43}\) Hussey, 1997

\(^{44}\) Hussey, 1997
contacted by telephone and asked whether they would agree to answer questions in a face-to-face interview on the topic of TBSS. After agreeing on a scheduled interview, an e-mail containing the interview questions was sent to the managers, so that they would have an overview of the specific questions and time to think about the questions and gather additional information that might be useful for the research.

In choosing interviewees for the research it was apparent that only higher-level or directly responsible managers would be able to provide the sufficient information and material for the research topic, since it includes overall operation, strategy and performance.45 Higher-level managers are the ones familiar with all aspects of the companies’ operations, they can influence the strategic direction and play a key role in technology adoption decisions.46 The reason for not choosing lower-level managers, in this particular case, division managers, was that these could be considered as having a questionable validity since they rarely have full access to information on how the total system operates. These assumptions and limitations turned out to be true after the first scheduled interview with Coop Forum where the store manager was too busy and therefore substituted himself with a division manager to answer the interview questions. Although some useful answers were given, they were of an overly basic nature, as feared. However, the second scheduled interview where the interview was conducted with the store manager finally provided the specific information needed for a constructive analysis and evaluation. In addition, the project leader of Coop Forum’s Shop Express in Sweden also answered the same set of questions but in a telephone interview, since he is located in Stockholm.

45 Hambrick, 1988
46 Hambrick, 1988
3.2.4 Surveying

Surveying is a method of qualitative research that includes collecting data by asking questions and recording the answers from the chosen respondents. This method requires little previous knowledge of the subject researched and allows for a variety of answers.\textsuperscript{47} Using the qualitative survey method in this research made it possible to ask Coop Forum’s store manager as well as the responsible manager for ‘Self-scanning Shopping’ of ICA Maxi about the effects and success the TBSS system has had on the companies. The survey was conducted as a face-to-face interview, with the manager receiving the specific interview questions in advance.

Weakness of the survey method of data collection is that it fully depends on the knowledge and co-operation of the individual respondent. The respondent might feel obliged to give an answer even to questions he has no knowledge or opinion on, or he might give false information on purpose. In spite of the weaknesses and the possibility of misleading answers, this method is widely used in business research.\textsuperscript{48} This could of course cause a validity problem since the findings for this particular research for this reason might be different from what others, doing the exact same, might find. In other words there might be a validity problem. A criticism could for example be that the findings from one Coop Forum supermarket and one ICA Maxi are not necessarily applicable to other Coop Forums and ICA Maxis in other Swedish cities. However, since these supermarkets are only located in bigger cities, with similar characteristics, it can be assumed that they are similar to

\textsuperscript{47} Emory, 1985
each other. In other words, it is considered that the findings are valid based on the relative similarities between the chosen Coop Forum and ICA Maxi in Linköping and the rest of the Coop Forums and ICA Maxis with express shopping services located in other cities in Sweden.

3.2.5 Interview Design

An interview includes a set of questions that are planned beforehand. Designing the questions carefully is the most crucial part of this type of survey method. The four main decisions to be made in designing the questions of an interview are: what questions to ask in order to achieve the needed information, the wording of the questions, must be done in a way to make sure that the respondent understands the questions, what form of responses are desired and in which order the questions should be asked. An important issue in interviewing is to format the questions either as closed, with given answer alternatives or open-ended questions, giving respondents the freedom to answer in their own words. Usually open-ended questions are most suitable when finding out attitudes, feelings and the degree of knowledge. Giving alternatives can sometimes result in answering even when respondents do not have an opinion or knowledge of the issue, which poses a problem for the research. The structure of the interview used in this study includes open-ended, semi-ordered questions, meaning that the pre-set order of the questions was changed during the interview, when the

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48 Emory, 1985
49 Please find the interview questions in Appendix I.
50 Emory, 1985
51 For the whole section: Emory, 1985
manager’s answers to one question would point to another question on the
list than the next subsequent one. The reason the personal interviews were
chosen, instead of sending out questionnaires to gather information, was
mainly due to the fact that personal contact could be established, which leads
to more useful information that cannot be captured by using questionnaires.
Creating trust between the interviewers and the interviewee can also be
beneficial considering the willingness of the interviewee to answer certain
questions. Furthermore, there might be some questions that need to be
explained or some answers that need to be elaborated on in order to improve
the usefulness of the answers given. Another reason for choosing personal
interviews is that the interviewers get to observe the atmosphere of the
workplace. These “behind the façade” observations of the workplace might
add an interesting or maybe even different dimension to the rest of the
findings. Finally, the interviews were also recorded, to increase the
reliability of the information used in the description and interpretation
presented in the empirical findings.

### 3.2.6 Displaying Empirical Data

When presenting the empirical findings, the aim was to organise the material
collected from secondary sources as well as the interviews in a systematic
way to allow for interpretation and reflection. It is important to interpret and
analyse the information in the light of the theoretical framework presented in
the first chapter of the paper, as is stated by Hartley that “without a
theoretical framework, a case study may produce fascinating details about
life in a particular organization but without any wider significance...A case
study without the discipline of theory can easily degenerate to a ‘story’”, and agreed with by the authors.\textsuperscript{52} This is also called ‘theoretical sensitivity’, which requires the researcher to interact continually with the data collection and analysis, rather than hypothesising a pre-determined ‘outcome’, and suspending judgement until all data have been analysed.\textsuperscript{53} Thus the aim in this paper is to carry out a critical analysis of TBSS in the Swedish context in the light of theoretical considerations.

### 3.3 Critical Review of the Method

In writing a scientific paper, it is necessary to critically approach theories and empirical data used, as well as to maintain a self-critical approach in the study. The researchers are aware that factors both internal and external to the research as well as the researchers’ backgrounds affect the outcome of the study. Therefore, the following part presents aspects of a critical review of the method that help to minimise shortcomings that might affect the reliability and validity of the research.

#### 3.3.1 Validity and Reliability

The critical aspects of the hermeneutic approach have previously been described when talking about the scientific approach chosen for the study. Further aspects to improve the validity of a qualitative research study involve improving plausibility, credibility and using evidence. Triangulation of method and data, respondent validation, choice of cases, generalisations

\textsuperscript{52} Hartley, 1994, From Jörgen Dahlgren’s Lecture at Linköping University Autumn 2004.

\textsuperscript{53} Parker, and Roffey, 1996
in terms of theories are ways to improve the validity of qualitative research. Triangulation means using more than one type of source and method to arrive at a more valid conclusion.\textsuperscript{54} In order to improve the validity by triangulation, the researchers chose to base the results on a combination of interview data, business documents and theoretical considerations.

Another way of improving the validity of a research is by using respondent validation. In this case transcripts of the interviews were sent back to the interviewees in order to avoid misinterpretations.

Reliability in the qualitative research refers to the reliability of the observations carried out, the reliability of texts and secondary sources used, the reliability of the interview design and the interviewees chosen, and finally the reliability of the transcripts when the interviews are interpreted and analysed. These critical aspects have been elaborated upon in the research design and data selection section above.

In trying to reach validity in the research, the aim is to be as objective as possible by using reliable sources for the conclusion and perform the analysis and reflection as ‘neutrally’ as possible.\textsuperscript{55}

\textbf{3.3.2 Generalisability}

There are three views on the possibility of generalising from case studies: at one extreme, the possibility of generalisability is wholly denied; at another extreme, “the rationale of the aim to generalise” is denied; finally, the moderating view holds that when properly conducted, case studies of high

\textsuperscript{54} Based on lecture at Linköping University by Per Åman, 2004  
\textsuperscript{55} Lundahl and Skärvad, 1999
quality can produce generalisable results. The researchers agree with the latter view and the aim is to present a high quality empirical study, from which it is possible to generalise. Furthermore the researchers agree with Alvesson and Björkman, who state that “In case studies, the trick is not to make strictly empirical generalisations, something which is hardly possible, but rather to make interpretations to arrive at ideas, aspects, concepts of a more general relevance for reflection and theory on organizations.”

3.3.3 Researcher Background

Finally, it is important to note that experience and knowledge gained in the past influences both understanding and interpretation. This means that every researcher will enter the research process with a ‘pre-understanding’ of the world. This is also why it is essential to reflect on own opinions, on why some reflections are considered more truthful than others and which factors might influence judgements made. As described previously, this research was conducted by two researchers with different educational and cultural backgrounds, which also had an influence on the way the research has been carried out and the way interpretations have been made. Closely related to this aspect is the importance of considering the use of language in the research. The research is written in English, which is well spoken by both researchers, it is therefore not considered a problem when data is interpreted and analysed. However, some relevant literature was only available in Swedish that had to be translated, which poses the problem that meanings could have been lost in the translation process even though the aim was to translate the texts as accurately as possible. Moreover, during the interview

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56 Lukka and Kasanen, page 45, 1995
57 Alvesson and Björkman, page 55, 1992
process, some questions were answered in Swedish, since the store manager at Coop Forum and the responsible manager for Self-scanning Shopping at ICA Maxi are both Swedish and carry out their activities in a Swedish environment. This was mostly of benefit to the research, since if only English had been spoken the store manager probably would not have answered as extensively to the interview questions and thus information could have been lost.

In this chapter attempt has been made to describe the method used and to reconstruct the design of the study as realistically as possible and also as a guide for other researchers who wish to conduct similar studies. Important aspects of validity and reliability have also been described to show the authors’ careful and critical approach in their aim to contribute to the body of knowledge through this research.
Chapter 4.

THEORETICAL FRAMEWORK

This chapter discusses theoretically relevant material connected to the topic of the research paper, written by academics and researchers throughout the years. A definition of innovation and TBSS is given as understood in business literature as well as by the authors. Competitive advantage theory is then reviewed, with the emphasis on the role of innovation and TBSS in particular, in achieving sustained competitive advantage. Further, changes in the value chain due to TBSS systems are discussed, and the value network idea added, as well as their overall effects on competitive advantage. The importance of loyal customers and customer relationship management is also described briefly at the end of the chapter, since TBSS systems give customers a direct role to carry out during the service provision process.

To discuss the effects of implementing technology-based self-service in supermarkets, the following topics have been chosen to comprise the building blocks of the theoretical framework, which are to be used constructively in the analysis of the empirical case at the end of the paper: role and importance of innovation in a business context and TBSS as innovation as well as product life cycle connected to innovation; competitive advantage theory and complementary concepts, value chain theory, and finally the importance of customer relationship management in the ‘new’ self-service economy. These concepts are presented in a logic sequence to serve as a theoretical base for the research paper, with the addition of the authors’ critical stance.
4.1 Definitions of Innovation

Since technology-based self-service is considered as a type of technological as well as service innovation, it is necessary to begin the theoretical consideration with different definitions of what innovation is as understood in business economics terms, and as understood by the authors. By this the authors aim to help the reader fully understand the importance and essence of technology-based self-service as an innovation for companies providing services.

A basic definition of innovation, adopted from Merriam-Webster's Dictionary, defines innovation as “a new idea, method or device, or the introduction of something new.”\(^{58}\)

In Kuczmarski’s research article, innovation is further defined as “a mindset, a pervasive attitude, or a way of thinking focused beyond the present into the future vision.”\(^{59}\)

Drejer, in a business management research article, argues that innovation is more than just invention, implying that ideas need to be put into practice and inventions need to be commercialised in order to be able to speak of innovation.\(^{60}\)

For the purpose of this research paper, Blackmon seems to comprise a most appropriate definition: “… technological change is used to describe changes in knowledge that increase the volume of output or allow a qualitatively superior output from a given amount of resources … It is one of the key

\(^{58}\) Merriam-Webster's Online Dictionary
\(^{59}\) Kuczmarski, 1996, page 7
\(^{60}\) Drejer, 2002
forces shaping organisational environments and thus in driving organisational evolution …”

Furthermore, Weerawardena’s interpretation of innovation provides additional useful thoughts on innovation in business organisations:

“Innovation is the application of ideas that are new to the firm, to create added value either directly for the enterprise or indirectly for its customers, regardless of whether the newness and added value are embodied in products, processes, work organisational systems or marketing systems”.

In the case of this research paper, innovation involves the implementation of a new technology-based self-service system, which is used to carry out a new process of service provision. Technology-based self-service as innovation is discussed in further detail in the followings, where a classification is also provided where the category to which TBSS in supermarkets belongs to is exactly pointed out.

### 4.1.1 Technology-Based Self-Service as Innovation

There are many ways companies can implement and offer TBSS systems to provide services. Dabholkar made a classification of technology in service-delivery with three dimensions that the authors find very useful in order to understand the different types of TBSS systems, and to place the one that is dealt with in this research. The classification is based on three main issues: by whom the service is delivered and who operates the technology; where the service is delivered (at the shop or in customers’ home); and how the

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61 Blackmon, 1996, page 6 in Drejer, 2002
service is delivered. Depending on which category the service belongs to different factors will affect the customer’s evaluation of the service quality. This classification can be useful in guiding companies in the development of their marketing strategies when implementing TBSS systems.\textsuperscript{63}

**Table 1. Classification of TBSS Delivery**

<table>
<thead>
<tr>
<th>Direct contact</th>
<th>Indirect contact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>At service site</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CELL 1</strong> Customer goes to service site and performs service using technology at service site. E.g. ATM, self-scanning at retail checkouts.</td>
<td></td>
</tr>
<tr>
<td><strong>CELL 3</strong> Customer goes to service site and uses automated telephone system to perform service. E.g. automated wake-up calls at hotels.</td>
<td></td>
</tr>
<tr>
<td><strong>At customer’s place</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CELL 2</strong> Customer uses technology from home/office to perform service. E.g. internet shopping.</td>
<td></td>
</tr>
<tr>
<td><strong>CELL 4</strong> Customer calls automated telephone service from home/office to perform service. E.g. automated ticket-ordering over telephone.</td>
<td></td>
</tr>
</tbody>
</table>


Each of the four categories in the classification scheme includes distinct qualities of TBSS systems. Therefore, different issues must be considered in service-quality management when implementing one of these technologies.

Cell 1 is the relevant technology examined in this study. Using this type of TBSS, the customer goes to the service site and performs the service using technology provided at the service site. Cell 1 involves direct contact at the

\textsuperscript{62} Weerawardena, 2003, page 412  
\textsuperscript{63} Dabholkar, 1994
service site, which means more interaction with both technology and with the physical surroundings than in any of the other cells. This implies a greater importance and wider range of quality issues in the interactive marketing function. These and other issues relating to the implementation and operation of TBSS in supermarkets will be discussed in more detail throughout the paper.

4.1.2 Life Cycle Theory

As in the case of introducing new products, the introduction of new services is also characterised by a number of stages that it passes through while it is implemented, tried and accepted by customers. During the different stages, management has to adjust and concentrate on different activities, while the effects and gains from the new service are also different during the different stages. Therefore, considering the life cycle of TBSS systems is important when investigating the effects on company competitiveness.

The Product Life Cycle in its original form refers to the succession of stages a product goes through. Related to this, Product Life Cycle Management refers to the succession of strategies used by management as a product goes through its life cycle. The life cycle concept has been extended also to apply to for example industries and innovations and to both. In the product life cycle, products tend to go through five stages. ‘New Product Development Stage’ is the first stage. Its characteristics are that it is very expensive, no sales revenues are gained and most often losses are

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64 Dabholkar, 1994
65 As described for example in Van Weele, 2002
66 The Product Life Cycle Model is illustrated in figure 1, Appendix III
incurred. Stage two is the ‘Market Introduction Stage’ where costs are high, sales volumes low and profits are still not seen.

The third ‘Growth Stage’, involves costs reduced due to economies of scale, significant sales volume increases and finally profitability. The ‘Mature Stage’ is the fourth stage, which is characterised by very low costs, sales volume peaks, further prices tend to drop due to the proliferation of competing products and high profitability can be gained. The final ‘Stage of Decline’ as it implies involves declining sales as well as dropping prices leading to the decline of profits.68

The progression of a product through these stages is not certain however. Some products may stay in the mature stage forever, for example commodities such as milk. Various techniques have been designed by marketeers to prevent the products from entering the decline stage. Nevertheless, in most cases, one can estimate the life expectancy of a product category.69

Marketers' marketing mix strategies change as their products goes through their life cycles. Advertising, for example, is informative in the introduction stage, persuasive in the growth and maturity stages, and reminder-oriented in the decline stage. Promotional budgets tend to be highest in the early stages, and gradually taper off as the product matures and declines. Pricing, distribution, and product characteristics also tend to change.70

Most innovations and new technologies follow a similar technology lifecycle. This is similar to a product life cycle, but applies to an entire

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68 Day, 1981
69 Box, 1983
70 Day, 1981
technology, or a generation of a technology. TBSS belongs to this consideration.\footnote{Rogers, 5th ed. 2003}

In the section above, an attempt has been made to give a thorough explanation of what innovation is in a business context, what different types of technology-based self-services exist and which type is referred to in this research paper. The concept of product life cycle, applied to TBSS innovations, has also been introduced as an important concept that also contributes to affecting competitiveness.

In the following, a discussion of competitive advantage theory as well as complementary ideas to it are presented. This is to show what the main goals of firms in the first place are and what they can take to differentiate themselves from their competitors to achieve better market positions, as understood in theory. At the end of the competitive advantage theory discussion, the innovation and TBSS explanation of the first section of this chapter is linked to the idea of competitive advantage. In relating the two concepts to each other, the authors aim to clarify why companies need to achieve competitive advantage i.e. why implementing new innovative systems and processes such as TBSS are necessary.

### 4.2 Competitive Advantage Theory

It is important to include competitive advantage theory in the theoretical framework of this research, since the paper focuses on a company perspective and on what companies can do to perform better in their
competitive marketplace. The discussion begins with introducing Porter’s competitive advantage theory, since this is considered as the ‘classic’ theory of competitive advantage. However, to maintain a critical approach, the ideas of critics to Porter are also presented, as well as two complementary concepts that deal with the issues Porter is seen to have neglected. This way, a more comprehensive picture can be given on companies’ competitive advantage as discussed in theory. The theoretical considerations are linked to practice in the empirical and analysis parts of the paper.

### 4.2.1 Porter’s Competitive Advantage Theory

Porter has initiated studies on the competitive advantage of firms, which led to his prominent ‘Five Forces’ model and ‘Generic Strategies’ approaches for firms. Porter suggests that five industry forces influence every firm’s strategy, while also driving competition and forming industry structure. These five forces are: relations with suppliers; bargaining power of buyers; threats of new entrants; threats of substitute products or services; and rivalry amongst established firms. According to Porter, firms have to find positions within the industry, which can defend them against adverse forces or help them influence forces to serve their advantage.\(^7\)

In his book from 1985, Porter further argued that according to their choice of positioning, firms must choose from among a number of generic strategies. Porter discussed the following generic strategies: overall cost leadership, product differentiation and focus. Focusing on and implementing one of

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\(^7\) Porter, 1980
these strategies in a successful manner could lead to competitive advantage.\textsuperscript{73}

4.2.2 Criticism to Porter

As all influential research is likely to, Porter’s ideas have attracted attention and criticism by many. For instance, Mintzberg saw the generic strategies of Porter as being incomplete, since the focus is only on business strategy.\textsuperscript{74} Johnson and Scholes criticised the practicality of the generic strategies, as being difficult to put into practice in reality, due to constrained resources.\textsuperscript{75} Further, critics argue about the staticness of Porter’s approach, being one-dimensional since it only considers external forces.\textsuperscript{76}

The topic of competitive advantage of firms has continued to fascinate researchers, thus newer versions of competitive advantage are evolving. A ‘common’ definition sees competitive advantage as a “superior marketplace position” achieved through providing customers with superior value and/or achieving lower relative costs. Market share dominance and superior financial performance are seen to be indicators of competitive advantage\textsuperscript{77}.

\textsuperscript{73} Porter, 1985  
\textsuperscript{74} Mintzberg, 1988  
\textsuperscript{75} Johnson and Scholes, 1993  
\textsuperscript{76} Wonglimpiyarat, 2004  
\textsuperscript{77} Hunt and Morgan, 1995; Day and Wensley, 1988 in Drejer, 2002
4.2.3 Complementary Concepts: Path Dependencies and Dynamic Capabilities

Two complementary concepts to Porter’s competitive advantage theory have been chosen, which take issues into consideration that have been criticised in Porter’s theory to be lacking. The authors of this study find it imperative to include these complementary concepts in the theoretical discussion on competitive advantage when dealing with the topic of TBSS in supermarkets.

**Path Dependencies**
Porter does not consider path dependencies when describing the strategies companies can pursue to gain competitive advantage. Teece and Pisaro on the other hand emphasise the importance of path dependencies in influencing the strategic choices of firms. According to this, the path a firm chose in the past influences its choices for its future.\(^{78}\) Pavitt suggests that what a firm can do in the future is constrained by what it has been able to do in the past.\(^{79}\) This is a relevant issue in the case of supermarkets introducing TBSS, since for instance, a supermarket must have the resources to be able to implement TBSS as well as an established customer base who will use the new service. The relevance of path dependencies will be further dealt with in the analysis part of the paper.

**Dynamic Capabilities**
The other complementary idea to Porter’s competitive advantage that was chosen for the purpose of this paper presents a dynamic approach to organisations – as opposed to Porter’s ‘static’ approach – and involves the

\(^{78}\) Teece and Pisaro, 1994 in Wonglimpiyarat, 2004
concept of ‘dynamic capabilities’. The term ‘dynamic’ refers to the continuously changing environment, while the term ‘capabilities’ refers to the role of strategic management in reconfiguring organisational competences in response to changes. The focus therefore is on the importance of continuously assessing a changing environment, dynamic change and corporate learning, which contribute to an organisation’s success. Teece and Pisano emphasise that ‘dynamic capabilities’ can be a source of competitive advantage to firms.\textsuperscript{80}

The trend towards implementing technology-based systems and processes in increasingly many areas of one’s life reflects a continuously changing environment. It therefore becomes crucial for companies in all industries – in this case supermarkets in the grocery retail industry – to consider ways to meet these kinds of demands and even anticipate future trends in order to stay ahead of competition.

As mentioned above, the ideas of path dependency and dynamic capabilities complement Porter’s competitive advantage approach. Considering the three concepts together, Porter answers ‘why’ there is a need for certain strategic actions, whereas path dependency and dynamic capabilities point to ‘how’ these strategies are and should be built in order to lead to competitive advantage. Although these three approaches give explanation to background circumstances and the types of actions firms can take considering the externalities, they do not give any indication to whether a firm will succeed

\textsuperscript{79} Pavitt, 1986; Pavitt 1989 in Wonglimpiyarat, 2004  
\textsuperscript{80} Teece and Pisano, 1994 in Wonglimpiyarat, 2004
in taking a certain action.\textsuperscript{81} It is therefore interesting to ‘test’ these theories using real-life examples, as is done in the empirical part of this study.

\textbf{4.2.4 Innovation and Sustained Competitive Advantage}

As mentioned previously, rapid technological change characterises today’s business environment, with intensifying non-price competition. Firms therefore have been forced to be innovative in all areas of their business activities. Reflecting this trend, during the last decade researchers have been writing increasingly much on the role of innovation in competitive strategy as well as on the relationship between innovation and competitive advantage.\textsuperscript{82} This theme constitutes a most crucial idea for this research paper: TBSS is an innovation that companies can chose to implement as a part of their competitive strategy in order to enhance their competitive advantage.

Achieving competitive advantage is important for a firm’s competitive position in its industry; however, it must be sustained in order for the firm to survive in the long run. Sustainable competitive advantage is in a simple way described as competitive advantage lasting a long period of calendar time.\textsuperscript{83} Drejer has found that although attracting some criticism, most of the existing research uses superior financial performance or “rent” as an indicator of sustained competitive advantage.\textsuperscript{84} Evidence supporting the view that innovation leads to sustained competitive advantage comes from several sources. For example, research by Hyvarinen;

\begin{itemize}
\item \textsuperscript{81}Wonglimpiyarat, 2004
\item \textsuperscript{82}Porter, 1990; Lengnick-Hall, 1992 in Weerawardena, 2003
\item \textsuperscript{83}Jacobson, 1988 in Drejer, 2002
\item \textsuperscript{84}Aharoni, 1993; Porter, 1990 in Drejer, 2002
\end{itemize}
Rothwell; and Lengnick-Hall examines innovation and firm performance and suggests that innovation leads to higher performance. According to Weerawardena, technological and non-technological sources of innovation are important, in that they either separately or together can impact a firm’s sustainable competitive advantage.

Kuczmarski states that in order to gain ‘real’ competitive advantage, the focus of innovative efforts should be concentrated on the development of ‘new-to-the-world’ or ‘new-to-the-market’ products that provide consumers with totally new perceived benefits. It is further argued that by implementing such innovations competition can be ‘leapfrogged’, since new ways to strengthen profit margins and to sustain future earnings are created. In terms of investigating TBSS in supermarkets, this perception is of particular relevance, since TBSS in Swedish supermarkets is a relatively new type of service, implying an opportunity for supermarkets in Sweden to use it to enhance their competitive advantage.

However, in order to minimise the risks of failure when implementing innovations, it is important to have a strategy that combines product and process innovations with regular incremental improvements. In other words, it is important that the firm stays flexible and tries to avoid being outpaced by competitors even if product and process innovation imitations are only incremental due to the high costs of development and implementation.

Another challenge for the established firm is to adapt to continuous changes

85 Hyvarinen, 1990; Rothwell, 1992; Lengnick-Hall, 1992 in Weerawardena, 2003
86 Weerawardena, 2003
87 Kuczmarski, 1996
88 Utterback, 1994
in the sense of organisational adjustments to maintain successful competitiveness.
So how can firms achieve a sustained competitive advantage with innovation in mind? According to Utterback, firms need to have a strong technological base, as well as a good understanding of markets and demands and a strong financial position. Furthermore it is important to continuously question the performance of one’s competitive position while also being aware of the damaging influences constantly bombarding the firm and the industry\textsuperscript{89}. These are very important issues for supermarkets to consider before as well as after the implementation of TBSS systems.

Furthermore, Normann put forward four reasons why service-provider companies may offer technology-based service delivery: to reduce costs; to control quality; to standardise service; and to increase the quality level. These strategic reasons are influenced by a company’s present competitive position as well as its anticipated future position. In order to achieve these goals of implementing TBSS systems, companies must re-evaluate and rearrange their activities affected by the new system. Therefore, the theoretical discussion leads to value-chain theory, by which one can ‘monitor’ the effects, of TBSS in this case, on the internal activities of companies.

\textsuperscript{89} Utterback, 1994
4.3 The Value-Chain

“In a dynamic economic and institutional setting, changes in the dominant competitive logic of firms are of particular interest.”

Adopting alternative forms of value-creation is a way for firms to differentiate themselves from their competitors. For example, the value chain activity focus can be useful for firms to identify strategic improvement needs and/or opportunities as well as the possible effects of strategic choices made in relation to these activities. For the purpose of this study, value chain theory is therefore considered as an extension to competitive advantage theory in that it turns to an internal focus and decomposition of a company’s activities important in considering the effects of TBSS systems.

4.3.1 Porter, Stabell and Fjeldstad

Porter’s value chain framework today still is the ‘accepted language’ for representing and analysing the logic of firm-level value creation, and is also a framework for analysing firm-level competitive strengths and weaknesses. In essence, value chain analysis is a “method for decomposing the firm into strategically important activities and understanding their impact on cost and value.”

In value chain analysis competitive advantage is understood by these discrete activities of the value creation process that contribute to the firm’s relative cost position and create a basis for differentiation. These activities are the ‘building blocks’ from which a product or process is created that is valuable to the firm’s customers. The different activities have

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90 Prahalad and Hamel, 1994 in Stabell and Fjeldstad, page 413, 1998
91 Stabell and Fjeldstad, page 417, 1998
92 Stabell and Fjeldstad, page 413, 1998
different economics and thus contribute differently to the valuable characteristics of the product or process.  

The value creating activities in Porter’s model are divided in two levels. Primary activities are those directly involved in creating and bringing value to the customer, while support activities enable and improve the performance of the primary activities. The primary activity level consists of five activities: inbound logistics, operations, outbound logistics, marketing and sales and service. The support activities are procurement, technology development, human resource management, and firm infrastructure. It is important to note that the different activity categories are not the same as organisational functions. Using the value chain for analysis, costs and assets are assigned to the value activities as a first step, and are further analysed as “structural drivers” related to the scale and scope of the firm, linkages across activities, and environmental factors. Cost and value drivers are usually analysed separately. Moreover, drivers are partly related to internal relationships, partly to external factors, and partly to relationships between internal and external factors as well. The main drivers of value are policy decisions made by product and segment choices when the firm is established or repositioned.

According to Porter, the value-creating logic of his value chain with its generic activity categories is valid for firms in all industries. However, he

93 Stabell and Fjeldstad, page 416, 1998
94 An illustration of the value chain can be referred to in the Appendix IV as Diagram 2.
95 Porter identifies ten generic drivers: scale, capacity utilisation, linkages, interrelationships, vertical integration, location, timing, learning, policy decisions, and government regulations.
96 Stabell and Fjeldstad, page 418, 1998
97 Stabell and Fjeldstad, page 419
further states that the specific activities that are vital to a firm’s competitive advantage depend on which industry the firm operates in.  

Stabell and Fjeldstad however have investigated the application of the value chain model to more than two-dozen firms from a variety of industries and have experienced problems in applying the value chain framework. They have found that the value chain is suitable for describing and understanding the value creation logic of manufacturing firms, but that it proves problematic when analysing activities in service industry firms. They argue that problems arise from difficulty to assign and analyse activities in terms of the five generic primary value chain categories proposed by Porter, leading to unclear explanations of value creation.  

Therefore, Stabell and Fjeldstad suggest that the value chain be considered as one of three generic value configurations to facilitate the understanding and analysis of firm-level value-creation logic for a broad range of industries and firms. The additional two value models besides the value-chain are the value shop and the value network. The value shop model applies to firms where value is created by “mobilising resources and activities to resolve a particular customer problem”, for example professional service firms dealing with medicine, law, architecture and engineering. The value network model refers to firms that create value by “facilitating a network relationship between their customers using a mediating technology”. Stabell and Fjeldstad also propose alternative presentation formats for both models that represents their unique value creation logic.

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98 Porter, 1985, 1990  
99 Stabell and Fjeldstad, 1998  
100 Stabell and Fjeldstad, page 414, 1998  
101 Stabell and Fjeldstad, page 414, 1998
For the purpose of this research both Porter’s value chain and Stabell and Fjeldstad’s value network is of importance. Although Stabell and Fjeldstad state that according to their findings the value chain is mostly useful for manufacturing firms, for our investigation of supermarkets’ ‘traditional’ operations\textsuperscript{102}, the value chain is most fitting, with one small alteration.\textsuperscript{103} However, in also considering the introduction of a new type of service offering through technology-based self-service checkouts, it is found necessary to complement the value chain model with the value network model in order to be able to capture the value adding activities of TBSS. The combination of the different value-creating logics, as suggested for this research, has also been proposed by Norman and Ramirez.\textsuperscript{104} Since the main purpose of the research is to investigate the effects of TBSS in supermarkets, the value network is of central importance, which is discussed in further detail below.

\textbf{4.3.2 The Value Network}\textsuperscript{105}

“Value networks use a ‘mediating technology’\textsuperscript{106} to link clients and customers who wish to be interdependent.”\textsuperscript{107} According to Stabell and Fjeldstad, the firm provides a networking service through the mediating

\begin{itemize}
\item \textsuperscript{102} By ‘traditional operation’ the authors mean the process of a supermarket’s purchasing, selling and service as generally carried out by most supermarkets today; i.e. excluding the self-service option of shopping.
\item \textsuperscript{103} Out of the five primary activities proposed in Porter’s value chain model, for supermarkets outbound logistics is not relevant since production does not take place in retailing. Therefore the model is used with the small alteration of excluding outbound logistics to fit the retail business.
\item \textsuperscript{104} Normann and Ramirez, 1993
\item \textsuperscript{105} Reference for this whole section, if not stated otherwise, Stabell and Fjeldstad, 1998
\item \textsuperscript{106} Thompson, 1967 in Stabell and Fjeldstad, 1998
\end{itemize}
technology and thus facilitates exchange relationships among customers distributed in space and time. For the consideration of TBSS, the value network idea is modified to mean that the firm is the network itself, linking its customers not to each other but to the firm itself, facilitating a more interdependent exchange relationship between the firm and its customers. Value creation in value networks therefore lies in the way the exchange is organised and facilitated. In our case, the ‘mediating technology’ is the technology-based self-service system.

The manager’s role in managing mediating technologies, here TBSS, is like managing a club. Customers are admitted to a club to be a part of the network and to use TBSS. Admittance means the establishment of customer contracts that commit both the customer and the firm operating the network to a mutual set of obligations. For supermarket self-checkouts, subscription to a membership card is the equivalent of a customer contract. The TBSS checkout system can be linked between different supermarkets located in different cities, or even countries giving the customer the opportunity to use the service in multiple places. This implies that activities have to be performed simultaneously within the system, which suggests a use of standardised equipment and processes.

Network externalities pose unique strategic challenges for companies. A new service has to win the acceptance of customers and the costs of introduction are the highest in the beginning phase. This leads to distinct life cycle phases, which are not discussed further in this paper. Value is derived from service, service capacity, and service opportunity. In the case of TBSS, value is derived from a faster and smoother new purchase process that is

\footnote{Stabell and Fjeldstad, page 427, 1998}
perceived by the customer as high quality service delivered by the supermarket. With customer acceptance and participation the loyalty of customers is won, with the further anticipation of winning even more customers.

The primary activities of the value network are network promotion and management, service provision and network infrastructure operation. Network promotion and management involves inviting potential customers to join the network and the selection of customers that are allowed to join as well as the further management of the network of customer contracts. Service provision involves the systems and processes required to carry out the service, while network infrastructure operation – closely connected to service provision – involves activities associated with maintaining and running the physical infrastructure.

The support activities are the same as for the value chain. Within technology development, activity network infrastructure development and service development are important to mention. Network infrastructure development is associated with the design, development and implementation of network infrastructure. Service development includes setting customer contract terms as well as developing brand new services.

In analysing a firm’s value network, effects of ‘structural’ drivers on cost and value, as already mentioned for the value chain, are important to identify. Firms operating a value network offer value to their customers both through the access option and the actual use of services, therefore cost and value are associated with both. Scale is a potential driver of both cost
and value in the value network, while size and composition of the customer base are drivers of value. As in the value chain, capacity utilisation reduces unit costs in the value network. However, in the case of value networks, high capacity utilisation may also reduce service levels. Therefore, capacity utilisation is both a cost and a value driver.\textsuperscript{109} Identifying such drivers and their associated cost and value effects will be important for discussing the effects of TBSS in supermarkets, which is presented in the empirical part of this research.

\textbf{4.4 Customer Loyalty and Competitive Advantage}

A final theoretical consideration is considered by the authors to be a crucial element of the theoretical framework in this research: the role of customer loyalty for firms implementing technology-based self-service must be considered, since the TBSS shopping option requires a greater degree of the customer’s involvement in the service process and is necessary for the success of the new system. Through participation in the service process, the customer becomes a ‘co-producer’, performing certain tasks that previously were performed by personnel.\textsuperscript{110} Technological advances implemented into the service process involving increased customer participation imply a change of the ‘conventional view’ of the market, as distinctions between producers and consumers become blurred.\textsuperscript{111} This issue has been addressed in service-marketing research, referred to as the “interactive marketing function”. This means that

\textsuperscript{108} The Value Network model is illustrated in Appendix V, as Diagram 3.
\textsuperscript{109} Stabell and Fjeldstad, page 432, 1998
\textsuperscript{110} Norman, 1983 in Anselmsson, 2001
production and delivery of services become marketing issues, since production and consumption take place simultaneously. Moreover, customers interact with company resources, TBSS, during both production and delivery. Therefore, positive customer perceptions of the quality of the service provided become as important as levels of productivity, hence giving marketing a greater role.\textsuperscript{112}

This implies that firms must develop and deploy competitive strategies driven by market requirements. There is agreement among researchers that firms that align their competitive strategies with the requirements of their environments outperform those firms who fail to achieve such alignments.\textsuperscript{113}

However, in their research paper, Kandampully and Duddy argue that it is not enough for firms to improve products and services, they have to innovate and anticipate customer needs on a continuous basis by implementing new ways to serve them better. Capturing market leadership in providing exceptional service and innovativeness may lead to satisfied and loyal customers, however, “customer loyalty is time specific and non-permanent and, thus, requires continuous and consistent investment.”\textsuperscript{114}

Following the line of argumentation presented above, therefore it is vital for organisations to focus on providing service loyalty, committing to customers by anticipating and innovating products and services according to customers’ evolving needs. Service loyalty comprises activities of an

\textsuperscript{111} Wickström et al, 1992 in Anselmsson, 2001
\textsuperscript{112} Anselmsson, 2001
\textsuperscript{113} Venkatraman and Prescott, 1990 in Bea and Lockamy, 1999 page 71
\textsuperscript{114} Kandampully and Duddy, 1996, page 51
organisation to develop a long-term relationship with its customers. “In business, anticipation is a process of customer-orientation into the future.”

By providing service loyalty to satisfy and create a long-term relationship with the customer, customer loyalty can be achieved by the organisation. This can be gained most effectively through a firm’s employees who play a major role in creating and maintaining the trust and relationship between the firm and the customer.

Retained and loyal customers indicate high perceived service quality, which affects financial results through the financial impact of service quality. Outstanding company performance due to loyal customers perceiving high service quality shows that by being able to anticipate present and future needs of customers, firms can gain competitive advantage. Therefore, an organisation’s long-term success depends on its ability to maintain and expand a large and loyal customer base. As described above, this can be done by fulfilling present needs of customers, anticipating their prospective needs and by enhancing the ongoing relationship.

“Firms are thus required to think both as a customer and on behalf of the customer, developing the products and services that tomorrow’s customers want before they become a reality.”

In recent years, firms have evidently increased their attention toward the creation of a relationship with their customers and other stakeholders.

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115 Kandampully, 1998 in Kandampully and Duddy, 1996
116 Kandampully and Duddy, 1996, page 52
117 Parasuraman et al., 1991 in Kandampully and Duddy, 1996
118 Zeithaml et al., 1996 in Kandampully and Duddy, 1996
119 Freid and Freid, 1995 in Kandampully and Duddy, 1996
120 Kandampully and Duddy, 1996, page 54
121 Gummesson, 1996 in Anselmsson, 2001
This concept is referred to as ‘relationship marketing’. Additionally, Zeithaml and Bitner identify five important benefits of using relationship marketing: increased purchase, reduced costs, free advertising through word-of-mouth, employee retention and the lifetime value of a customer. It has been emphasised above that companies implementing TBSS systems have to consider issues connected to increased customer participation as priorities. Therefore the role of customer relationship management and marketing becomes more significant for the firm.

A focus on providing service loyalty with the help of motivated employees and effective customer relationship management and thereby achieving customer loyalty are especially important concepts for supermarkets implementing technology-based self-service systems. Since customers are direct participants of the service process, a consumer-driven development process is needed and it is important that companies collaborate with customers on process improvements. The importance of customer relationship management and a loyal customer base for supermarkets implementing TBSS systems is further discussed, as seen in practice, in the following empirical study of the research.

The empirical study that follows discusses issues related to the concepts presented in the theoretical framework above in two Swedish supermarkets located in the city of Linköping. In other words, the theoretical concepts are presented as they occur in the selected real-life examples.

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122 Grönroos, 1994 in Anselmsson, 2001
123 Zeithaml and Bitner, 1996 in Anselmsson, 2001
124 Kuczmarski, 1996
Chapter 5.

EMPIRICAL STUDY

The authors have conducted an empirical study in order to investigate the assumptions and claims of the theories described above as practised in real life. In the city of Linköping where the research was conducted, only two supermarkets, Coop Forum and ICA Maxi, have so far implemented TBSS checkout systems. Therefore, these were chosen to represent the empirical cases for this research paper. Important information is presented here collected through interviews carried out with the managers of both supermarkets. This serves as valuable material to address and analyse the topic and purpose of the research.

As mentioned previously, most studies on self-service systems have been focused primarily on consumer behaviour towards TBSS in groceries, which is why this research was chosen to focus on the more unexplored area of self-service as seen from the company’s point of view. This empirical chapter aims to capture up-to-date information on how self-checkout systems in the Swedish context affect the activities and overall competitive advantage of the two chosen companies.
5.1 The Swedish Grocery Retail Industry

To introduce the empirical findings of this research, brief background information is given concerning the Swedish retail industry context in which the two supermarkets investigate operate:

The Swedish grocery retail industry is currently domestically dominated by and concentrated as four main conglomerates ICA, Kooperativa Förbundet (KF), Axel Johnson Group and D-Group\textsuperscript{125}. Together they account for 95 percent of food and grocery sales through their integrated wholesale and retail affiliates. The grocery retail industry’s share of the estimated SEK 160 billion market at retail level is still a modest percent, but the sector has grown 200 percent over the last ten years. The steady growth is showing no signs of levelling off.\textsuperscript{126}

5.1.1 Changes and Trends

Much has happened in the Swedish grocery retail sector since the economic downturn in 2000/2001. The downturn forced many retailers to rethink their strategies and expansion plans. The main market trends have been towards consolidation, liquidating unprofitable operations and ‘profiling of concepts’.\textsuperscript{127, 128}

\textsuperscript{125} The Axel Johnson Group, now the third largest after ICA and KF, has over 1,000 stores (Åhlens, Pressbyrån, Hemköp). The D-Group with the Matnara, Vivo and Rema stores has 855 outlets. Source: ‘Discount stores sweep the Swedish food market,’ FindArticles Website

\textsuperscript{126} ‘Sweden: its value-added market’, Findarticles Website

\textsuperscript{127} ‘Profiling of concepts’: to give an old concept a new profile i.e a ‘relaunch’.

\textsuperscript{128} Euromonitor Website
Due to the industry changes many supermarkets have had to rethink their strategies. This is reflected in discount food stores and supermarkets being the fastest growing business in the Swedish food retail industry. The altered strategies have led to a discount race among the grocery retailers and the larger supermarkets. Discount stores are becoming increasingly more popular with consumers.

Although price-pressure seems to be the main weapon in the competitive race, bigger supermarkets with low-price strategies are also introducing a new service to their customers through the implementation of TBSS checkouts. This implies a further strategy of not just attracting customers with low prices but winning their loyalty by introducing convenient shopping i.e. Express Shopping.

When one firm chooses to introduce a new innovative concept, if seen as successful, others are soon to follow. In the case of TBSS checkouts in the city of Linköping, Coop Forum was the first mover, but ICA Maxi soon followed their lead.

After introducing the main competitors in the Swedish grocery retail industry, a presentation of the chosen two case companies will follow.

5.2 The First Case Company - Coop Forum

5.2.1 Coop Norden AB

Coop Norden AB was established in 2002, and is the biggest company in the Nordic region in the FMCG\textsuperscript{129} sector. It is owned by Kooperativa Förbundet

\textsuperscript{129} FMCG: Essential brands with exceptional value.
KF, Sweden (42%); FDB, Denmark (38%); and Coop NKL, Norway (20%). Coop Norden AB runs the business through its three subsidiaries Coop Danmark A/S, Coop Norge AS and Coop Sverige AB.

KF's members run Sweden's largest supermarket chain, Coop Forum. Along with its counterpart retail cooperatives in Norway and Denmark, KF is part of Coop Norden. The company has around 60,000 employees and around 3,000 stores and supermarkets. Total retail sales amount to SEK 135 billion, which give them a market share of 26 percent.

Coop’s turnover for the business in Sweden is SEK 28 billion. The number of employees is around 11,500.

### 5.2.2 Coop Forum

Coop Forum is Sweden’s biggest supermarket retail chain with 50 supermarkets and over 5000 employees. A large selection of products and brands are offered at Coop Forum. Customers purchasing large quantities of goods and registered members holding MedMera membership cards can take advantage of further promotions and offers. Each week Coop Forum sends out a magazine to inform customers of special weekly offers.

There are two Coop Forum stores in Linköping, however only one has implemented the self-checkout system so far. Shop Express has been

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130 Kooperativa Förbundet (KF) is an organisation, also known as the Swedish Cooperative Union, and is owned by about 70 cooperative societies.
131 Kooperativa Förbundet Group Company Profile; Yahoo Finance
132 'Discount stores sweep the Swedish food market'; www.findarticles.com
133 'MedMera membership': for a deposition fee of SEK 100, households receive a MedMera membership card, which gives access to promotions offered by Coop and other retail stores belonging to the group. A MedMera membership is necessary in order to sign up for using the Shop Express service.
implemented in 20 out of 48 Coop Forum supermarkets around Sweden. Bigger cities were chosen as sites to implement the Shop Express concept successfully. In 2002, Coop Forum was the first retail grocery to introduce the technology-based self-service checkout concept to Linköping consumers.

5.2.3 Coop’s market

Coop Forum’s strongest competitor is ICA Maxi. All through 2004, Coop Forum has lost market shares to ICA Maxi. Furthermore, Axfood is breathing down Coop Forum’s neck threatening to move up to become the second biggest of the conglomerates in the Swedish retail food industry.\textsuperscript{134} According to Svante Nilsson, President of Coop Norden, the competitors can be held at arms length by “increasing the power of competition, total sales and profits”.\textsuperscript{135}

5.3 The Second Case Company – ICA Maxi

5.3.1 ICA Sverige AB\textsuperscript{136}

Together with the ICA retailers, ICA Sverige is the country’s leading food retailer, with a market share of 37.2 percent. ICA retailers are independent merchants who own and manage their stores. ICA Sverige’s role is to manage the logistics behind the stores, strengthen the ICA brand, oversee new store openings and develop store concepts. There are a total of 1668

\textsuperscript{134}From the newspaper Butikstrender, news on the groceries- and service trade
\textsuperscript{135}From the newspaper Butikstrender, news on the groceries- and service trade.
\textsuperscript{136}Please find detailed information on ICA in Appendix VI
ICA stores in Sweden with sales of SEK 43,086 million\textsuperscript{137} in 2003. ICA represents 59.9 percent of group sales.\textsuperscript{138}

### 5.3.2 ICA Maxi

At ICA Maxi stores, customers can find a wide variety of foods, as well as books, apparel, house ware, sporting goods and everything for the garden. ICA Maxi stores are located outside of major cities, convenient for customers who arrive by car and shop in greater quantities.

In 2003, there were 34 ICA Maxi stores in total. ICA Maxi sales were SEK 12,749 million\textsuperscript{139} in 2003.

### 5.3.3 ICA’s Market

The Swedish food retail market is dominated by three nationwide chains – ICA, Coop and Axfood – while a fourth, BergendahlsGruppen, is mainly active in southern Sweden. In 2003, the Swedish food retail sector grew by 2 percent on a turnover exceeding SEK 200 billion. ICA stores raised sales by 3.2 percent and their market share to 37.2 percent. The most substantial growth was in the supermarket segment, ICA Maxi Stormarknad. This could be the result of the trend toward one-stop shopping, where customers prefer to buy everything in one place.

\textsuperscript{137} Sales excluding VAT.
\textsuperscript{138} ICA Annual Report 2003, from ICA’s Official Website
\textsuperscript{139} Sales including VAT.
\textsuperscript{140} “ICA Kundkort”
5.3.4 Customer Loyalty Programme
ICA’s customer loyalty programme in Sweden was launched in 1990, with customers given the option to hold a customer-card\textsuperscript{140} and access to special offers connecting to being a member. In 1990, already 2.3 million ICA customer-cards were distributed to 1.7 million households. Since 1995, all ICA members receive the monthly magazine ”Buffē” together with weekly promotional material on offers and invitations to ICA’s events.

5.4 Coop Forum, ICA Maxi and the Linköping Area
Both Coop Forum and ICA Maxi are situated in the Tornby shopping area just outside the city of Linköping. The Tornby shopping area is considered as Östergötland region’s biggest shopping space spreading over 48,000 square kilometres with more than 60 different retail stores, and developing.\textsuperscript{141} The Tornby shopping area attracts around five million visitors yearly, the number of visitors nearing 6 million in 2003, with sales over SEK 2 billion.\textsuperscript{142}

After presenting the two case companies and the area in which they are situated the following paragraphs will contain the findings from the interviews conducted with representatives from Coop Forum and ICA.

\textsuperscript{141} Official website of Tornby Köpcentrum
\textsuperscript{142} Ikano Fastighets AB website and Östgöta Correspondenten website
5.5 Interview Findings

Below, information collected from interviews regarding the two companies and their TBSS systems are presented. The observation and interpretation of the empirical material has been organised to reflect issues presented in the theoretical framework of the paper.

5.5.1 Coop Forum Findings

According to the Project Leader of Shop Express and the Store Manager of Coop Forum Linköping:

The first pilot project introducing Shop Express was carried out in Coop Forum in Stockholm in the end of 1998. A few years and 11 supermarkets later, in the autumn of 2002, Coop Forum in Linköping introduced Shop Express.

The main competitors of Coop Forum are ICA Maxi and Willy’s.

**Strategic Objectives**

The initial strategic objectives of introducing Shop Express were better service to the customers, simplicity for the customer, shorter queues, a decrease in total hours worked, better working conditions and thereby less sick leave and a better working environment. Coop Forum tried to have a mix of service differentiation strategy and cost strategy. In order to gain both, a research was done where customers were asked what improvements
they would prefer. The feedback was shorter queues and less time packing groceries at the checkout.

After having introduced the TBSS system Coop Forum has gained more loyal customers, more personally satisfied staff and increased sales per customer but the initial costs of the system, SEK 2-3 million, investments has not yet broken even. The manager of Coop Forum expects that it will break even in three years time. Once it does it will become a very profitable business. The reason for this is that if the amount of purchased goods per time per customer shopping in the old-fashioned way is compared to the amount of purchased goods per time per customer using Shop Express the old-fashioned way amounts to SEK 320 compared to SEK 500 when using Shop Express.

When looking at how you rate the success of a system like the TBSS, Coop Forum’s manager states that the criteria they have used, is satisfied customers. The Project Leader adds that the share of total sales through Shop Express should be a third of the total sales volume to be considered a success. Coop Forum has at present 30 percent, the aim being 40-50 percent, of the total volume. The failure rate is under control, according to the manager they have only experienced one attempt to cheat, when using the scanner for Shop Express, since it was introduced in 2002.

**Customer Relationship Management**

Coop Forum was very careful when introducing Shop Express not to pressure anyone into using the new system. It was explained in a brochure available at Coop Forum together with a video stand presenting how to use
the scanning device as well as on Coop’s homepage. The Coop Forum magazine with weekly offers distributed to the households of Linköping and the surrounding area, also had a short description. The reason for the discrete marketing was that Coop Forum did not want to ‘attack’ the customers. They considered it risky to pressure customers into trying the system they would much rather have the customers try Shop Express out of their own curiosity. After the introduction Shop Express has not been marketed further. This is an area that needs improvement according to both the store manager and the project leader. The goal is to have half the 65,000 Medmera customers use Shop Express. So far one fourth is using the system.

As it is now bonus points and discounts are not much used to attract more MedMera customers. Presently the only thing offered to first-timers is 5 percent on the first purchase using Shop Express.

When asked about customer segments, Coop Forum serves them all. Their main target segment is families with children still living at home. This way they can establish a relationship with the children, believed to be the customers of the future. Unexpectedly, the TBSS attracted a male segment, whereas before it was almost entirely women shopping. This was, according to the project leader, caused by the males being interested in the technology of TBSS, which all of a sudden made them think of grocery shopping as fun.

**Competitiveness**

According to the store manager of Coop Forum, the implementation of Shop Express in 2002 has proven to increase Coop Forum’s competitiveness in terms of winning customers. According to the store manager, “Being the first supermarket in the Linköping area to introduce technology-based self-
checkouts was a strategic move to further improve our competitive position as well as an attempt to sustain our competitive advantage”.

Another indirect indication of the success of Express Shopping may be the fact that Coop Forum’s main competitor ICA Maxi in the autumn of 2004, two years after Coop Forum’s introduction of technology-based self-checkouts, also introduced this type of service. According to both the interviewees representing Coop Forum, it is all about being the first mover. “When Coop Forum introduced Shop Express in Linköping, ICA Maxi did not have the system yet, this made quite a few of ICA Maxi’s customers shop in Coop Forum instead, and many of the customers never returned to ICA Maxi”, states the store manager of Coop Forum.

After introducing Shop Express total sales in Coop Forum, Linköping have increased with 0.5 percent per month. The total annual sales are SEK 300 million, SEK 25 million of these are from Shop Express. Coop Forum has 17,000 customers a week and 35 percent of these actively use self-check-out when shopping. Self-check-out takes approximately 30 seconds compared to 4 minutes when shopping in the traditional way.

Coop Forum’s Value Chain has been affected in several ways by the introduction of Shop Express. There have been Human Resource changes due to the reallocation of personnel. The Marketing department has been affected by having to for example, send information material to the daily press right before Shop Express was introduced, to create interest for this new service, make brochures on how to use the self-scanning device, arrange VIP introduction evenings, send direct mails to the silver/gold MedMera
customers\textsuperscript{143} and make sure that the TV stand in Coop Forum, showing the introduction video on Shop Express, was set up. Today Shop Express is not promoted as such, information about this shopping option can be found on the Coop’s homepage as well as in Coop Forum’s stores. The Technology department was also affected by the increased needs for development and the Sales Service department, had to ‘outsource’ the service formerly provided solely by the personnel to the customer.

Introducing Shop Express has not yet led to any cost savings. Even though less personnel is needed at the checkout counters, according to the store manager, the number of personnel has not been reduced, they have instead been reallocated to the shop floor in order to provide the customers with more individualised service. By reallocating the personnel, Coop Forum has instead experienced an added value in the service level. In other words, Shop Express has not led directly to any cost savings and will not, according to the project leader, -and are not expected to, over the next couple years. Since the Shop Express system is considered a long-term investment, cost savings are expected in the long run.

\textbf{Problems with the Shop Express System}

The problems that have been caused by the Shop Express system have been few and mainly technological. Details as, the scanners in the ceiling had to be adjusted to reach the hand-scanners and smaller problems with bulk offers not being registered correctly on the scanner screen.

\textsuperscript{143} Silver/Gold customers (5000 customers approximately) are shoppers who spend the most money on an annual basis, they are entitled to extra bonuses/discounts.
The Future of Shop Express at Coop Forum

The project leader of Coop Forum believed that the future of TBSS would be developed further by a rationalisation effect. Meaning that the un-manned check out counters would free some working hours, which could lead to cutbacks in staff regulated by a new staffing system. In order for Coop Forum to reduce the number of personnel the Shop Express system has to be developed further. This development could for example include enhancing the software technology in the hand scanner so that the system will be able to ‘scan negatives’. Other aspects could be to further develop the radioLAN equipment. According to the project leader and the store manager, there will in the future be put more emphasis on innovation seen as direct marketing by targeted customer offers. A few of the ideas presented were offering special discounts to specific customers. This could be done through a device called ‘radio-LAN’ this device makes it possible for the managers of Coop Forum to register what the Shop Express customer buy and when he/she shops. All depending on not violating PuL this device can apply Coop Forum with valuable information. This could for example be, observing when a grocery buying family mother is in the area, which contains diapers, the supermarket could then send a message to her hand scanner offering her a discount on diapers. Relations marketing, through direct marketing is according to the project leader of Shop Express one of the many ways of making the Shop Express customers buy more. When improving the future software technology this could be the more sale of the future. According to the store manager, it is better financially to sell more to

144 Scan negatives: discount cheques, bottle/can deposit receipts, etc.
145 RadioLAN: Local area network. Cost efficient internet communication device.
the customers you already have than to spend money on ‘stealing’ new customers from competitors because of the strong competition and in this case also because TBSS customers are more loyal than other customer groups.

According to the project leader of Coop forum, more money will in the near future be spent on further marketing the Shop Express idea. The aim is, within two years, to have 33 percent of Coop Forum’s 65,000 customers use Shop Express and within five years to have 50 percent use the Shop Express self-checkout system. The project leader has plans of automatically making MedMera customers Shop Express customers. The store manager believes this would encourage more people to start using the system and help Coop Forum, Linköping reach its goal.

When asking the project leader about whether Shop Express would be considered an option for some of the smaller Coop Konsum supermarkets, it was not seen as a possibility since the customer group simply is not big enough yet. Therefore breaking even would be impossible or very far-fetched. It could though over the years become an option all depending on how and if the retail market develops.

Coop Forum’s image will in the future be reflecting more personified service. Customer relationship management being key. This will according to the interviewees be possible by having personnel who know how valuable they are and making sure that personal development is in focus. The project leader and the store manager both believed that having happy personnel is

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146 PuL: Personuppgiftslagen, a law protecting people’s personal integrity, so it is not violated. The individual must give his/her assent before data can be collected.
the key to happy customers. As the project leader put it, “It is no longer enough just to offer low prices”.

5.5.2 ICA Maxi Findings

These findings are based on an interview with the responsible manager for self-scanning shopping at ICA Maxi in Linköping.

Strategic Objectives

ICA Maxi, linköping introduced the self-scanning system in the end of 2004. So far 17 ICA stores have TBSS and in a matter of weeks four more will introduce it and 20 more are on the verge. The self-scanning system can be found in both ICA Maxi’s and ICA Kvantum supermarkets. Both ICA Maxi and ICA Kvantum have a customer base that is large enough. Meaning that breaking even can be reached within a couple of years. The number of checkout registers, also play a role, since 15 is the minimum requirement for allowing another supermarket unit to start up the self-scan system. The costs of introducing TBSS is about SEK 4 million, so it is important that the customer base is of a certain size and that the customers are ready to use it. Otherwise, the aim of implementing the self-scanning system, which is that it is profitable and increases the service level, is hard to achieve.

Initially the strategic objectives for ICA Maxi to introduce the self-scanning system were to create customer relationships, have more-sale and to improve the service offered to the customers. At present 25 percent of ICA Maxi, Linköping’s 10,000 ICA members are using the self-scanning system. The
aim, according to Linköping’s responsible manager, is to have 35-40 percent of the ICA members using the system. The introduction of the self-scanning system was immediately a success. In the first 2.5 weeks almost 3000 customers were registered and today 250 customers a week sign up for an ICA membership. ICA Maxi’s marketing department had done their homework, the 8000 best customers were offered a free shopping basket if they would come and try the new system moreover, ICA’s magazine with offers of the week also announced the new self-scanning system. As the store manager stated, “We had an advantage in introducing the self-scanning system after Coop Forum, since at this point almost all our customers knew the self-scanning concept”. Even though ICA Maxi was able to ‘copy’ the self-scanning system certain technological features, as the scanners in the ceiling and the fruit weights, still had to be adjusted.

**Customer Relationship Management**

The total number of customers, on a yearly basis, that shop in ICA Maxi is 1.5 million. It was not possible to get figures on how many of these, use the self-scan system. Of the 1.5 million customers the biggest segment is families with children because they, in general, shop more than the other segments. The second largest group is people between 50-60, and of these particularly the men have embraced the concept. According to the store manager, the attitude towards the system is very polarised, either you hate it or you love it. The customers that love it become very loyal, and in general they buy more when using the self-scan system SEK 700 compared to the traditional way of shopping where the customer in average spend SEK 370. The store manager continued by saying that once ICA Maxi introduced the
TBSS many of their former customers who left, to try Coop Forum’s Shop Express as MedMera customers, returned.

**Competitiveness**

ICA Maxi’s biggest competitors are Coop Forum and City Torp. Overall, ICA Maxi is the biggest in the retail industry, with 37.2 percent of the market shares.

ICA Maxi’s Value Chain has been affected by the introduction of Shop Express. There have been Human Resource changes due to the increase of personnel. The Marketing department has been sending direct mails to the 8000 best customers. The Technology department was also affected by the increased needs for development for example, in making sure that the terminal, next to the front entry, gave the right discount offers to the right customer when an ICA membership card was inserted. The Sales Service department, had to ‘outsource’ the service of the personnel to the customer.

So far ICA Maxi has not experienced any cost savings. On the contrary more personnel have been hired to upgrade the service level. Compared to Coop Forum, all ICA Maxi’s check out counters are manned and according to the responsible manager, ICA Maxi has no plans of changing that. The extra personnel is used when random checks on customer purchases are needed but also for making sure that ICA Maxi as a whole in general looks tended to. As with Coop Forum, the self-scan system is considered a long-term investment that will not pay off directly.

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147 City Torp belongs to BergendahlsGruppen
**Problems with the Self-Scan System**

The problems ICA Maxi has had with implementing TBSS have mainly been staff planning/organising related and keeping the personnel activated, so that they constantly serve their purpose.

**The Future of the Self-Scan System at ICA Maxi**

The aim for the near future is to have 35-40 percent of ICA’s members use the self-scanning system within the end of year 2005. The overall goal is to make the self-scanning system profitable. In order to achieve this, ICA Maxi’s main strategy is to offer the best price possible within the given margins. This strategy will become obvious in the spring of 2005. According to the store manager, if the prices are cheaper at ICA Maxi more customers will shop there and since the self-scanning customers are loyal, hopefully they will stay and as a result, ICA Maxi will have gained more market shares.

Similar to Coop Forum, ICA Maxi’s image and the indirect way to success, is also affected by be well being of its personnel, because only when the personnel is active and motivated can they provide the customers with top-level service. As Claes-Göran Sylvén, the Chairman of ICA states: “I also think it is important that all our employees have a clear role and know that they make a difference. We have to concentrate on the individual and allow each and everyone to develop based on their goals and potential. Making people feel like they are part of something bigger than themselves also contributes to this.”

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148 Three staff members are used at the random customer check. Extra service of repacking the groceries is offered so that the customer is bothered as little as possible.

149 ICA Annual Report 2003, from ICA’s Official Website, page 5
After having presented the empirical findings based on secondary data and the primary interview data, the findings in the next chapter are compared and analysed in relation to the theoretical framework proposed in chapter 4.
Chapter 6.
ANALYSIS

This section aims to compare and contrast the relevant theories referred to in the beginning of the paper with the empirical findings presented above. The observations and analysis of empirical information aim to show how theory corresponds to practice and to add new insights as to implementing TBSS systems in Swedish supermarkets.

In the following the analysis of the empirical material is presented in a way that is related to issues of the problem and purpose presented in the beginning of the paper. The analysis further aims to indicate new insights gained from the research. The authors have chosen to structure the analysis to correspond to the theoretical framework and concepts of chapter 4.

6.1 TBSS as Innovation and its Life Cycle

As discussed in the beginning of the theoretical framework of this paper, TBSS technologies and processes chosen by companies to complement the traditional services of the company may vary. In the case of Coop Forum and ICA Maxi in Linköping, the innovation refers to in-store self-checkouts systems. For both supermarkets, the technology and devices used for the self-checkout service are identical, although both anticipate upgrading and expanding the technology in the future. Since Coop Forum has been operating the system for two years, and ICA Maxi has only introduced it since the Autumn of 2004, Coop Forum has a
lead in experiences with the technology and its implementation. This is seen in the fact that at ICA Maxi even though customers are doing the scanning of products by themselves, they always have to go to a manned-cashier to complete the final part of their purchase, payment. At Coop Forum, customers may carry out the entire shop express process by themselves, which is the ultimate goal of the system.

These facts imply that TBSS systems have life cycles, as most products and processes do. This means that during the five different stages that a product or process may go through, different activities and strategies are required by management, leading to different competitive gains in the short- versus long-run as the product passes through its life cycle.

In the case of Coop Forum and ICA Maxi, only the first two stages are relevant for TBSS checkouts, since they are at most 2 years in operation. ICA Maxi’s TBSS system is seen to be in its transition from the ‘New Product Development’ stage to the ‘Market Introduction’ stage. This is characterised by high investment needs, no sales revenues and losses associated with the system. Coop Forum on the other hand can be seen to be in stage two of its life cycle, in the ‘Market Introduction’ stage, where costs are still high, sales volumes associated with TBSS still relatively low and break-even still has not been acheived.

Since the different stages of the life cycle required different emphasis on different activities, the assessment has implications for the competitive advantage of these supermarkets as well for the value-chain and value network configurations of the companies.
6.2 Competitive Advantage and TBSS Checkouts

Each company is part of an industry and is therefore affected and can affect the industry structure through the competitive strategies that it chooses to pursue. Following the idea of Porter’s Five Forces Model, companies are affected by and act according to pressures from and in anticipation of five different factors: relations with suppliers; bargaining power of buyers; threats of new entrants; threats of substitute products or services; and rivalry amongst established firms. In the Swedish grocery retail industry, the quest for still lower prices that have characterised the competitive arena in recent years is also giving way for another type of strategy pursued by bigger supermarket chains in bigger Swedish cities. These supermarkets, including Coop Forum and ICA Maxi, have chosen to implement TBSS as a new service strategy, besides competing in prices, to win loyal customers who do not shop around but purchase in large quantities in one place.

This also implies that in relation to Porter’s five generic strategies for gaining competitive advantage, although a focus on cost position is clear for both the supermarkets investigated, both are also pursuing a way to differentiate themselves in the eyes of the customer, through the self-checkout service. This can be seen as differentiation on the basis of a unique service offering at this point in time for both supermarkets. However, it is possible that as the TBSS process goes through its life cycle, costs associated with it become lower, and therefore it can, in the long-run turn to serve the cost position of the companies. This depends on the rate of development and added features the supermarkets are aiming to introduce in the next few years. Also, if the TBSS system were to be implemented at the smaller stores located in inner cities, this would imply a differentiation
strategy. However, the supermarkets that have been investigated do not see the TBSS system implemented in their smaller store in the next years to come, because of cost considerations. Therefore the TBSS systems in both supermarkets are at this point in time related to differentiation.

Since the aim of implementing strategies is to gain competitive advantage over competitors, Coop Forum can be said to be the leader in Linköping in providing TBSS checkout service. Although ICA is the market leader in Sweden in the grocery retail industry, in Linköping ICA Maxi lost customers due to the fact that Coop Forum was the pioneer in implementing the TBSS system. This points to the relevance and importance of path dependencies and dynamic capabilities. Due to Coop Forum’s position and second in the market in 2003, its good financial position and resources and past experiences within the industry, investments into TBSS checkouts as a pioneer in Linköping were possible. This follows the concept of path dependencies where the past performance and experiences of companies affect where they can go in the future. A further crucial element concerning the relationship between TBSS and path dependencies involves the customer loyalty programme of Coop Forum. The membership club that has been operating for years is the reason Coop Forum could implement TBSS as a secure, almost totally buffered system to avoid customers misusing it, since customers have to be registered as club members as well as approved to use the self-checkout service.

Also, dynamic capabilities are important, and seen in the case of Coop Forum, where a changing environment was identified early with the possibility of gaining on changing customer shopping habits. In addition, the relatively fast and successful implementation also points to corporate learning at Coop Forum within the dynamic capabilities concept.
As has been presented Kuczmarski’s statement before, in order to gain ‘real’ competitive advantage, the focus of innovative efforts should be concentrated on the development of ‘new-to-the world’ or ‘new-to-the-market’ products and processes that provide consumers with totally new perceived benefits. It is further argued that by implementing such innovations competition can be ‘leapfrogged’, since new ways to strengthen profit margins and to sustain future earnings are created.\textsuperscript{150} As seen for both supermarkets, but in particular for the pioneer Coop Forum, the implementation of TBSS systems although not showing signs of financial benefits just yet in the short run, do seem to add a new dimension to the competitive environment of the Swedish grocery retail industry and cause customers to switch from one supermarket loyalty programme to the other due to the supermarket’s new service offering through TBSS. Therefore, TBSS does seem to have an effect on the competitiveness of companies, even though a minor one, which can be attributed to the newness of the service.

6.3 TBSS and Value Chain and Network Effects

The changes needed for the implementation and operation of TBSS checkouts have a transformative effect on the value-chains of supermarkets. In the theoretical part a distinction was made between the value chain and the value network. Here these concepts are analysed as understood in the case of the supermarkets Coop Forum and ICA Maxi. The value chain is seen to apply to the whole operation of a supermarket, including the

\textsuperscript{150} Kuczmarski, 1996
traditional checkout system as well as the new TBSS checkout system. Furthermore, when supermarkets introduce loyalty programmes building a network of loyal customers, the value network consideration has to be included in the supermarket’s overall value chain. This can be connected directly to the marketing primary activity of the value chain, which has to go through alterations due to the customer loyalty programme, since loyal customers have to be given special attention and added services. However, since it is required to also separately apply for using the TBSS service within the customer loyalty programme, a further value network is thus created within the value network of the customer loyalty programme. Therefore, the TBSS service is seen to have a value-network of its own, with its activities and outcomes directly and indirectly affecting the whole value chain of the respective companies. Since value chain theory is a way to make implications concerning the competitiveness of companies, therefore TBSS in Coop Forum and ICA Maxi affect competitiveness.

For Coop Forum and ICA Maxi, slightly different changes concerning human resource and service management have been identified. In the case of Coop Forum, personnel that were no longer needed in the cashier due to the implementation of TBSS checkouts were reallocated to different floor-divisions to help employees and customers in the store. For ICA Maxi, personnel have only been reallocated to service the TBSS checkouts. Since for ICA Maxi, self-checkouts are still manned, with additional employees helping to pack items, the personnel are still almost doing what they have been doing before. Therefore, refuting the theoretical expectations of minimised customer-personnel contact due to the TBSS service, in the case
of ICA Maxi, the contrary is seen. Employees need to interact more with customers who are for example using the self-checkout for the first time or who encounter problems during the scanning process. Therefore, human resource management of these companies must encourage and train employees how to communicate and help customers in a better way.

Also, the technological development activity within the supermarkets’ value chains will be affected, since in having TBSS checkouts, technological problems arise often at the introductory phase and occasionally afterwards. This was experienced in the case of both Coop Forum and ICA Maxi. Furthermore, technological development must become more dynamic if the companies want to stay ahead of their competitors who are likely to also introduce TBSS checkouts in their stores. This means that Coop Forum and ICA Maxi who both have TBSS checkouts can only be successful in this service offering if they continuously aim to find new ways to update the TBSS system.

In having to introduce TBSS checkouts, the ‘infrastructure’ of the supermarket is also altered to include the TBSS devices.

Finally, a primary activity that also needs to adjust to TBSS systems being introduced is that of marketing. Marketing is especially important at the outset of implementing the TBSS. Customers at Coop Forum were made aware of the new service through letters sent out to the most loyal customers who are ranked according to the amount they spend in the supermarket. Also, a VIP event was organised for customers who could try the TBSS checkout in a special setting. Furthermore, personnel in the stores have to be ready to assist customers who want to learn to use the system. In the case of ICA Maxi, marketing activity is similar to that of Coop Forum, since the customer loyalty programme includes similar marketing activities. However,
ICA seems to put less emphasis on informing customers of the new service offering. Both companies have exerted the need for more marketing activity efforts to promote the TBSS system.

As stated in the theoretical section, value chain analysis involves ‘drivers’ that shape the company’s business value system, and thereby also competitive position. In dealing with TBSS systems, value and cost drivers are both important. The major driver of cost is scale as well as capacity utilisation. This means that for Coop Forum and ICA Maxi costs can only be saved if the appropriate amount of customers are won to use the TBSS system, the goal for both is 35-40 percent, as opposed to today’s 20-25 percent. In the case of value, that is the element where both Coop Forum and ICA Maxi are adding value for customers and improving their competitive position, even though in the short run this is very costly. The long-run goals for both supermarkets are however to operate TBSS and its related activities by both adding value as well as saving costs at the same time.

The customer relationship management concept does not have to be analysed in further detail, since it is apparent from the value-chain and network analysis in terms of Coop Forum and ICA Maxi that it has a major role in achieving success with TBSS.

In conclusion as to the effect of TBSS on Coop Forum’s and ICA Maxi’s competitive advantage, out of the four main reasons why companies offer

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151 Four main reasons to introduce TBSS: to reduce costs, to control quality, to standardise service, and to increase the quality level.
technology-based self-service systems, increased quality level is the apparent reason at this point in time, since the service is in a too infant phase to reap costs and gain revenues at this stage. As expected by these supermarkets, all four goals are aimed to be achieved in a long-term perspective in order to positively affect their competitive advantage, both in terms of loyal customers and sustained profits.
Chapter 7.

CONCLUSION

The final chapter of the paper summarises the findings and conclusions of the research paper. The aim is to have presented a constructive discussion of the problem and answers to the research questions in the light of both theory and practice. The conclusion also gives suggestions to further research issues that should be investigated related to the topic of this paper.

7.1 The Major Results of the Research Paper

The purpose of the research paper was to investigate, through a management perspective, the changes brought about by implementing innovative TBSS checkout systems in Swedish supermarkets, and their effect on the competitiveness of companies.

The structure of the research paper to answer the purpose was organised as secondary data, mainly consisting of theories connected to the research topic, and empirical data including primary data through conducted interviews, in a way that make comparisons between theory and practice possible as well as contribute new thoughts to the subject.
In answering the research question on the changes brought about by implementing technology-based self-service systems in supermarkets, it has been concluded that the issue must be discussed in the short-term and long-term separately. These changes were shown to include increased quality of services, reduced costs, and the winning of loyal customers. The changes were seen in value activities connected to the value chains and networks of the respective supermarkets.

It was seen in the analysis and can be concluded that TBSS can add to the competitiveness of companies, however, positive financial results can only be expected in the long-term since the initial investments have to be reaped. The short-term effects can be seen in winning customers to join the loyalty program and thereby binding themselves to the particular supermarket and in a way commit themselves to purchase all in that supermarket in the future. Attracting customers away from other supermarkets, as was shown in the case of Coop Forum, is a sign of having a competitive advantage over competitors in terms of providing a new service.

Since ICA Maxi was shown to follow in Coop Forum’s foot steps in implementing TBSS, this may imply a pressure to innovate in this direction and therefore competitive companies will in the future also be affected.

Coop Forum and ICA Maxi had to carry out changes and make adjustments to their value activities and customer relationship management in order to operate TBSS checkouts successfully. Mostly human resources were seen to be reshuffled as well as human resource management had to change to educate employees to show customers how to use the TBSS system. Technological development activities were also affected, since the TBSS technology has to be operated without fault to be successful. In order to
minimise the risks of failure when implementing innovations, it was seen that it is important to have a strategy that combines product and process innovations with regular incremental improvements. Marketing activities related to TBSS were also affected, although these were seen to be more important in the introductory phase of the system. However, brochures and TV-stations explaining the service in-store have become a new and indispensable part of marketing activities related to TBSS checkouts in supermarkets.

Finally, the overall service quality level has been seen to have increased through the implementation of TBSS.

The implementation of the TBSS system did have an effect on the competitiveness of Coop Forum and ICA Maxi: As seen for both supermarkets, but in particular for the pioneer Coop Forum, the implementation of TBSS systems although not showing signs of financial benefits just yet in the short run, do seem to add a new dimension to the competitive environment of the Swedish grocery retail industry and cause customers to switch from one supermarket loyalty program to the other due to the supermarket’s new service offering through TBSS. Therefore, TBSS does seem to have an effect on the competitiveness of companies, even though it is a minor one, which can be attributed to the newness of the service. Long-term competitiveness related to cost savings are until now only anticipated.

A model illustrating the findings, in the light of the theoretical and empirical parts of the paper, has been built, which will be presented on the following page.
7.1.1 Contribution to the Development of Knowledge

Since TBSS checkouts in Swedish supermarkets are a relatively new phenomenon, studies relating to various topics concerning this issue are valuable to add to the body of scientific knowledge. Studies conducted in Sweden on TBSS in supermarkets have been seen to predominantly have a customer focus. This research paper has been written with a company perspective in focus and therefore aims to add to this part of the business
literature on TBSS checkouts. As the findings of this paper show, the effects of TBSS checkouts on the competitiveness of Swedish supermarkets must be dealt with in terms of the technology’s and the related service’s life cycle and the value and network activities affected by this. The results have shown that the cost and value-effects of activities and goals related to TBSS in supermarkets differs in the short and long term. Moreover, competitiveness therefore also has to be investigated in terms of short-term and long-term strategic objectives.
This study contributes a deep insight into the short-term effects of TBSS on the competitiveness of supermarkets in the Swedish context. Although the findings are based on an empirical study conducted in the Swedish context, it can be seen as generalisable to other contexts as well, where TBSS is introduced and is still in its introductory phase.

7.1.2 Contribution to Practice
The contribution of this study to practice is based on the empirical study conducted. It is based on the grocery retail industry in a Swedish context, therefore companies operating in this sector may benefit from the findings of this paper when dealing with their competitiveness in the industry. Trends can be identified from the paper, as well as the activities that pioneers of TBSS checkouts have to implement and change to operate these technologies. Supermarkets that are considering implementing TBSS checkouts will find this study of particular interest. Clearly, Coop Forum and ICA Maxi will find this study of interest, since the empirical study was based on their experiences. Although the research paper is a kind of case
study, and presents an analysis of experiences from the close past, therefore mostly presenting historical data, ideas with implications for the future have also been presented and therefore may be considered by Coop Forum and ICA Maxi in their future operations of TBSS checkouts. Also, since it reveals differences between their activities, providing some competitor information.

7.2 Further Research

Further research on the topic of TBSS systems in supermarkets is encouraged by the authors. Since this study was based on a qualitative approach, a quantitative analysis would also be beneficial to show more consistency.

Furthermore, this study should be conducted a few years from now, in order to be able to see the long-term anticipated effects of TBSS checkouts in the Swedish grocery retail context. At this point in time, when the TBSS system is at most 3-4 years old in the Swedish context, the investments into the system have not yet been reaped, and in some instances it still requires large sums to be invested. Therefore, it can still be said to be its infant stage. Future studies could also include the Innovation Model of Utterback briefly mentioned in the theoretical part of this paper. The innovation model attempts to explain the dynamic processes over a period of time within the chosen industry and the firms involved.

Furthermore the study should also include the investigations of TBSS checkouts implemented in other Swedish cities, and the findings compared to give a more complete picture of TBSS in Swedish supermarkets.
APPENDIX

Appendix I.
The Interview Questions

I. Strategic Objective

1. What were the initial strategic objectives to introduce express shopping?

2. What were the costs of implementing the self-scanning system?

3. What are the gains for your company from having introduced the self-checkout?

4. How would you rate the success of the express shopping system? (Have goals/expectations been met?)

5. What criteria does your company use to judge success?

6. What is the failure rate of the technology?

7. Which areas/regions are considered more receptive towards express shopping? (In terms of number of customers using the service)

II. Customer Awareness

1. How many customers in Sweden are registered as holding the customer-card?

2. How many of these members are registered to use shop express?

3. Does your company have a special customer segment that is more receptive towards this service?
4. Is customer express shopping behaviour/attitude recorded and evaluated? If yes, is the response mainly positive?

**III. Competitiveness**

1. Who do you consider as your competitors in terms of express shopping?

2. What is your company’s market share in the industry?

2. Has the implementation of express shopping benefited your competitive position in the industry? How?

3. Have there been any changes in the value chain due to express shopping? What are these changes?

5. Has your company experienced cost savings due to implementing express shopping?

**IV. Problems with Express Shopping**

1.a. What are you struggling with the most?

1.b. Does the problem stem from technology, operation or customer related issues?

**V. The Future of Technology-Based Self-Service at Your Company**

1.a. What are your company’s expectations for the future use of express shopping?

1.b. How is this going to be achieved? (marketing etc.)

2. What challenges are ahead for the future success of express shopping?

3. Can the shop express system be technologically updated and expanded?

4. Are there plans to introduce shop express in inner city stores in the future?
Appendix II.
Utterback’s Innovation Model

Source: Utterback, page 91, 1994
Appendix III.
Figure 1. The Product Life Cycle

Source: Levitt, 1965
Appendix IV.
Diagram 2. Porter’s Value Chain

Source: Porter, 1985, 1990
Appendix V.
Diagram 3. The Value Network Model

Source: Stabell and Fjeldstad, 1998
Appendix VI.
Diagram 4. Combination of the Value Chain and the Value Network

Customer Loyalty Value Network

TBSS Value Network

Network promotion & contract management

Service provision

Infrastructure operation

Infrastructure
Human Resource Management
Technology Development
Procurement

Network promotion & contract management
Service provision
Infrastructure operation

Infrastructure
Human Resource Management
Technology Development
Procurement
Appendix VII.

Step-By-Step Illustration of the Express Shopping at Coop Forum\textsuperscript{152}

An explanation of how technology-based self-service checkout works in practice, with the illustrative example taken from Coop Forum’s Express Shopping.

Express Shopping at Coop Forum

"Coop Forum Shop Express, Shopping in a New Way – Easier, Smoother, More Convenient.\textsuperscript{153}"

The Express Shopping Process

The basic idea for Coop Forum Shop Express is simple: instead of having to wait in queues and to unload the shopping cart and then to pack the groceries into shopping bags, you get a hand scanner with which you can carry out all these activities on your own. It is easy and more convenient, saving valuable time.

\textsuperscript{152} Coop Forum’s registration and guide brochure to Express Shopping translated by the authors.

\textsuperscript{153} Quoted from Coop Forum’s Express registration and guide brochure to Express Shopping; translated by the authors.
With the use of a hand scanner, barcodes of each item that is purchased is scanned. The hand scanner serves also as a calculator, calculating the total amount of your purchases as they are scanned in. By using the hand scanner at checkout the customer does not have to unload the shopping cart, the scanned items can directly be put into shopping bags as they are scanned. At checkout, only payment is carried out. The customer can purchase as many items as he/she wishes when using Shop Express at Coop Forum.

MedMera members above the age of 18 can use this new special service. Shop Express can be used by signing up for using the service. After signing up, Medmera members can use Shop Express in all Coop Forum stores that provide this service around Sweden. During the first period when a customer starts using Shop Express, personnel will at random times ask to scan the items in at the checkout counter. It is for the security of both the customer and the supermarket. However, the longer you have been a MedMera member the less you are checked.

Step 1.
Take a shopping cart as usual. Go to the Shop Express quick-check-in and register your MedMera card at the card-reader. The display screen of the handscanner that you will use during your shopping will light up, indicating that you can take it and start your Shop Express purchase.

Step 2.
Select and scan the barcodes of the shopping bags you wish to place purchased items in. Place the shopping bags into the shopping cart.

Step 3.
Scan in the items to be purchased by holding the scanner a few centimeters from the item’s barcode, while pressing the yellow button on the handscanner. A beep-sound indicates that the item is identified. The name and price of the item appears on the handscanner’s screen.

Step 4.
When purchasing fruit and vegetables, the scale must be used by putting the items in a bag onto the scale and pressing the corresponding picture of the fruit/vegetable. The scale prints out a barcode-label that you must stick on the respective bag. Do not forget to scan the barcode off the labels with the handscanner!

Step 5.
For certain items, such as softdrinks, beer, bread etc., barcodes are displayed on a separate Shop Express sign. Scan the barcodes off of these signs!

Step 6.
A great convenience for you with Shop Express that you can pack your items into your shopping bags directly and as you wish, without having to unpack them again at the checkout counter.

Step 7.
On the handscanner’s display screen you can follow the list of items that you have purchased as well as the total sum of your purchase, with the up and down scrolling buttons of the handscanner.

Step 8.
If you have scanned an item but decided not to purchase it, or if you by mistake scan an item twice, scan the item again, while pressing the – button. Do not press the yellow button while pressing the – button.

Step 9.
When you have finished your purchase, proceed to the Shop Express checkout counter. Scan the purchase-finalising barcode at the self-service counter. Leave items that could not be scanned in during your purchase with the checkout clerk.

Step 10.
Leave the scanner with the clerk at the checkout. Also hand over your MedMera card for registering. This is when you can also leave your coupons etc.
Appendix VIII.
A more detailed description of ICA

ICA
The ICA Group is one of the Nordic region’s leading retail companies, with 3,000 of its own and associated stores in Scandinavia and the Baltic countries. In total, the Group and its stores employ over 40,000 people. The Group includes operating subsidiaries, the majority of which have a large network of stores. A separate company specializes in distribution to restaurants, the foodservice sector and convenience stores. ICA also offers financial services to Swedish customers through ICA Banken.\textsuperscript{154}

Ownership structure in 2003/2004
The ICA Group is 30\% owned by ICA Förbundet Invest AB, 20\% by Canica AS of Norway and 50\% by Royal Ahold N.V. of the Netherlands. Royal Ahold is a group of companies in the food retail and foodservice businesses operating in the U.S., Latin America, Asia and Europe. ICA Förbundet Invest AB is an investment company 75\% owned by ICA-handlarnas Förbund, the member organization for Sweden’s ICA retailers. The remaining 25\% is owned by 3,300 individual shareholders, most of whom are ICA retailers. Canica is a Norwegian private investment company owned by Stein Erik Hagen and family.\textsuperscript{155}

\textsuperscript{154} ICA Annual Report 2003, from ICA’s Official Website
\textsuperscript{155} ICA Annual Report 2003, from ICA’s Official Website
Goals
ICA’s overall goal is to be the leading food retailer in all the geographic markets in which it is represented. ICA’s long-term goal is to increase sales faster than the total market is increasing in each sector. The profitability goal is an operating margin before goodwill amortization of 3.5–4.0%. The return on equity over a business cycle should be at least 14–16% and the long-term equity/assets ratio 30–35%.
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