Exploring and Evaluating the Parcel Locker
A Swedish Consumer Perspective

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Abstract

Title   Exploring and Evaluating the Parcel Locker – A
                     Swedish Consumer Perspective

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Background   A growing e-commerce in Sweden, with an increase of
                     16 % only in 2014, leads to limited capacity at postal
                     agents and a service request from both consumers and e-
                     retailers. A solution could be the parcel lockers to collect
                     and return parcels, which can be administrated unmanned
                     and used by the consumer at any time. Several countries
                     are already using this logistic solution, but Sweden has
                     not adopted the system yet. There is an overall lack of
                     knowledge concerning the optimal way to provide the
                     service and making it consumer friendly.

Purpose   The thesis aims to create an understanding for PostNord
                     in terms of evaluating and exploring the parcel lockers in
                     Sweden from a consumer perspective. Published quality
                     studies of parcel lockers and the interactions with
                     consumers is limited, therefore this thesis intent to
                     contribute in this area.

Goal   The goal is to provide support for decision making by
                     offering a consumer perspective. Secondly, with this
                     perspective, the thesis should contribute with
                     recommendations of how public procurement of parcel
                     lockers can be conducted, in terms of developing
                     specifications derived from interviewing and observing
                     consumers.

Method   To answer the purpose of the study, a set environment
                     had to be created. Therefore, this study was seen as an
                     experiment. This qualitative study consisted of the data
                     collection methods semi-structured interviews and
                     observations. For this project, experience and behavior
                     questions were of interest, as well as opinions and value
                     questions.

The experiment was conducted during nine days in February-March, 2015. In total, 25 hours were spent at the different placements of the parcel lockers around Stockholm, both during weekdays and weekends. Each process took around five to eight minutes.

The experiment started with asking a person passing by if they wanted to participate in the experiment. If they agreed, they were asked a couple of basic questions from an interview guide. Thereafter, the researchers let the participant conduct the task of collecting a parcel from the parcel locker, followed by returning the parcel. Finally, some descriptive questions were asked about how the participants experienced the parcel locker processes.

Data from all interviews and observations were compiled in an Excel document and coding system was used to create themes and topics for each interview question and observations, to combine the data and find common patterns.

When defining specifications, the analysis consisted of transferring the results of the consumer evaluations into specifications for the future procurement process. Therefore, the consumer suggestions needed to be prioritized. This was conducted in a matrix that estimated the suggestions according to implementation potential and importance for the consumers to create final specification. Interviews were held with key personnel in the area, at the purchasing department of PostNord in Denmark, and internal data at PostNord was also utilized.

Conclusion

93 % of the participants did not know what a parcel locker was, though all participants found the process easy to conduct in this experiment. Reasons for using the locker were the fast process and the perception that it would lead to less queuing time, compare to the current postal agent system. Reasons for not using the locker were the lack of personal service and security aspects.

The parcel locker is a novelty on the Swedish market and it was difficult for the participant to express ideas on if, how, or why they would use it, regarding if the consumers would need the parcel locker is therefore harder to answer. The main threat for the parcel locker

implementation seems to be that participants were satisfied enough with the postal agents.

If the parcel locker should be implemented, consumer aspects can be derived from this consumer evaluation to be of use as specifications in PostNord's public procurement process. Recommendations for software and hardware specifications were comfort zone alteration, implementing a capacity system for the consumers, have spoken instructions with speakers, and a video surveillance system. These suggestions are of main importance, and should be considered for the next public procurement. Some of the suggestions may be introduced and altered on the current parcel lockers too, to increase the user experience for the Swedish consumer.

Sammanfattning

Titel	Utforska och Utvärdera Paketautomaten – Ett Svenskt Konsumentperspektiv
Författare	Cajsa Bengtsson Anna Vikingson
Handledare	Daniel Hellström, LTH Gunilla Karlbom, PostNord Johan Littmarck, PostNord
Bakgrund	En ökande e-handel i Sverige, med en ökning på 16 % under bara 2014, har lett till nya utmaningar för PostNord, till exempel begränsad kapacitet på postombuden och ökade krav från både konsumenter och e-handelsföretagen. En lösning skulle kunna vara paketautomater för hämtning och returnering av paket, vilka kan administreras obemannat av kunderna när som helst. Många länder använder redan liknande logistiklösningar, men Sverige har inte implementerat detta system än. Kunskap saknas om vad kunderna tycker om paketautomaten.
Syfte	Examensarbetet syftar till att bidra till en förståelse för PostNord genom att utvärdera och utforska paketautomaten i Sverige utifrån ett konsumentperspektiv. Publicerade vetenskapliga artiklar om paketautomater och interaktionen med konsumenter är begränsad, därför är målet att bidra med kunskap inom detta område.
Målsättning	Målet är att ge underlag för beslut från ett konsumentperspektiv. Vidare, med detta perspektiv i åtanke, ska examensarbetet bidra med rekommendationer om hur offentliga upphandlingen av paketautomater kan genomföras, genom att utveckla specifikationer byggda på intervjuer med och observationer av konsumenter.
Metod	För att kunna svara på syftet av studien, var en skapad miljö bildad. Därför ses denna studie som ett experiment. Projektet är även av kvalitativ natur och en kombination av utforskande och förklarande synsätt, då processen av att använda paketautomaten var skapad medan omgivningen redan fanns (PostNords pilotplaceringar).

Denna kvalitativa studie bestod av datainsamling från semi-strukturerade intervjuer samt observationer. För detta experiment var upplevelse- och beteendefrågor av intresse, även åsikter och värderingar om paketautomaten från deltagarna var viktiga.

Experimentet utfördes under nio dagar i februari och mars, 2015. Totalt spenderades 25 timmar på de olika placeringarna av paketautomaterna runt om i Stockholm, både på vardagar och helger. Varje experiment tog runt fem till åtta minuter.

Experimentet startade med att personer som passerade blev förfrågade om att vara med att testa paketautomaten. Om de ville vara med, fick de först några enkla frågor att besvara. Därefter fick deltagaren testa att hämta ut ett paket ur paketautomaten, samt returnera detta paket. Till sist ställdes deskriptiva frågor om hur deltagaren upplevde paketautomaten och dess processer.

Data från intervjuer och observationer sammanställdes i ett Excel-dokument. Kodningssystem användes för att skapa teman och ämnen från varje intervjufråga och observation, för att därefter kombinera dem och finna gemensam nämnare.

När definieringen av specifikationer gjordes, bestod analysen av att överföra resultat från konsument utvärderingen till specifikationer som PostNord kan använda för framtida upphandlingar av paketautomaten. Därför prioriterades konsumentförslagen, med hjälp av en matris, som uppskattade implementeringspotentialen för PostNord mot konsumentbetydelsen. Intervjuer hölls med PostNord Danmarks inköpsavdelning samt interndata från PostNord användes även i denna process för specifikationer.

Slutsats

93 % av deltagarna visste inte vad en paketautomat var. Dock tyckte alla deltagare att processerna med att hämta och returnera paket var enkla att utföra. Ingen klagade på att experimentet var svårt att utföra. Anledningar till att använda paketautomaten var den snabba processen, och föreställningen att det skulle gå mycket snabbare än vid dagens postombud. Anledningar till att inte använda

skåpet var bristen på personlig service samt säkerhetsaspekter.

Paketautomater är en nyhet på den svenska marknaden och deltagarna hade svårt att utrycka idéer om hur, varför och om de skulle använda den. Därför var efterfrågan och behovet svårare att svara på än tankar om användarvänlighet. Det största hotet mot paketautomaten upptäckt i dessa intervjuer är att konsumenterna är tillräckligt nöjda med postombuden och systemet som används i Sverige idag, att det inte finns ett tillräckligt behov.

Om paketautomater implementeras i Sverige, kan konsumentaspekter användas redan i offentlig upphandling av paketautomaten i form av inköpsspecifikationer. Från experimentet uppkom ett antal förslag från konsumenterna, som rekommenderas som specifikationer till framtida inköpsförhandlingar. Rekommendationerna för både hård- och mjukvara var comfort zone-ändringar, implementering av ett kapacitetssystem för konsumenterna, införandet av muntliga instruktioner med högtalare samt videoövervakning.

Dessa rekommendationer är centrala, och bör övervägas vid nästa offentliga upphandling av paketautomaterna. Några av dessa specifikationer är även förslag som kan bli applicerbara på de nuvarande skåpen för att öka användarvänligheten och ta hänsyn till den faktiska användaren: den svenska konsumenten.

Nyckelord   Förpackningslogistik, paketautomat, konsumentbeteende, självbetjäning, last mile distribution

Abbreviations

3PL   Third-party Logistics Provider

ATM   Automatic Teller Machines

B2C   Business to Customer

B2B   Business to Business

C2C   Consumer to Consumer

C2B   Consumer to Business

C.O.D   Cash On Delivery

ERP   Enterprise Resource Planning

EC   E-Commerce

FAQ   Frequently Asked Question

FMS   Flexible Manufacturing Systems

GUI   Graphical User Interface

OECD   The Organisation for Economic Co-operation and Development

SCM   Supply Chain Management

SST   Self-Service Technology

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1 Introduction

This section provides a brief background followed by problem statement, purpose, goal and research questions, as well as the projects focus, which sets the framework for forthcoming chapters.

1.1 Background

Increased e-commerce has brought about major changes within the national postal service, which has created a need for new solutions to deal with the enormous increase in the amount of parcels sent across the country. A result is the parcel locker, which is now introduced on a trial basis in Sweden. The following section will touch upon general information about e-commerce and parcel lockers, followed by a description of the current situation in Sweden and what has been done in this area already.

1.1.1 E-commerce

In recent years, the concept of e-commerce has become a natural part of everyday life for most people (Blom, 2011). A definition can be found in the book E-Business and E-Commerce management; *"E-commerce is the exchange of information across electronic networks, at any stage in the supply chain, whether within an organization, between businesses, between businesses and consumers, or between the public and private sector, whether paid or unpaid."* (Chaffey, p.11, 2009). In 2014, the e-commerce turnover in Sweden was 42.9 billion SEK, which represents an increase of 16 percent (HUI Research, p.7, 2014).

There are different types of e-commerce transactions; the most common types are transactions from the business to the consumer (called B2C), or between businesses (called B2B). A form of transaction that is becoming increasingly common is the consumer-to-consumer transaction (C2C), as a result of the development of social media, blogs and sites like eBay. An additional type is the consumer to business type (C2B), where the consumer initiates contact with the company. (Chaffey, pp.26-27, 2009)

Nowadays there are many alternatives of buying, selling, distributing and receiving products and services. Consumers can for example choose to get parcels delivered to their front door, pick them up at a postal agent, or order them through a company's site to later collect them at the company's physical store (often called click and collect). Other services like buying tickets for events like concerts or trips can also be done over the Internet and then be delivered to your home by mail or be printed immediately after the purchase.

1.1.2 Parcel lockers

The rapid and large increase in e-commerce over the last years has made the consumer expect an improved level of service, e.g. decreased delivery time and cost, and track-and-trace of the delivery (WIK-Consult, p.236, 2013). This increase of e-commerce also requires a C2B return channel. The challenges posed by the increase in e-commerce have had a significant impact on the last mile distribution network in Europe

over the last few years, (WIK-Consult, p.245, 2013). A part of this change is the parcel lockers.

The parcel lockers can be found around the world. The self-service delivery lockers are sold in as greater availability for the consumer, e.g. flexible opening hours and the ability to choose where to collect and return your parcels. Domestic postal operators, as well as e-retailers and private operators, provide these automated parcel lockers around the world, e.g. Deutsche Post and Amazon, (WIK-Consult, p.251, 2013). Already in 2010, when European postal operators were investigating parcel lockers, it was said that only Deutsche Post had one and a half million users for their parcel lockers and were launched as early as in 2002. The parcel locker development in Germany has led to 90 percent of the population living within 10 minutes of a parcel locker (International Post Corporation, p.6, 2010).

The obvious obstacles for the use of parcel lockers, mentioned already in 2010, are high investment costs followed by maintenance, reparations and other running costs like electricity. Another limitation highlighted was deciding on the location and ownership of the lockers (public authorities, private owners of shopping malls and other considerations like legal aspects), to obtain a sustainable location for the consumer (International Post Corporation, p.5, 2010).

1.1.3 Current state in Sweden

In Sweden, the concept of parcel lockers has not yet been fully implemented. This might be explained by the strong postal tradition in Sweden; Swedes are used to go to postal agents and offices to collect or return their parcels. "In the other Nordic countries, it has traditionally been the norm to pick up your parcel at a collection point, but if you look at Denmark, 71 percent expect to have their goods delivered to the door." (PostNord, p.5, 2014) Denmark has already adopted and implemented the parcel locker system. Now it seems like even Sweden has reached the market matureness of parcel lockers, with several companies introducing these lockers around the country, e.g. DHL with Swipbox, Combiplate and PostNord.

Combiplate is starting up a project similar to PostNord's parcel lockers, with both collect and return of parcels, with the aim to install "service boxes" inside properties in the residential area Hammarby Sjöstad. This is a project Combiplate has taken on in collaboration with housing associations and e-retailers. The idea is to start in 2015 with around 15 to 20 buildings. The service boxes are to be placed in the stairwells, within the building residents live in. The concept is working like the parcel locker of PostNord: the residents shall be able to both collect and return their parcels. (Ritzén, 2015)

1.1.4 Earlier studies

Two studies have been conducted on this topic already. In 2008, PostNord performed a pre-study followed by a qualitative pre-study from both a company- and consumer perspective in 2010. Both studies showed little interest in implementing the parcel lockers from both the consumer and the companies' perspective, so the investigations

were dropped. Now, five years later, the question regarding implementing parcel lockers has arisen once again, due to the increasing e-commerce. A presentation from 2013 was conducted by PostNord, which contains a compilation of the previous studies. Evaluation of future parcel locker for PostNord should contain aspects like cost, time, functionality and user friendliness and serve as an additional service to postal agents. The presentation also highlighted pros and cons from previous studies. A final conclusion reached in this presentation was that new technology demands new consumer behaviors. This is where the thesis is capable of playing an important role in providing guidance in PostNord's work with parcel lockers in the future.

1.2 Problem statement

With the growing e-commerce in Sweden, PostNord has to tackle many new challenges, like limited capacity at postal agents and increased service demands from consumers and e-retailers. One possible solution could be provided by adopting parcel lockers for the collection and return of parcels, which can be administrated unmanned and used by the consumer at any time. There are already several countries using similar logistics solutions, but in Sweden there is a lack of knowledge regarding how the consumer would like the service and how to make it as user friendly and efficient as possible. Consequently, the procurement process at PostNord lack this input too.

1.3 Purpose, goal and research questions

The thesis aims to create an understanding for PostNord in terms of evaluating and exploring the parcel lockers in Sweden from a consumer perspective. Secondly the thesis should contribute with recommendations of how public procurement of parcel lockers can be conducted with a better consumer perspective, in terms of developing specifications derived from interviewing and observing consumers. Published quality studies of parcel lockers and the interactions with consumers is limited, therefore this thesis intent to contribute in this area. To reach these goals the focus will be on the two following research questions:

1. How does the consumer experience the parcel locker?
2. How does the consumer evaluation influence specifications set for future public procurement processes for parcel lockers?

1.4 Focus

The study was conducted for PostNord and therefore the thesis was built on their existing pilot in Stockholm. The focus was to provide support for an eventual decision about implementing parcel lockers, not an actual implementation plan. The study was done for the Swedish market. The thesis was written in English, though the interviews were conducted in Swedish, because a large majority of the consumers interviewed speak primarily Swedish.

The actor within the supply chain that was in focus for this thesis is only the final consumer. Other actors like the e-retailer were not taken into consideration. The main

focus was to evaluate the parcel lockers from a consumer perspective, followed by transferring the consumer evaluations into procurement specifications.

Focus was on the process connected to the parcel locker, and did not involve the process of ordering online, see Figure 1. This thesis aimed to capture the consumer ideas of how to use the parcel locker and not how to conduct the whole ordering process.

Collect process

Order online	Get notification by text & e-mail	Go to parcel locker	Enter PINs	Collect parcel
	Attach and scan label	Choose slot size	Enter the parcel	

Return process
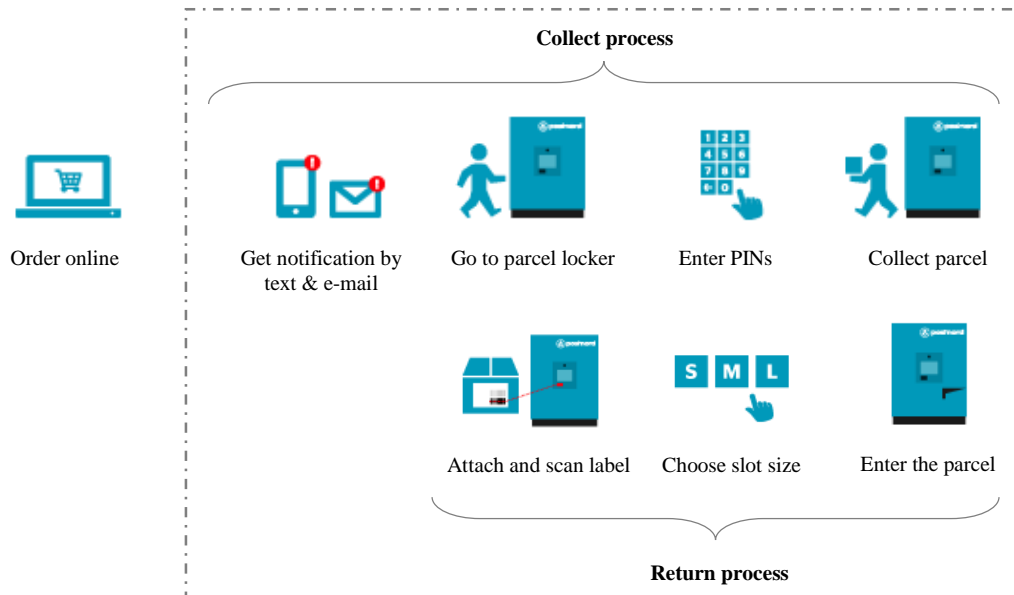
Figure 1 - Consumer process focus (PostNord, 2015c)

1.5   Structure of the report

This introduction chapter will be followed by a description of the methodology, how research methods are applied and how the project will be carried out. Furthermore, quality aspects will be presented. A frame of reference will touch upon topics that can be related to later in the discussion of the research questions. The fourth chapter will describe the system and setting for the project. Chapter five will present the experimental findings. The following chapter puts the experimental findings in relation to the Frame of Reference, and presents specifications based on these. Furthermore, different business models are applied to the findings both to summarize them and to put them in a broader perspective, which will be helpful for PostNord in their continuous work. Chapter seven will conclude the thesis and provide a critical reflection on the method. The last chapter presents recommendations for the project company, followed by suggestions for further studies.

2 Method

This chapter explains how the project was carried out. It describes the research methodology and its design, the setting for the data collection, and more deeply describes the specific approach that was used in this project.

2.1 Research methodology

Research is defined as "investigating something in a systematic manner" (Merriam, p.3, 2009). Different research strategies can be described as qualitative or quantitative research, and can also be combined. Some differences between qualitative and quantitative research are that the design characteristics for qualitative research are flexible, evolving and emergent, while for quantitative research it is more predetermined and structured. The data collection in qualitative research focuses on interviews and observations, while quantitative research use for example scales, tests, and questionnaires. A simplified description of qualitative research is that the result will come in the form of words and not in numbers, as for a quantitative research. (Merriam, p.18, 2009)

Yin (p.5, 1994) suggests that when identifying the appropriate research strategy for a project three conditions could be evaluated:

- The type of research question posed.
- The extent of control an investigator has over actual behavioral events.
- Degree of focus on contemporary as opposed to historical events.

Yin created an overview of the three conditions, and connects them to five common research strategies; experiment, survey, archival analysis, historical, and case study, see Table 1.

Strategy	Form of Research Question	Requires Control of Behavioral Events?	Focuses on Contemporary Events?
Experiment	how, why?	Yes	Yes
Survey	who, what, where, how many, how much?	No	Yes
Archival analysis	who, what, where, how many, how much?	No	Yes/No
Historical	how, why?	No	No
Case study	how, why?	No	Yes

Table 1 - Overview of different research strategies (Yin, p.5, 1994)

2.1.1 Research methodology design

The research methodology design is divided in explanatory (theoretical science) and exploratory (design science) research, see Figure 2. Explanatory research look at a phenomenon that already exists in the society, while in exploratory research, the phenomenon has to be created before studied and evaluated. The explanatory research

intends to seek theoretical prediction and explanations while exploratory research also wants to reach explanation but to solve a practical problem too (Holmström et al., pp.68-69, 2009). Worth mentioning is that one does not have to choose between the two research methods, they can be complements.

	Exploratory Research (Design Science)	Explanatory Research (Theoretical Science)
The phenomenon	"artificial phenomena" have to be created by the researcher	"out there"
Data	created, collected, and analyzed	collected and analyzed
End product	solving of a problem	explanatory theory, prediction
Knowledge interest	pragmatic	cognitive/theoretical
Disciplinary basis	engineering, fundamentally multidisciplinary	natural and social science, primarily unidisciplinary

Figure 2 - Exploratory and explanatory research, by Holmström et al. (p.68, 2009).

2.1.2 Data collection

2.1.2.1 Interview

A common data collecting method in qualitative research is conducting interviews. DeMarrais (p.55, 2004) defines it as "a process in which researcher and participants engage in a conversation focused on questions related to the research study". Person-to-person is the most common interview form and interviews can be differently structured: highly, semi- and unstructured. (Merriam, p.89, 2009) Regardless of structure, one can use an interview guide, which is a list of topics or questions to ask. Many interviews in qualitative research are semi-structured (Merriam, S., p.103, 2009). The semi-structure interview will have themes to be covered and some prepared questions (Kvale, p.65, 2007). More open-ended questions let the participants define their own world, which is often of interest in qualitative research (Merriam, pp.88-90, 2009). To get feasible and useful data (Merriam, p.95, 2009), it is recommended to prepare and try out questions in advance. One should avoid asking multiple choice questions, leading questions as well as questions leading to short yes or no answers (Merriam, p.100, 2009).

2.1.2.2 Observation

Observation is a data collection method, which allows for the recording of behavior as it occurs. A field study often contains both observations and interviews. Observation is good to use when a fresh perspective is required or participants are not able to discuss the topics. Observations together with interviews and document analysis triangulate findings (Merriam, pp.117-119, 2009). Triangulation is known as a method for ensuring the quality of the collected data (Merriam, pp.215-216, 2009).

There are different ways to observe for a researcher, and the researcher has to be clear of the interaction and participation. It is essential in this data minor to be a careful observer and according to Gold (pp.217-223, 1958) there are four classic stances:

complete participant (researcher is a member of the observed group), *participant as observer* (the observed group knows the activities which the researcher observe, but is subordinate to the role as a participant), *observer as participant* (the participants is aware of the activities which the researcher observe, and the observer's participation in the activities is of second priority) and *complete observer* (e.g. hidden observer). One needs to be aware that humans are selective when it comes to perception, therefore training and preparation are of importance when becoming a good observer, e.g. being careful and systematic as well as pay attention (Merriam, p.117, 2009). More than one observer increases the reliability, because of every person's unique comprehension (Yin, p.93, 1994).

What to observe are usually: physical setting, the participants, the activities and interactions, the conversation, subtle factors as well as your own behavior. It is important that the observer does not affect the participant. (Merriam, pp.120-127, 2009)

Field notes of the observation should preferably be written down directly or as soon as possible afterwards, containing verbal description of setting and activities, direct quotations and observers' comments. Technical devices like cameras, computers and phones to record can also be used. (Merriam, pp.128-131, 2009)

2.1.2.3   *Documentation*
All types of documentation can be of use for a project when starting to form a clear picture. Since documentation often is not written with the purpose of a particular study, one need to be aware of the limited usefulness of the documents. (Merriam, p.154, 2009)

2.2   Experimental design – Consumer evaluation
For the consumer evaluation section, the research question is *How does the consumer experience the parcel locker?*. In relation to Yin, see Table 1, the "how" question connects with the strategies experiment, historical and case study and because it focuses on contemporary events, the choice is between experiment and case study. If the parcel lockers were already utilized in Sweden, one could do a case study of the set environment to get a consumer evaluation. Since a pilot by PostNord is still in an early phase, another method needs to be applied to grasp the consumer and its behaviors and thoughts of the parcel lockers. To satisfy the purpose of the study the set environment had to be created, therefore this study is seen as an experiment.

Furthermore, this project was of a qualitative nature with a combination of an exploratory and explanatory approach, since the processes were created but the environment is "out there", see Figure 2. This qualitative study consisted of the data collection methods semi-structured interviews and observations as participants, which will be described in more detail together with the experimental process in the next section, 2.2.1. There was also information drawn from documentation from PostNord. All types of documentation can be of use for the project, for example how the pilot has progressed so far.

2.2.1 Experimental process

The experiment was conducted during nine days in February-March, 2015. In total, 25 hours were spent at the different placements of the parcel lockers around Stockholm. The interviews were held both weekdays and weekends, to get as many participants as possible to participate. Each process took around five to eight minutes, depending how talkative the participant was.

To understand the consumers' interaction with the parcel locker, a normal state (if the parcel lockers were implemented and used in Sweden) had to be simulated. The normal state included the opportunity to collect and return your parcel, which will be the main activities when the parcel lockers are fully implemented. A parcel with a dummy barcode was used in the experiment when consumers were testing the collect and return process.

Before the experiment started preparations were made: the researchers put a number of dummy parcels in the parcel locker. This was possible since the researchers got the same access to the parcel lockers as the drivers at PostNord. The experiment started with asking a person passing by if they wanted to participate in the experiment. Exactly how it was presented can be found in Appendix 1. If they wanted to participate, they were asked a couple of basic questions from an interview guide that had been conducted, see Appendix 2-5.

When performing the experiment, there were two observers, one that only observed and one that both observed and asked the interview questions, in order to minimize deviation in perception. The field notes follow a predefined structure to make sure that the same activities are observed by both researchers, see Appendix 6.

The interview started out with a couple of basic questions about consumers' experiences regarding e-commerce, in order to get the participants comfortable in the situation, while at the same time gathering basic information about their knowledge of the parcel lockers and their e-consumption. To be able to compare different age groups, five different groups were created (<25, 25-40, 40-55, 55-70, >70 years). When the basic questions were answered, the researchers let the participant conduct the task of collecting the parcel, followed by returning the parcel.

To collect the parcel, the participant was shown a text with two PIN-codes, four digits each. This code is in reality sent to the consumer's phone by text or by e-mail. For this experiment, a mobile phone provided by the researchers, got all texts and the participants were shown one text each with these PIN-codes. When the code was entered, the parcel locker opened the locker door containing the participant's parcel, and the participant collected the parcel and closed the locker door. A step-by-step description of the collect process is presented in Appendix 7.

After this process was done, the participant was asked to return the parcel. To return the parcel a label must be put on the parcel. The participant was given a label with a barcode by the researcher. The participant should place the label on the parcel without

any further assistance from the researcher. The barcode should be scanned, and the participant chose an appropriate slot size, thereafter a door of the parcel locker opened and the participant placed the parcel and closed the locker door. A step-by-step description of the return process is presented in Appendix 8.

Moving on, after the collect and return process, some descriptive questions were asked about how the participants experienced the process and additional thoughts and feelings about the parcel locker. The interview was held person-to-person in a semi-structured way. For this project, experience and behavior questions are of interest, as well as opinion and value question. How the consumer think and how they value the parcel locker and the experience related to it was of great importance. There was room for changing the order of the questions if necessary, as for asking spontaneous questions when they occur. When the more detailed questions had been answered, the experiment was over. Directly after each participant was done with the experiment, the researchers discussed and documented their observations. The researchers were not a part of the trial of collecting and return activities, but supported the participant in the activity if the participant had problems with carrying out the experiment.

2.2.2 The participants

This experiment does not target a special group, since it aims to give a holistic view of the attitudes and experiences of future Swedish users of parcel lockers. The ones participating in the experiments were people passing by the parcel lockers. PostNord has previously determined the four geographical locations, which are a part of their pilot. No further restrictions of participants were made, the ones who wanted to try the parcel lockers with the collect and return activities were able to participate. One factor to consider was that people with perceptions about the parcel locker or the company might affect the willingness to participate or not.

The pilot started 16th of February, the week before the experiment was carried out. In the pilot, PostNord are currently cooperating with an e-retailer whose customer has the ability to choose the parcel locker as one of the delivery points. At the time, there was no guarantee that there would be consumers collecting or returning parcels when the interviews and observations were made since the parcel lockers only had been available to the consumers for such a short amount of time. Therefore, interviews and observations were done with only one real consumer (pilot-consumer), while the remaining 60 were done with the participants of the experiment. To conclude, two different types of consumers were observed and interviewed during the process; Experiment-consumers and a Pilot-consumer.

Four of the consumers did not conduct the process themselves, so the researchers helped them out. This was due to that they specifically asked for guidance and wanted to learn by watching instead of doing. They were still interviewed, but the collect and return process could not be observed. Three return processes were cancelled due to technical problems with the parcel locker.

As mentioned before, the participants were divided into five age groups. This was to investigate any differences that might occur between the groups. The participants were not asked directly about their age in the experiment, but it was estimated by the researchers. There was no target group though, as many as possible were asked to participate. But it was managed to get a fairly even distribution among all age groups and both genders. An overview of the participants' gender and age can be seen in Table 2. A complete overview of the participants can be seen in Appendix 11.

Age	Total	Women	Men
<25	11 (18 %)	6	5
25-40	20 (33 %)	9	11
40-55	13 (22 %)	6	7
55-70	12 (20 %)	5	7
>70	4 (7 %)	2	2
Total	60 (100 %)	28 (47 %)	32 (53 %)

Table 2 - Overview of the participants

2.2.3   Locations

The interviews were performed at four locations in Stockholm (Östermalm, Liljeholmen, Bromma, and Kista), see Figure 3, where the parcel lockers are currently placed. Consequently, this is where the majority of data collection was performed. See Table 3 for an overview of the distribution of participants between the different locations. All locations had opening hours from 8 a.m. to 10 p.m., except from Östermalm that is open from 7 a.m. to 11 p.m..

Figure 3 - Location of parcel lockers in Stockholm (Ehandel, 2014)

The experiment started with two days at the locker in a supermarket at Östermalm. There were three reasons why it was difficult to get people to participate the experiment at this location. People that were passing by had groceries to carry, there was almost no space to interview anyone without being in the way of those who were passing by, and the interviewers were also still novice at this point. The two following interview days were spent at Liljeholmen. A phenomenon encountered at this location was that a

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majority of younger people, especially women, had their headphones on or were talking on the phone which made them harder to approach, in terms of interviewing and getting them to participate in the experiment. Only one day was spent at the Bromma location. Since the locker was placed at the far end of the supermarket, it was hard to get people to participate. Kista was the location where most time was spent, in total three days. Half of the participants were interviewed here, see Table 3. The reason for this was the advantageous placement in the mall. There was just enough space around the locker to get close to possible participants, without the passage being too narrow and blocked.

Location	Number of participants
Östermalm (Hemköp Östermalmstorg)	12 (20 %)
Liljeholmen (Liljeholmstorget Galleria)	12 (20 %)
Bromma (Coop Forum Bromma)	5 (8 %)
Kista (Kista Galleria)	31 (52 %)

Table 3 - Number of participants per location

2.2.4 Analysis

To be able to analyze all gathered data, one needs to organize and manage the data and be clear on what technique is used for data gathering. This is a necessary process toward making sense of the data gathered; it should be consolidated, interpreted and narrowed down with the goal of answering the research question. (Merriam, pp.173-176, 2009) A way to start the data organization process is by categorizing answers and observations of similar types to gain a holistic view of the studied areas. Coding process can be used, where each interview, field notes and documents have identified notations accessible to be used in the analysis. (Merriam, p.173, 2009)

Data from interviews and observations were compiled in an Excel document. Thereafter, the researchers used coding and keywords, see Appendix 12, to create themes and topics for each interview question and observations, to combine all data and find common patterns. The experimental findings will be presented and discussed in chapter 5.

To consolidate the themes created, a SWOT-analysis was conducted. A SWOT (Strength, Weakness, Opportunity, and Threat) is common to use in business environments to get an overview of capabilities for an organization (Johnson et. al, p.65, 2012). A SWOT usually provides a long list of aspects and therefore prioritization is needed (Johnson et. al, p.68, 2012). To make the SWOT fit the experiment, the possible aspects were estimated and graded both by frequency of answers and the importance of the topics; the grading of the topics was a combination of how often the topics were discussed or seen in observations, in combination of how important they would be for PostNord. All topics with an average score over 25 (average score (5) of how often the topics were discussed * average score (5) of importance = 25), were seen

as key topics and were summarized in a SWOT-analysis. The SWOT-analysis will be presented in chapter 6.3 and aims to summarize the 60 participants' ideas relevant for PostNord and furthermore answer research question 1.

To put the experimental findings in a broader perspective, a business model canvas and a five forces framework was conducted. In these models, information gathered through the whole project was used. There were also speculations made with the basis from the experience the researchers got, not only during the thesis project, but the undergone education. These business models do not contribute to answering the two research questions, but are of importance for the company, therefore these can be found in Appendix 13 and 14.

Nine blocks build up Osterwalder's business model, from Customer Segment to Cost Structure (Osterwalder et. al., pp. 16-17, 2010). The focus will be mainly on the parts where the consumer interaction plays a main role (which are market in the model).

Porter's five forces framework is presented by Johnson et. al (p.25, 2012). The framework is used to investigate if a market is attractive or not to enter. It looks on threat of entry, threat of substitutes, the power of buyers, the power of suppliers, and the extent of rivalry between competitors. The five forces were graded from 0 to 10; the higher the number, the harder it is to succeed and make a profit in this market. The framework was conducted from PostNords point of view to investigate the parcel locker market in Sweden. Each "force" will be discussed separately, and the sub-headings used were suggested by Johnson et. al (pp.26-31, 2012).

2.3   Developing specifications based on consumer evaluations

The research question is *How does the consumer evaluation influence specifications set for future public procurement processes for parcel lockers?*. The method was built on specific purchasing tools.

Arjan J. van Weele (p.31, 2010) distinguishes three types of purchasing situations; the *new-task situation*, the *modified rebuy* and the *straight rebuy*. The *new-task situation* is when the company never bought a product before, and buys it from a totally unknown supplier. The *modified rebuy* is done when the company wants to buy a new product from a known supplier or the other way around, a known product from a new supplier. This is more certain than the new-task situation, since either product or supplier is known, and therefore the six steps does not need to be performed to the same extent. The *straight rebuy* is when a known product is bought from a known supplier, which is the most common purchasing situation. (Weele, p.31, 2010)

PostNord is in this case in a modified rebuy situation, since they conduct a new procurement process with a known product. One might think that the process in Sweden is a new-task situation, but because of the merge with Denmark, Sweden will use the same supplier.

Theory describes a couple of purchasing process approaches. Arjan J. van Weele (p. 29, 2010) describe a six step buying process:

1. Define specification
2. Select supplier
3. Contract agreement
4. Ordering
5. Expediting
6. Evaluation

Additionally, Stock and Lambert (p.481, 2001) present more steps in a buying process, where an essential step before establishing specification is to have identified the needs. According to Weele (p.31, 2010), there are relatively few situations in which all the steps of the purchasing process are performed, but the new-task situation is one of them. Since the thesis project does not involve implementation, step two to six was not performed in this project. How the first step will be performed, and also how the needs will be identified, will be discussed in detail below.

2.3.1 Identify needs

Indications of what the consumer wants were gained from the consumer evaluation part of the project. The identified needs will be the foundation when establishing specifications.

2.3.2 Define specifications

Weele (p.33, 2010) provides topics that should be covered by the specification documents:

- Quality specifications - delivery, technical standards etc.
- Logistics specification - quantity needed, place/time for delivery etc.
- Maintenance specification - service performed by suppliers, supply of spare parts etc.
- Legal and environmental requirements - both for product and production
- Target budget - financial constraints

Since the focus in this thesis is to generate specifications based on consumer evaluations, specifications like target budget, and legal and environmental requirements were not developed. The method for generating specifications was built upon the results from the experiment presented in section 6.1 by deriving and interpreting of the consumers' thoughts to create concise specifications.

2.3.3 Data collection

The collection of data when identifying needs and defining specifications was mainly internally at both PostNord in Denmark and Sweden, through discussions and interviews with key personnel in the area, e.g. the purchasing department. The internal data available at PostNord was also utilized, as well as the results from the consumer evaluation experiment.

2.3.4 Analysis

The analysis will essentially consist of transferring the results of the consumer evaluations into needs and specifications that can be used by PostNord in a future procurement process. Through an evaluation and interpretation of what real consumers' needs are, a transfer of results was possible. The consumer specifications were divided into software and hardware functions. The consumer experiences in section 6.1 needed to be prioritized in terms of creating useable specifications for PostNord. This was conducted in a matrix that estimated the suggestions according to implementation potential and importance for the consumers.

2.4   Quality

There are four main parts related to the quality of the research design: construct validity, internal validity, external validity as well as reliability. (Yin, p.19, 1994). These can be seen as four tests to judge the quality of the method, see overview in Table 4.

2.4.1   Construct validity

This test is to make sure that "...a study investigates what it claims to investigate..." (Gibbert et al., p.1466, 2008). To construct validity one should use several sources of evidence and make a chain of them as well as let the main informants review the research. This is to ensure correct operational measures for the study and is done during the data collection as well as the composition part. (Yin, pp.34-36, 1994). A research study can never grasp and capture the actual reality, but to get as close as possible, the most common strategy is triangulation, where multiple methods, investigators and theories confirm the same emerging results and findings. (Merriam, S., p.215, 2009)

For the PostNord study, several sources of evidence were used, such as documentation, interviews, and observation. A database with this information was created. Confirmation from main informants was not applicable, since the consumers could not be contacted after the experiment.

2.4.2   Internal validity

This tests how well study results match reality (Merriam, S., p.213, 2009). For this project, the experiment was done out in the field, in a possible future location of the parcel locker, and not in a shielded environment without distractions. This way, the result will better match reality. Because of the presence of the researchers, it might be that the participant does not show as much authentic emotion as they would have if they were free from supervision and fear of possible judgment from others. If the experiment affected the participant too much in terms of being distractive is hard to tell. It might be that a person who collects a parcel in reality also is accompanied by someone and therefore not paying too much attention after receiving their parcel, since their main goal is to get their item and might see the process as finished by then.

One should also mention that the inhabitants in Stockholm might not be representable for the rest of the country, people in urban areas may have other perceptions than people on the countryside. But since the parcel lockers only are situated in Stockholm this study has to adapt to these placements. Another aspect to keep in mind is that there might be local differences between the locations in Stockholm, due to both demographics and the surroundings (mall or grocery store).

2.4.3   External validity

This test aims to tackle the problem of a study's generalizability. Yin (p.37, 1994) describes this problem for case studies but mention that this test tries to answer the question if the target group results are applicable on another group. To make generalizations, theory must be tested by replicating the findings on other groups. For

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a qualitative study, and in terms of generalizability it is to give the reader the decision whether the findings apply to his situation. Therefore the researcher need to provide as detailed description of the study as possible. (Merriam, S., p.226, 2009)

This study was not aiming to generalize but to visualize the experience and interaction for different consumers. The results from the PostNord study were not generalized, instead it will be descriptive of certain groups of people and their thoughts and feelings about the parcel locker and the collect and return process.

2.4.4 Reliability

This test should make sure that if someone wants to repeat the experiment and follow the same procedure, the result achieved should be the same. Documentation of the study is essential and during the data collection phase one should use protocols as well as a database for the study, (Yin, pp.35, 37-38, 1994). Worth mentioning is that for qualitative research, the human behavior is a factor which is never static and therefor repeating patterns may not occur. Personal experience is not unreliable, but rather explains the person's perspective. Here, it is more important to underline that results are consistent with data collection rather than a replication of the results.

The results from the report should be easy to track; "a chain of evidence". To increase reliability one needs to maintain this chain of evidence: from the report one should be able to trace backwards to the experiment database (interviews, documentation or observations). (Yin, p.105, 1994)

For PostNord all data collections were collected in documents (interview guides as well as an excel sheet with all interviews and observations gathered), which were written and kept during the whole time. All the responses from interviews and observations were saved for transparency of the project. The experiment was tested by revising questionnaires and trying out the experiment beforehand at the parcel locker at PostNord's head office. This to make the researchers comfortable and practice to work in a structured way in terms of performing observations and interviews, to ensure that all interviews and observations are conducted in the same way.

A total of seventy people were interviewed for the study. Ten of these people were interviewed and observed at the parcel locker at the PostNord headquarters. These interviews will not be analyzed together with the rest, since these interviews were seen as a way to test and evaluate the interview guide and the procedure in general. Another aspect was that the return process could not be conducted due to technical problems with that particular locker. Furthermore because people interviewed at PostNord could be somewhat bias to the idea of the parcel locker.

Test	Improvement activity	Description of activity	Phase of research
Construct Validity	Triangulation	Several data collection methods were used: documentation, interviews, and observation.	Data Collection
	Multiple evidence of same source	Several people were interviewed and observed, and several sources for information, e.g. web pages were used.	Data Collection
Internal Validity	Pattern matching	Interviews and observations were matched with theory from Frame of Reference.	Data Analysis
External Validity	Describe the context of each study	The method was described thoroughly to make the reader decide whether it is applicable to other studies.	Research Design & Data Collection
Reliability	Interview Guide	The interview guide took literature guidelines and suggestions into consideration, and was also tested on others beforehand. The interview guide ensured that all interviews were conducted in the same way.	Data collection
	Observation Protocol	A template was made for executing observation in the same way.	Data collection
	A chain of Evidence	Results in the report, interview questions, as well as observation field notes should be traceable and connected to one another.	Data analysis

Table 4 - Overview, credibility of project

3   Frame of Reference

The frame of reference aims to gather literature from different fields to understand the purpose of the thesis. Secondly, it aims to give the reader an understanding of the subject.

Published quality studies of parcel lockers and the interactions with consumers is limited, therefore this part of the thesis aims to gather relevant literature to combine with an experiment to understand the consumer interaction with parcel locker and its surroundings. The parcel lockers create a new channel in distribution for e-retailers to reach their customers, where PostNord is the link. To get a deeper understanding of the circumstances for PostNord and other actors within this supply chain, and to understand the needs and behavior of the final consumer, the frame of reference is divided into three parts: Consumer behavior, Distribution and Self-service technology.

3.1   Consumer behavior, needs and motivation

In the past, a company sold products by finding needs and fulfilling them. Nowadays, in a society that has everything, it is all about creating new needs. (Kotler and Gustafsson, p.72, 2003) Kotler and Gustafsson (p.75, 2003) also state that 70 percent of the marketing budget goes to attracting new consumers, when 90 percent of the income comes from existing consumers. Thus it should be more important to build and maintain current relationships with consumers. One way of doing so is to understand the consumers' behavior. This section will therefore start with a brief overall description of consumer behavior, and the consumer's characteristics and decision-making process regarding purchasing existing and new products.

A way to keep existing consumers, but also attracting new ones, is to build consumer relationships that create value that will satisfy consumers. Satisfied consumers are more likely to be more loyal, which will bring the business revenue for a long time (Armstrong, p.19, 2012). To understand what creates value for the consumer, one needs to understand the motivation behind the choices that the consumers make. The section will therefore continue with describing consumer motivation before discussing the concepts of consumer value, satisfaction and loyalty.

Consumer behavior contains several fields like psychology, economy and sociology to describe the choices consumers make (Solomon et al., p.2, 2013). Before it was often seen as buyers' behavior, the purchasing between buyer and producer, while now it is seen as a process that is ongoing and not just when the buyer pays for their product. It is rather a three-stage process containing pre-consumption, consumption and post-consumption, with value creation for the consumer at each stage (Solomon et al., p.4, 2013). Armstrong (2012) has created a model, see Figure 4, which describes the buyer behavior in a similar way as Salomon (2013). All inputs enter the buyers minds, referred to as the "buyer's black box", and results in a response or decision about for example a certain product or brand. The box reflects the consumer's behavior by trait and decision-making process. (Armstrong, pp.144-145, 2012)

Marketing and other stimuli	Buyer's black box	Buyer responses
• Product • Price • Place • Promotion • Economic • Technological • Political • Cultural	• Buyer's characteristics • Buyer decision process	• Product choice • Brand choice • Dealer choice • Purchase timing • Purchase amount
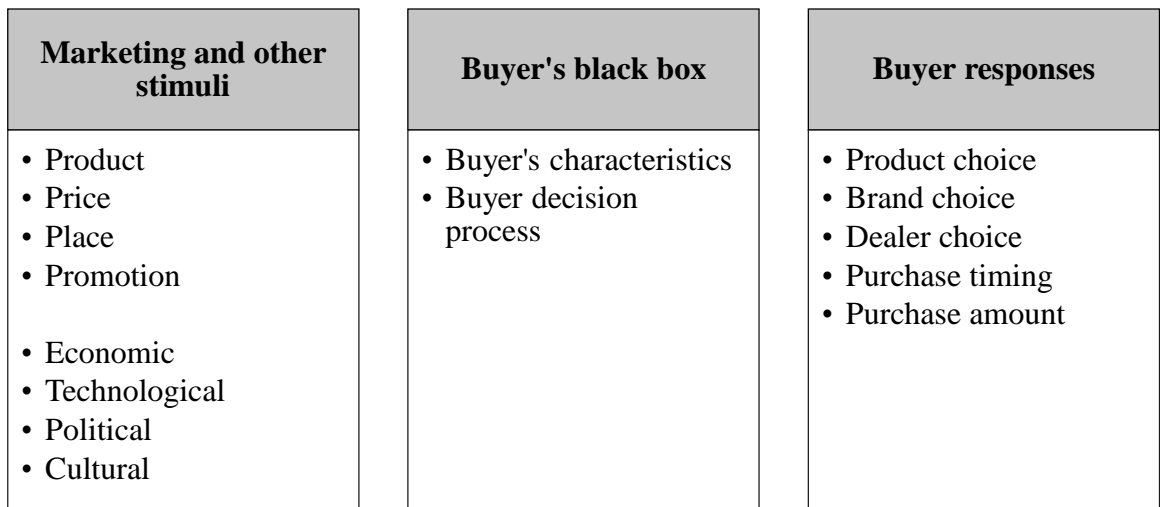
Figure 4 – Armstrong's model of buyer behavior (p.145, 2012)

The buyer's characteristics, see Figure 5, will influence how the consumer perceives and react to the input. While the buyer decision process, see Figure 6, will affect the buyer's behavior. (Armstrong, p.145, 2012) The majority of the characteristic factors and the decision process will not be described in more detail, since the meaning of them is straight forward and not of the greatest importance to the project.

Cultural
•Culture
•Subculture
•Social class

Social
•Reference groups
•Family
•Roles and status

Personal
•Age and life-cycle stage
•Occupation
•Economic situation
•Lifestyle
•Personality and self-concept

Pshychological
•Motivation
•Perception
•Learning
•Beliefs and attitudes
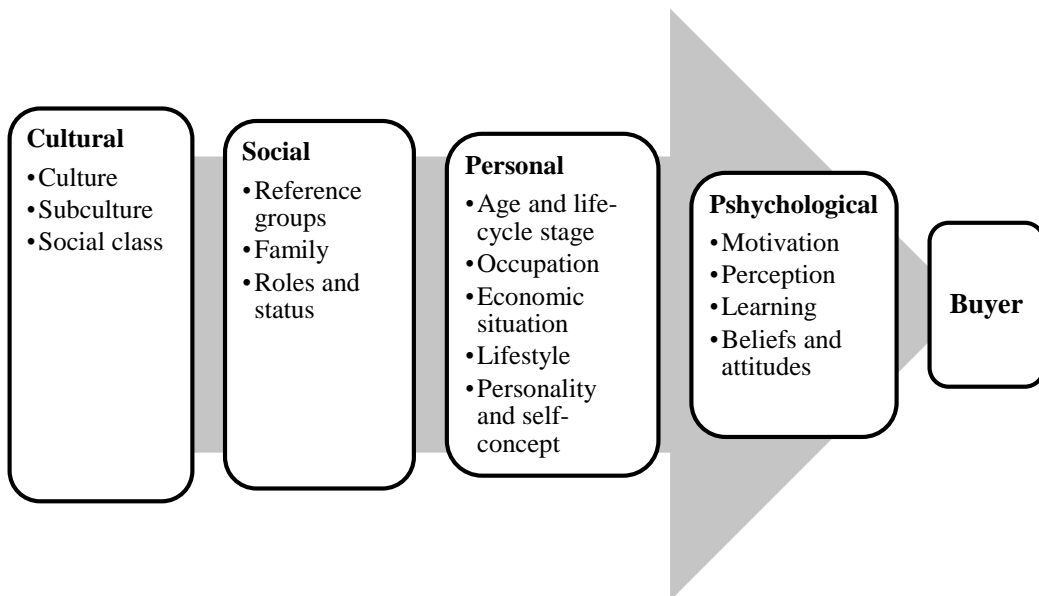
Buyer

Figure 5 – Buyer's characteristics, according to Armstrong (p.145, 2012)
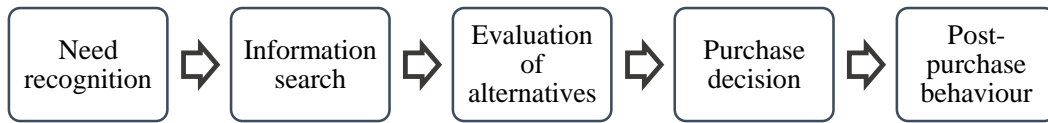
Figure 6 - Buyer decision process, according to Armstrong (p.157, 2012)

Something that is applicable for the thesis is Armstrong's five-step process for the decision to adopt a new product (p.164, 2012), since the parcel locker is a new addition to the Swedish market. Armstrong defines a new product as "a good, service or idea that is perceived by some potential customers as new". The five stages involve awareness, interest, evaluation, trial and adoption (Armstrong, p.164, 2012). Wang et al. (p.400, 2013) suggests a sixth step between trial and adoption, which is repeated use. It is of course desirable to guide the consumer through all stages. How to make this possible is by making the new product visible, supply clear information for easy access, and encourage the consumer to take the step to try something new. (Armstrong, p.164, 2012) (Wang et al., p.400, 2013)

3.1.1   E-consumer behavior

Hsin Chang and Wang (p.341, 2011) have adopted Bagozzi's (p.183, 1992) three step process explaining consumer behavior to focus on the e-consumers' behavior, see Figure 7.
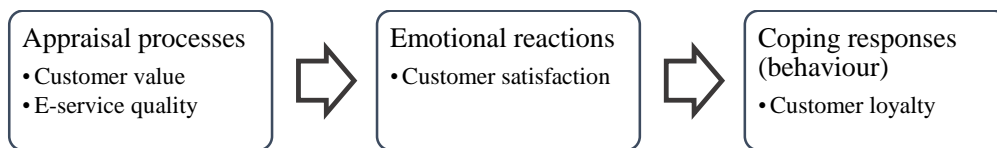
Figure 7 - Three step process explaining e-consumers' behavior (Bagozzi, p.183, 1992) (Chang and Wang, p.341, 2011)

When a consumer has identified a need and has the motivation to act on satisfying that need, they explore the market for a suitable product or service and evaluate the market and the companies' offers. This evaluation does not always correspond well to reality and is therefore called the perceived value. So the company that offers the highest value on the market is not necessarily the company that offers the highest customer perceived value. (Armstrong, p.18, 2012). Groth and Dye (p.275, 1999) agree with Armstrong when stating that "perception rather than reality dictate consumer behavior". Salem Khalifa (p.650, 2004) complies a number of consumer definitions of value: low price, good quality, the quality obtained in relation to paid price, fast deliveries, and good service.

Caruana (p.813, 2002) defines service quality as "the result of the comparison that consumers make between their expectations about a service and their perception of the way the service has been performed". Wang and Huarng (p.634, 2002) identified nine service quality factors that have an effect on the consumer: website design, competitive

price of the product, merchandise availability, merchandise conditions, on-time delivery, merchandise return policy, consumer support, email confirmation of consumer order, and promotion activities. They found that some of the most important factors for the consumer were to receive the products on time to a competitive price with a good customer support.

Consumer satisfaction can be explained as the state of how well the consumer's pre-purchase expectations are met with the post-purchase experience. (Lin and Sun, p.462, 2009) This means that if the product or service does not live up to the consumer's expectations, the consumer will be dissatisfied. Armstrong (p.18, 2012) states that if the performance exceeds expectation, the consumer will be highly satisfied or delighted, which he claims is a postulate for the consumer's satisfaction to evolve into a sense of loyalty to the company. A delighted consumer will be more susceptible to continue the relationship with the company (Armstrong, p.19, 2012).

Hsin Chang and Wang (p.333, 2011) conclude that appraisal processes influence emotional reactions which in turn influence coping responses, see Figure 7. Hsin Chang and Wang also identified two different routes in leading the consumer from the appraisal process step e-service quality, to become a loyal consumer to the company. The two routes are the emotional influence route and the rational influence route. The two routes imply that to reach loyalty, you can aim either at achieving high emotional satisfaction or rational perceived value with help from the e-service quality factors (p.350, 2011).

3.2   Distribution

Distribution is mainly about having the right amount in the right place at the right time. With new technologies, and a growing e-commerce, new distribution channels arise to meet the demands of today's consumers. The final part of the distribution from business to consumer is called last mile delivery, which will be presented in this section, see 3.2.4.

3.2.1   Supply Chain Management / Logistics

Supply chain management (SCM) has developed since 1980 and is a term for "integration of key business processes from end user through original suppliers, that provide products, services and information that add value for consumers and other stakeholders" (Stock and Lambert, p.54, 2001).

SCM is a broader concept than logistics, though many see them as synonyms. Logistics can shortly be described as the knowledge of effective material flows (Jonsson and Mattsson, p.19, 2005). According to Jonsson and Mattsson (pp.44-45, 2005), the logistics system can be divided into five processes: procurement, manufacturing, order to delivery, distribution and after delivery. Where distribution is the process from a physical product to the consumer, including transportation planning, transportation, load and unload freight and storage. In this project with PostNord's parcel lockers, the main focus within the system is in distribution and after delivery.

3.2.2 New technology

The technology and especially Internet has changed the supply chains in both strategic and economic ways. The result can be seen in both efficiency and cost reduction, by allowing real-time communication among the supply chain actors. (Lancioni et. al., p.173, 2003). There are many new technologies that have improved the coordination within the supply chain, e.g. Enterprise Resource Planning (ERP), bar coding, Flexible Manufacturing Systems (FMS) etc., (Boyer et al., p.200, 2004).

The Internet has made it possible to give the consumer more information and a wider range of choices due to e-commerce (Kull et al., p.412, 2007). E-commerce (EC) is defined in 2009 by The Organisation for Economic Co-operation and Development (OECD): "An e-commerce transaction is the sale or purchase of goods or services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders." (OECD, p.72, 2011) Today, 93 percent of the Swedish population has Internet access. Common things to buy online are books and media, electronics and clothes, though for clothes and shoes the drawback is that you cannot try it on beforehand, which create a need to return the items. For consumers, free charge of return is important (HUI Research, pp.4-6, 2014).

PostNord, in collaboration with Svensk Digital Handel and HUI Research, have asked the Swedish consumers why they chose to buy online instead of in an actual store, and the main reasons were convenience, cheaper items on Internet, and that the item was not found in a store close by, (HUI Research et al., p.42, 2014). On the other hand, the consumers were asked why their latest buy in a store was made in a store and not online, and the main reasons were that they did not want to wait for their product to be delivered, they wanted to try the product before buying it, and that it was more convenient to visit a store (HUI Research et al., p.48, 2014).

3.2.3 New channels

Internet has made companies become multi-channel retailers, which means traditional companies have expanded from physical stores to e-commerce sites too, (Heinemann and Schwarzl, p.69, 2010). The biggest change is happening in the distribution channels, not in methods of production or consumption for companies. At least two problems can occur when distribution channels are increasing. Primarily, the quality can decrease and secondly, the company may have conflicts of channels. (Kotler and Gustafsson, pp.25-26, 2003) This is applicable to this project. When looking at the parcel lockers, the conflict channel could be the postal agents at the super markets.

When talking about the e-fulfillment distribution process, there are four main supply chain stages that are included: sales (consumer demand, price, and forecasts), delivery (physical movement of product to consumer), warehousing (storage handling) and purchasing (ordering final product), (Agatz et al., p.341-342, 2008). Multi-channel distribution is from a SCM perspective seen as providing opportunities when serving different consumer segments by synergy creation. There are though many challenges to obtain this and reach economies of scale. Design and trade-of processes are in focus,

e.g. integration and separation of multiple channels. Furthermore there are different service perspectives for different channels. For e-fulfilment the delivering of physical goods to consumer is usually the most expensive and the hardest to operate (Agatz et al., pp.339-340, 2008). The last part will therefore look further into delivering to end consumer, which the parcel locker will affect if implemented.

3.2.4 Last mile distribution

The last mile can be seen as the final part in business-to consumer (B2C) delivery, where the recipient receive the parcel at home or at a collection point. Last mile is seen as the most expensive, polluting, and non-efficient part in the logistic chain (Gevaers R., Et. al., p.3, 2010). The cost can be up to 75 percent for the total logistic cost just for the last mile, due to inefficiency (Gevaers, et al., p.5, 2010). A trade-off in last mile distribution is route efficiency versus consumer convenience (Kull, et al, p.411, 2007). The last mile supply chain is a sum of ordering and fulfillment and delivery, and it affects the consumer if not succeed (Boyer et al., p.200, 2004).
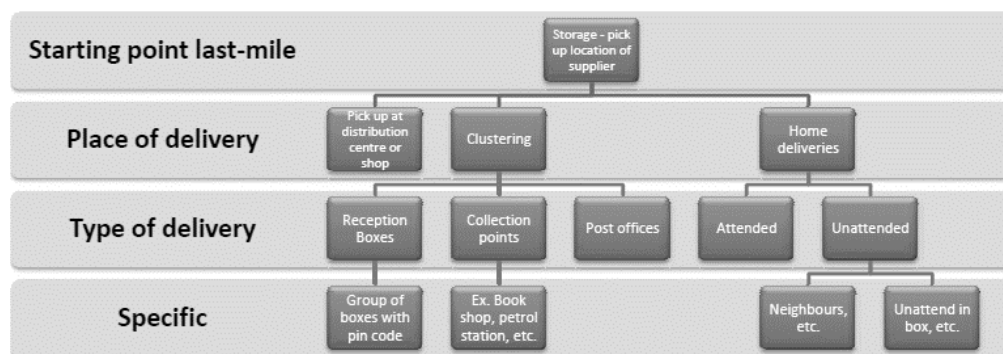
Figure 8 - Various delivery methods of last mile distribution (Gevaers et al., p.5, 2010)

There are various types of delivery for the last mile. In a consumer perspective, last mile is divided to home delivery or pick-up, see Figure 8, (Agatz et al., p.342, 2008). In terms of unattended delivery and attended delivery the unattended is by far most efficient, the trade-off is though the consumer convenience. Window size, how long a consumer has to wait when it comes to attended delivery, is commonly discussed (Boyer et al., p.190, 2004). The unattended delivery is by far more efficient, regarding the window size. Therefore, the parcel locker has been developed to be able to deliver even though consumers are not home. But the aim with parcel locker has been twofold: to simplify for consumer who are not home and secondly to make returns easier. (Boyer et al., p.197, 2004). The return process is a part of e-fulfillment service and implicates that the expensive last mile distribution is repeated a second time (Agatz et al., p.343, 2008).

3.3 SST - Self-Service Technology

An interesting area for this study regarding consumers' interaction with parcel lockers is Self Service Technologies, SSTs. Examples of SSTs are ATMs (automatic teller

machines), self-ticket purchasing, automated hotel checkouts, Internet service etc. Meuter et al. (p.50, 2000) defines it as follows: "Self-Service Technologies (SSTs) are technological interfaces that enable customers to produce a service independent of direct service employee involvement."

SST can reduce labor cost while providing more channels. Furthermore, the consumer has to be convinced to see it as a valid alternative to other channels that are interacting with an employee. Several SSTs have turned up and then been withdrawn due to the service providers' inability to show and educate the consumer how it works, not mentioning why it is a better alternative. Consumers have to be motivated to consider other channel alternatives. (Collier and Kimes, p.39, 2012)

Collier and Kimes (p.49, 2012) put weight on that one should treat users and non-users in different ways. When dealing with an experienced user, one should try to focus on supply a fast and accurate SST. Meanwhile, service providers should concentrate on building trust and by giving consumers the opportunity to explore the SST without having to spend any money or make an actual transaction. Scherer et al. (p.183, 2015) present the differences in needs of interaction with humans; some consumers want to and enjoy doing the service themselves with technology, while others want interactions and assistance with humans and create social bonds (see Figure 9, for more examples of why one wants to choose a specific channel). There is one group that is more likely to adopt to the SST and that is younger males, which are higher educated, better paid, less anxious, and whom embrace technology faster than other groups (Wang et al., p.400, 2013).

Already fifteen years ago, Meuter et al. (p.56, 2000) presented satisfying and dissatisfying incidents when using SST. Satisfying factors were: better alternatives, time saving, easy to use, saving money, and providing a service when and where the consumer wants. Some of the common dissatisfying incidents were: technology and process failure, poor design and service design problems. Factors that Collier and Kimes (pp. 40-44, 2012) mention more recent, are convenience, explore, speed of transactions, accuracy, trust, satisfaction, and need for human interaction. Collier and Kimes (p.44, 2012) consider the need for human contact as the main reason why consumers does not start using a SST.

When comparing SST with personal service one can divide it in two perspectives; value-proposition and value-in-context, see Figure 9.

	Self-Service Channel	Personal Service Channel
The Value-Proposition *what the firm offers*	Reduced number of cues leads to efficiency of information exchange (e.g., Choudhury and Karahanna 2008)	Rich in relational information, high in social context cues (e.g., Cyr et al. 2007)
	Automated responses lead to accessibility and flexibility (e.g., Wallace et al. 2004)	Human feedback; immediate and individual-ized attention (e.g., Venkatesan et al. 2007)
	Few personal touches or social cues (e.g., Cyr et al. 2007; Davis et al. 2011)	Highly personalized interactions (e.g., Barnes et al. 2000)
The Value-in-Context *when the customer can benefit*	Tasks are unambiguous and repetitive; service is not complex or new (e.g., Campbell et al. 2011; Kumar and Telang 2012; Selnes and Hansen 2001)	Tasks are equivocal and ambiguous; service is complex, critical or new (e.g., Selnes and Hansen 2001; Vickery et al. 2004)
	Customers have expertise, self-efficiency, and motivation to use self-service channels (e.g., Beuningen et al. 2009)	Customers do not have the skills, motivation, and abilities to deliver service or solve a task alone/via technology (e.g., Meuter et al. 2005)
	Customers enjoy "doing it themselves" and wish to be in control (e.g., Campbell et al. 2011; Davis et al. 2011; Lusch et al. 2007)	Customers enjoy human interaction, need to gain trust, overcome anxiety (e.g., Chan et al. 2010; Dabholkar 1996)

Figure 9 - Scherer et al. (p.184, 2015) present a table with different value-propositions and value-in context for different service channels.

There are advantages with both self-service channels and the traditional personal service channel. A trend seen is that more and more consumers are pushed to self-service, rather than by choice. There is though a warning from researchers that knowledge about how consumer loyalty will be affected long-term by self-service is deficient. Researchers question how self-service in the long-term affect consumer relationships. Wang et al. (p.411, 2013) states that forcing a consumer to use an SST could have consequences in forms of creating negative attitudes directed both towards the SST and the providing company. Self-service and personal service differs and it is of interest to see substitution of these channels. (Scherer et al., p.178 2015). Scherer et al. argue that over time the value for consumers' change, while consumers become experienced in their task in terms of performance and efficiency (p.184, 2015).

SST does not give the provider direct contact with its consumer and the consumer is increasingly involved in the service process with SST. The consumer becomes a co-creator and co-producer of value in self-service channels. While in personal service channels, there is presence of providers with direct human communication for the consumer. (Scherer et al., p.180 2015).

The time aspect for SST is essential; literature argues different statements in this topic. Kokkinou and Cranage state in 2013 that there is no empirical evidence that SST compared to service of today can reduce waiting-times. Though the waiting time aspect is a crucial factor for the consumer and therefore service providers work hard to reduce it (Kokkinou and Cranage, p.435, 2013). To reduce time and increase efficiency, the interface and applications in the SSTs have to be user-friendly and have clear guidelines (Wang et al., p.410, 2013) and (Collier and Kimes, p.48, 2012).

3.4 Summary
When introducing a new product or service on the Swedish market, it is essential to understand the consumer. Therefore this frame of reference focused on consumer

behavior in different aspects when the literature was reviewed, regarding both basic psychological theories and for example consumer behavior when adapting a new product.

A major factor that has changed the supply chain is the technology and Internet. The parcel locker is a result from Internet and especially the increasing number of consumers using e-commerce. The parcel locker is a type of self-service technology, and will be an extended channel in distribution in terms of the last mile distribution perspective. Therefore literature concerning self-service technology, new channels in distribution and last mile distribution literature were reviewed.

4 System Description and Setting

This chapter begins with describing the company and the parcel locker. Furthermore, it continues with explaining the process of collecting and returning of parcels, and moreover describes the system administration necessary from PostNord.

4.1 Company description - PostNord

PostNord is a company that was created in 2009 by the merge of the Swedish and Danish postal services, Posten AB and PostDanmark A/S. In addition to this, PostNord also provide logistical expertise through the company PostNord Logistics, and relationship-building communication solutions through PostNord Strålfors. In total, PostNord has nearly 40 000 employees. In 2014 the turnover was 40 billion SEK. PostNord delivered approximately 120 million parcels in 2014, both directly to people's homes and to the 5800 postal agents around the Nordic countries. (PostNord, 2015a)

PostNord has experienced the downward trend when it comes to letter volumes and the strong increase in e-commerce (TT, 2014). In 2007, 56 percent of the postal market was for letters and 44 percent for parcel and express, while in 2011 parcel was a majority with 52 percent and letter 48 percent (WIK-Consult, p.163, 2013). For example; in 2013, PostNord noticed an increase of B2C parcel volumes by 12 percent in the Nordic market (PostNord, p.3, 2014).

PostNord is responsible for the mission of providing the postal service in Sweden. This means that according to the Swedish postal law, PostNord must be able to distribute letters and parcels up to 20 kg to all citizens. The law also sets higher demands in terms of reporting and transparency regarding pricing compared to other operators. (PostNord, p.58, 2012)

Today PostNord uses postal agents, which the company calls service points, for collect and return of parcels in Sweden. Today there are 1600 postal agents in Sweden (PostNord, 2015b). The company is now considering parcel lockers to offer flexibility and accessibility for their consumers. "We want to offer a wider option. With the growing e-commerce, the expectations are set higher from the receiver" according to Gunilla Karlbom, Manager Retail Strategy & Concepts at PostNord (Henriksson Fjeldstad, 2014).

A clarification of how PostNord's customer structure looks can be seen in Figure 10. When the customer/consumer is used later in the report, it will aim at the end user and not the e-retailer unless otherwise stated.

• PostNord is only visible to the consumer at delivery and collect location (agent, home delivery or parcel locker).

• PostNord's customer

• E-retailer's customer
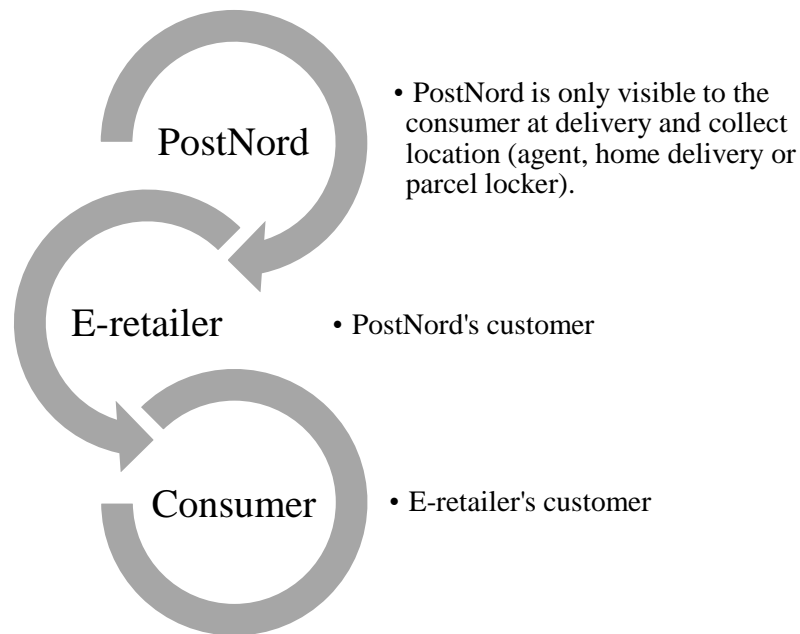
Figure 10 - Customer relationships

In contrast to the customer relationship, the physical flow, see Figure 11, starts with the consumer ordering something from the e-retailers' webpage. The e-retailer is the one managing the products stocks. The final part is the 3PL, a third-party logistics provider (in this case PostNord), which distributes the parcel to the consumer.
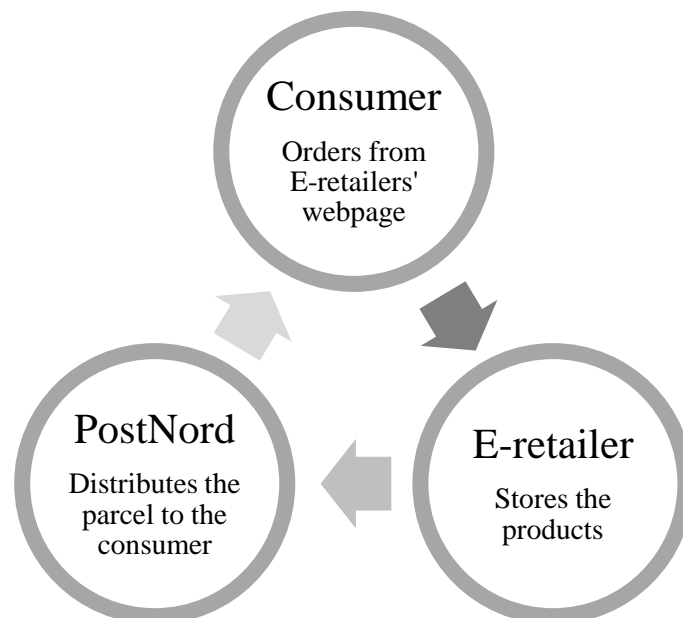
Figure 11 - Physical flow

4.2 PostNord's public procurement process

PostNord in Denmark have had the parcel locker system since 2008, and has already a procurement process in place for the parcel locker. The Swedish part of PostNord used the same supplier to save time and resources for the pilot.

PostNord is a Public Utility Company and procurements have to be conducted under the European Utilities Procurement Act, which means that there needs to be transparency and proportionality in the procurement process, where all tenders are treated equally.

Due to additional needs in Denmark and to shorten the time "to market" for the rest of PostNord Group, a new public procurement process was conducted in 2014, see Figure 12. The procurement process will result in a frame agreement covering a timeframe of six years. Worth mentioning is that the procurement technical specifications overall have remained the same since the start, and no consumer evaluation has been taken into consideration when defining these technical specifications. This does not mean that the GUI, Graphical User Interface, of the system has not changed during the years, it means that the basic functionality of the solution has remained the same. By using the consumer evaluation conducted in this thesis, specifications were defined with the support from this information, which can be of use in a future public procurement process.

	4-8 weeks	6-8 weeks	1,5 weeks	4-5 weeks	1,5 weeks	
Analysis	Specification	Offer	Evaluation	Negotiation	Standstill	Contract

Figure 12 - A short overview of the public procurement process of parcel lockers at PostNord

PostNord's public procurement process consists of the following seven steps:

1. ***Analysis***
   An analysis is done regarding which suppliers that are available and the needs. No specific timeframe is set for this process, depending on how complex the procurement process is.

2. ***Specification***
   A specification is prepared with minimum requirements (must and shall) and requirements for functionality (should requirements) are set. For the parcel locker it were two documents with 31 pages (minimum requirements) and 50 pages (of use-cases and process optimizing) respectively. PostNord Denmark wanted to keep it short due to that parcel locker is a standard product, but still wanted to ensure functionalities and the parcel handling process. Pre-qualifications like economy, financial ratings, quality

(ISO 9001 or equal), environmental process (ISO 14001 or equal) and PostNord's code of conduct are also set here.

3. *Offer*
    To the candidates who fulfill the qualification criteria for pre-qualification, the tenders prepare their proposal in accordance to the specifications, and submit it in accordance to time schedule.

4. *Evaluation*
    Internal process where the submitted proposals are evaluated and are preliminary scored in accordance with the evaluation criteria set for the tender.

5. *Negotiation*
    Several negotiations are done at this process step. The first negotiation is one day per supplier. At this stage PostNord asks the supplier for references (business) and discuss IT, hardware, and software, all to ensure that the use-cases are fulfilled. To be able to do an even stricter selection and to ensure the right solution, there is a second negotiation during approximately two days. At this negotiation, one day is set for software discussions and the other is for improving standard solutions. The third negotiation considers software, service, and most importantly price. Also the roll out process is discussed here. All contractual issues are also negotiated in the phase.

6. *Standstill*
    After the last negotiation and final evaluation, a notification is announced to the tenderers who PostNord intend to enter into an agreement with. This notification include information how the tenderers have fulfilled the requirement. After the announcement, a ten days standstill starts, where the other tenderers can appeal against the decision.

7. *Contract*
    The only thing left is to sign the papers!

4.3   PostNord's parcel locker pilot description

PostNord, in collaboration with the e-retailer Zalando, will conduct a pilot with the aim to evaluate the interest of parcel lockers. PostNord has placed ten parcel lockers in total in Sweden, Norway and Finland. Four of them are placed in Stockholm. During the pilot, Zalando will be the only e-retailer that offers the possibility to choose the parcel locker as the collecting point to their customers.

The pilot has been running since 16th of February 2015. Figure 13 shows the results from the first three months. It only shows the proportions and not the exact number. The graph shows that the collect rate is the highest at Östermalm.
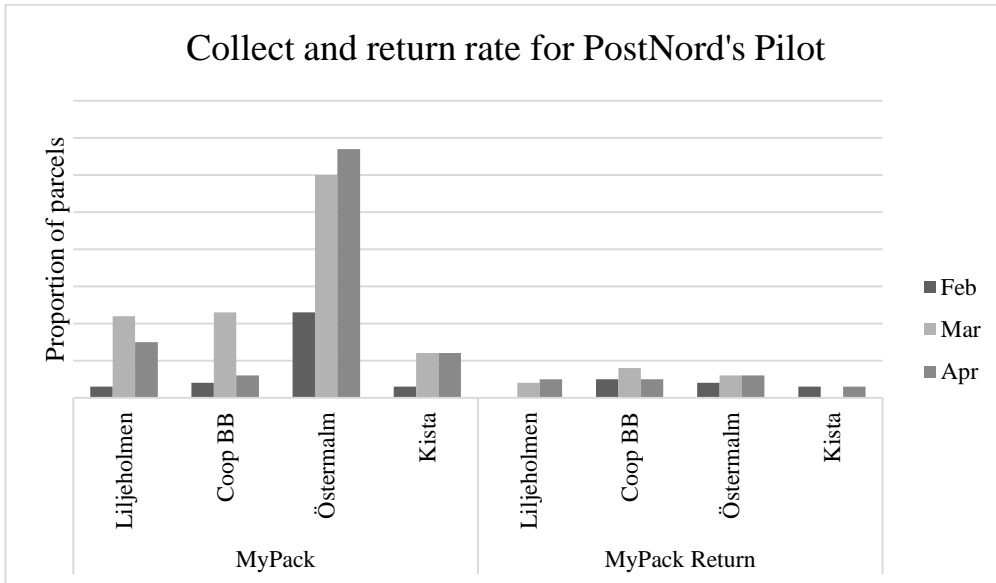
Figure 13 - Collect and return rate at the locations

4.4 Locations

4.4.1.1 Östermalm

The store where the lockers were placed was crowded, with little free floor space. The passage past the locker was very narrow. There were also chairs and tables in this passage. A phenomenon that made the situation worse was that people put used baskets and carts in the way after they had shopped at the supermarket, even if there was a dedicated place for this further on, see Figure 14. The staff had to clear the area periodically.

Figure 14 - In front of the parcel locker at Östermalm

4.4.1.2 Liljeholmen

The parcel locker was placed a bit secluded in the mall, but could easily be accessed from escalators and a car park nearby, see Figure 15. In the same mall, PostNord has a postal agent in the grocery store ICA. On the opposite side of the lockers was a popular Asian supermarket, which had customers coming in all the time.

Figure 15 - The parcel locker at Liljeholmen.

4.4.1.3 Bromma

The locker was placed near by a package wrapping station, vending machines for tobacco, and toilets. Furthermore, the area was spacious, though not too far from the counters of the supermarket Coop Forum. There was also a foyer shop that offers food, betting, and lottery tickets among other things, see Figure 16 and 17. It was observed that this area used video surveillance.

Figure 16 - The parcel lockers at Coop Forum, Bromma.

Figure 17 - The spacious area in front of the parcel lockers at Bromma.

4.4.1.4   Kista

The locker was placed near by an ATM, entrances, toilets, a bookstore, and the food restaurant Max. Still, the placement felt secluded. There was a favorable amount and variation of people, which was not experienced to the same extent at the other locations. The posters on each side of the parcel locker were torn apart or scribbled on. Furthermore, the posters were not updated. They still said "soon you can collect and return your parcel here", when the pilot already was up and running.

4.5   Parcel locker description

The parcel locker is a self-service technology (SST) since it does not demand any interaction with a service employee. The locker can be used at all times, or as long as the location (mall, supermarket etc.) is open, for collecting and returning of parcels. PostNord's B2C parcel service (from e-retailer to consumer) is called MyPack, and for the returning process the consumer use MyPack Return. The parcel locker will serve as an accessible and flexible alternative to the postal agents.

The parcel lockers that PostNord uses, see Figure 18, are built in modules, which means that the locker can be expanded according to the level of demand at a particular location.

Figure 18 – PostNord's parcel locker (PostNord, 2015c)

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One controls the locker from a touch screen, which provides guidance through the process. When collecting a parcel you enter the pin code you received in a text and e-mail, and then one of the slots will open containing your parcel. When returning a parcel, the barcode is scanned and a slot in an appropriate size will open. Afterwards you get an e-mail with the receipt.

4.5.1 Collect process
The collect process is defined as the moment from the consumer has the phone with the pin codes in their hands and starts to collect the parcel, to the point where they have closed the locker door.

1. Receive PINs by e-mail and text.
2. Click "Pick up parcels" on the screen.
3. Enter PIN1, clicks continue.
4. Enter PIN2, clicks continue.
5. Locker door containing the parcel opens.
6. The consumer collects the parcel.
7. The consumer closes the locker.

For description with pictures, see Appendix 7.

4.5.2 Return process
The return process is defined as the moment from the consumer arrives to the parcel locker, either with an already attached label on the parcel or with a label they can attach themselves, to the point where they have closed the locker door.

1. Attach label on parcel.
2. Choose "Return parcels" on the screen.
3. Scan the label.
4. Choose suitable locker slot size (S, M, L, XL).
5. Change size
6. Close the slot that is too small.
7. Chose new slot size.
8. Close the locker door.
9. Enter e-mail to get receipt.

For description with pictures, see Appendix 8.

Currently, there is no printer integrated in the parcel locker. Before future implementation, there are plans to integrate both receipt printer and label printer to the parcel locker.

4.6 Implications of implementation of the parcel lockers
The implementation of the parcel locker will add additional work for PostNord's work force. The parcel lockers will generate additional delivery points for the chauffeurs at PostNord, which means that the delivery routes needs to be expanded. It will also create

more manual labor in terms of loading and un-loading the locker with parcels. When the lockers are in use, there will be a need for service personnel. Both to clean the locker slots and to repair the locker if something is broken.

When consumers encounters problems and have questions regarding the parcel locker, there needs to be customer service in place that are able to provide the information and answer these questions. There will also be a group of workers at the headquarters at PostNord responsible for the parcel lockers.

4.7 Consumer behavior within the Nordic E-market

If the parcel lockers were to be implemented in Sweden, Norway, and Finland (where the pilot is conducted), it will be an additional distribution channel for the e-market. Denmark already has parcel lockers, and their postal network as well as e-commerce habits differ for the Nordic countries. So even if the Nordic countries are close neighbors, there are differences in how the citizens use Internet when shopping and how they prefer their packages to be delivered.

What all consumers across the Nordic seem to have in common are that they want to choose when and where to shop, how and when the goods should be paid and where and when it should be delivered. One example where the countries differ is concerning the payment terms. Norwegians, Danes and Finns prefer to pay with debit- or credit card, while the most popular way to pay in Sweden is by invoice (PostNord, p.11, 2014).

When it comes to deliveries, the Danes are the most impatient, followed by Swedes, Norwegians and last the Finns. PostNord recognize an increase in the demand for fast deliveries (PostNord, p.21, 2014). It is not only the speed of delivery that is important, the way that the parcel is delivered is also of interest. Denmark expects to have their parcels delivered to the door, while the remaining countries pick up their parcel at collection points. (PostNord, p.5, 2014). One thing to keep in mind is that 69 percent of the consumers want to choose their collection point themselves, but only 17 percent of the companies recognize this as a need (HUI Research, p.44, 2014).

During 2013, 80 percent of the Nordic population used Internet at least once for shopping, (PostNord, p.8, 2014) and the positive trend continues (PostNord, p.6, 2013). In the logistics company Bring's yearly E-commerce report (p.4, 2013), they highlight the freedom of choice as the key words for successful e-businesses.

5 Experimental Findings & Discussion

Keywords was used in this part to create themes for each interview question and observation, to combine all data and find common patterns. This with the aim to answer the first research question: How does the consumer experience the parcel locker?

The chapter will begin with describing the participants and their general ideas of the parcel locker. It will continue discussing how the participants experienced the collect and return process. Furthermore, this chapter will describe reasons and barriers for using the locker, expressed to or observed by the researchers. Finally, improvement suggestions that the participants communicated will be presented and discussed. This chapter will be summarized in section 5.14. An overview of chapter 5 can be seen in Figure 19.
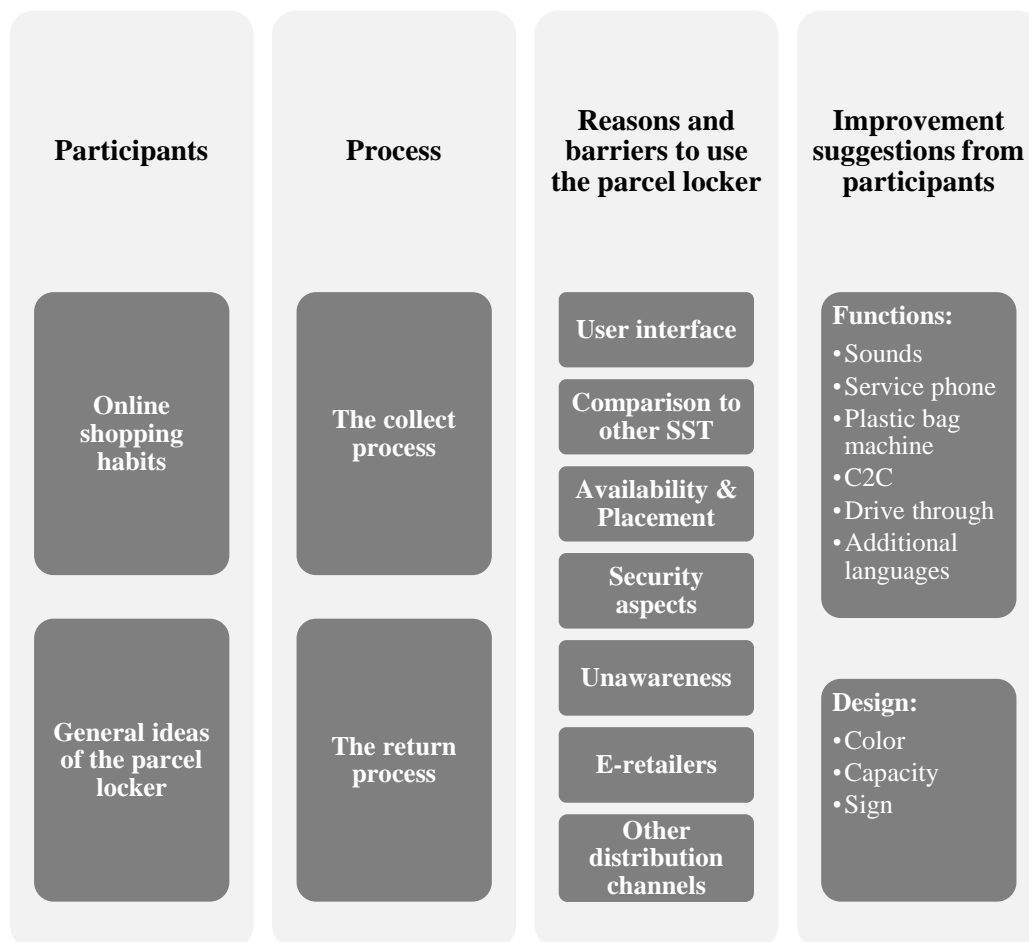
Figure 19 - Overview of experimental findings

5.1 Participants' online shopping habits

Of those 60 interviewed, 49 participants (82 %) had shopped online. The distribution between ages and gender can be seen in Table 5.

Have shopped online	Total	<25	25-40	40-55	55-70	>70
Total	49 of 60 (82 %)	10 of 11 (91 %)	17 of 20 (85 %)	11 of 13 (85 %)	9 of 12 (75 %)	2 of 4 (50 %)
Women	20 of 28 (71 %)	6 of 6 (100 %)	6 of 9 (67 %)	4 of 6 (67 %)	3 of 5 (60 %)	1 of 2 (50 %)
Men	29 of 32 (91 %)	4 of 5 (80 %)	11 of 11 (100 %)	7 of 7 (100 %)	6 of 7 (86 %)	1 of 2 (50 %)

Table 5 - Online shopping habits distributed between ages and gender

When it comes to different ages, the online habits were quite similar and did not depend on age. When it came to gender, the men had been shopping more online but it was not that big of a difference. This information was gathered mostly to understand what kind of consumer the participants were. Furthermore, if they had been shopping online they usually have to go and collect at a postal agent, which is the procedure that the parcel locker can replace. Approximately half of the participants (31, 52 %) answered the question "when was the last time you shopped online?". Those who answered had all shopped online during the past year, nineteen had shopped the last month.
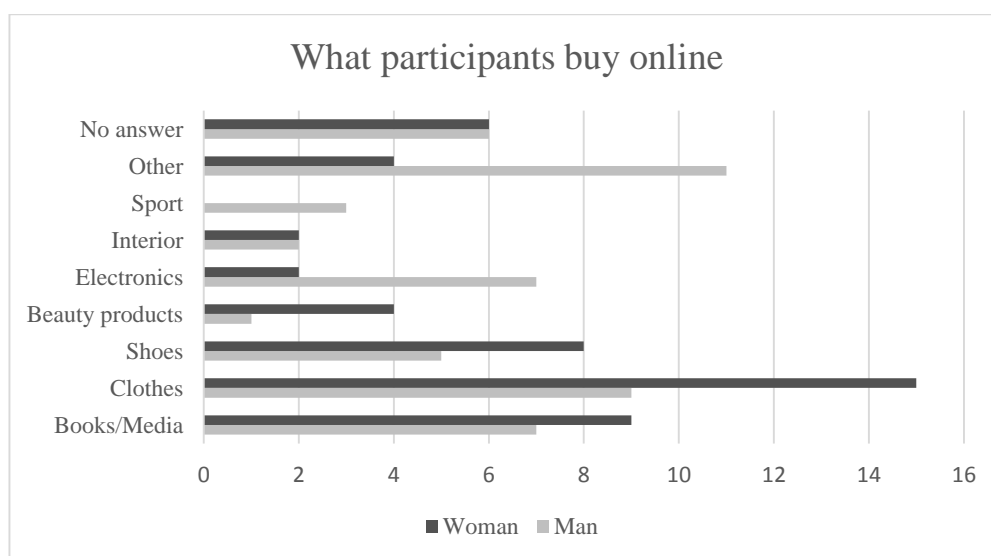
Figure 20 - What participants buy online

When asked what they bought online, the participants had a range of different answers, see Figure 20. Since the interviews were open structured, with participants having the choice of expressing themselves in many ways, the answers were divided into groups (clothes, books, shoes, etc.). When asking the question of what they used to shop online, if the participants had a hard time coming up with their answers or remembering what

they last shopped, the researchers gave these groups as examples. In total 60 people were interviewed, and every participant was able to give multiple answers. As seen in Figure 21, women bought mostly clothes and media, while men mostly answered clothes and electronics. In the group of "Other" were answers like: whiskey glasses, coffee, children's toys, motorcycle spare parts etc. There were six women respectively six men that did not answer this question, these are the ones that answered that they did not shop online or did not have any answers of what they shopped online.

Both Table 5 and Figure 20 shows that the interviewed group is well differentiated in terms of online shopping habits. Most of the participants had shopped online prior to the experiment, and the items they bought were diverse.

5.2 General ideas of the parcel locker

45 participants (75 %) of the participants in the experiment found it easy, simple, convenient, fun or other equivalent positive attitude towards the parcel locker after conducting the experiment, see Figure 21.

How was the parcel locker to use?

- No answer 7%
- Other 3%
- Pretty easy to use 15%
- Easy to use 75%
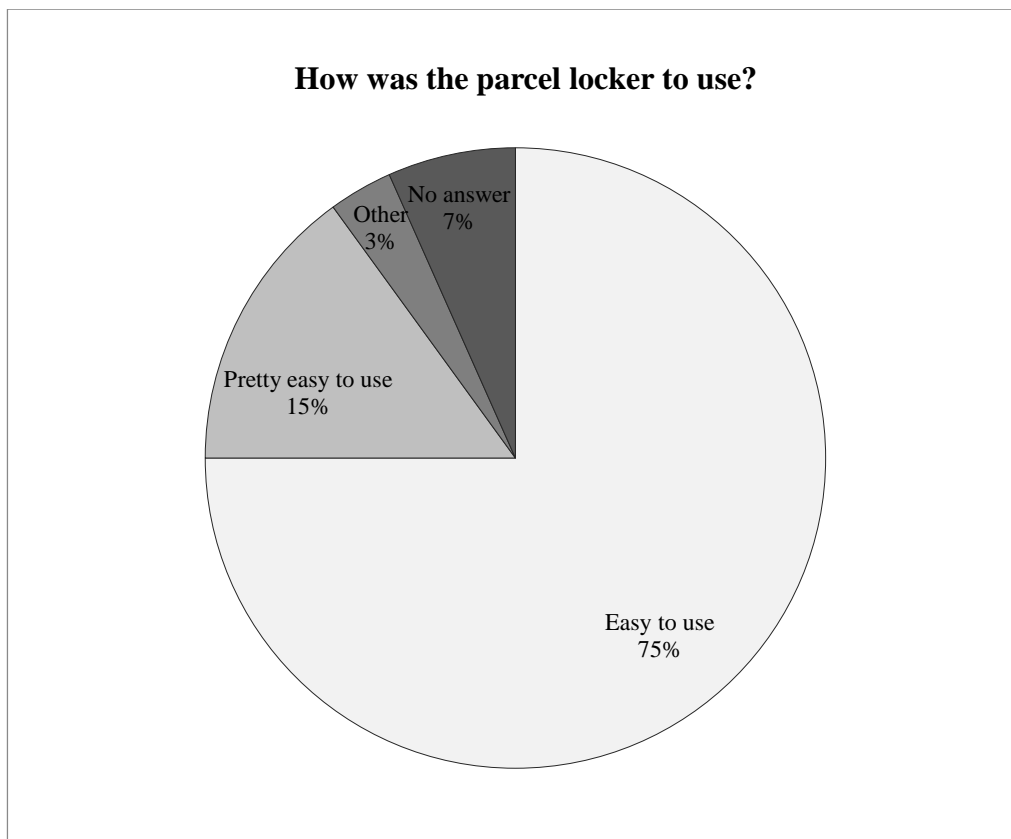
Figure 21 - How the participants experienced the parcel locker, after trying the process of collecting and returning a parcel

Nine participants (15 %) found the locker easy to use but had some doubts and questions regarding some functions during the process that they found difficult, for example the two pin codes or how the locker slots opened. None of the participants expressed that it was hard to understand or difficult to use the locker. Two people (3 %) expressed that they found it equally convenient or experienced it equal to postal agents.

Observations showed that participants did not understand what to choose when they got the question "can you reach all boxes of the automat?" on the screen (see Appendix 8, step 4). The participants frequently asked which alternative to choose and why this question was asked. The researcher answered that if you cannot reach all the slots, there is a dedicated "comfort zone", see Appendix 9, which are boxes that for example people in wheelchairs can reach.

Two of the participants were concerned for others when asked what could be improved. One participant asked how the disabled would reach all locker slots. When the interviewer explained what comfort zone was, she replied "you thought of everything!". The other participant was concerned for the elders, because of their deteriorating vision and motor skills. The researchers also observed this problem; an elder woman had to push really hard on the screen for the screen to detect the pressure, which was frustrating for her. Another observation by the researchers was that elderly people that had chosen the comfort zone still had a hard time reaching the lower locker slots. The participant expressing her concerns for elders had ideas how to improve the lockers and suggested handles on the lockers. Her reason for that was due to ergonomics and for elderly people it would be of use and handy in general.

The participants' overall opinion, after using the parcel locker, was that it was clear and quick to perform the processes. Even people who did not want to use it again found it easy to perform. Their reasoning for not using it again was more reluctance of buying online as well as protecting the human interaction. There was no one explaining that they would not use it again because it was too hard to understand or perform the process, though some confessed their worry of the technology or security failing.

5.3 Collect process

There were three main areas discussed regarding the collect process: the two pin codes, the opening of the locker and closing the locker slot when the process was done.

5.3.1 Pin code

The pin codes were a common topic for the participants. Furthermore, during observation it was seen that it was not intuitive for participant to put in two codes. When the first pin code is written, the participant has to click "Continue" on the screen, to be able to write the second pin code (see Appendix 7, step 3). At this stage many hesitated. When participant were asked about how to improve the parcel locker, five participants mentioned the pin code. The most common idea was that one code was enough. On the other hand, there were people who saw it from another point of view:

that it was good to have two short codes instead of one long, which is hard to read and type in. One participant asked for a more clear text message. The two pin codes are today written in a long sentence and not really clear to detect (see Appendix 7, step 1). Observations showed that others had these problems as well, though for most participants it were easy to understand where to type in the pin codes.

One participant particularly liked the text message notification, since it did not demand an ID to collect a parcel from the locker. He said that he could collect a parcel in his friends place. There were participants who wanted to continue using the personal ID to make sure no one else could collect their parcel with only the two pin codes.

One participant questioned the solution regarding getting the PINs to your phone and computer. He claimed that if you do not have a phone, you need to get home or to a computer that has an Internet connection to get a hold of your codes. Two participants asked if you got PINs to your phone when you return a parcel as well, but this question aroused before the participant performed the return process.

There were some problems regarding the collecting process in terms of how the experiment was built up. It was mainly because the participant could not read the pin codes themselves due to too much to carry or lack of reading glasses. One older man said "Do you think I can read this?", and requested for the researcher to read the pin codes out loud. This was something unexpected; that the participant would have problems carrying things or reading from the phone. This made the researcher somewhat forced to interfere in the process.

5.3.2 Opening of the locker slot

A common observation and topic was that the parcel locker door almost knocked several participants; five participants (8 %) mentioned it afterwards. The locker almost opened in their heads or on their legs without any warning. This especially happened if the parcel locker door above the screen opened, because the participant is leaned forward towards the screen and occupied with reading the instructions provided, which made them stand close to the locker and only focusing on the screen. The surprise of the locker opening made one participant say "I need a helmet for this" and others express similar comments like "Except from almost being hit by the parcel locker, it was easy to use". There was no participant harmed but several were surprised that the locker did not show where on the screen the locker would open, nor gave a sound to warn and make the participant aware on where the locker would open.

5.3.3 Closing of the locker slot

Another observation was that most participants did not close the locker after receiving their parcel. It was not intuitive for the user to close the locker even though the screen informed one to do so. A reason could be that the participants collected the parcels in a slot too far away from the screen or experienced the process finished when receiving their parcels. Another reason could be that the participants were busy looking at their parcel or talking to the researcher.

The habit of not closing the locker is a problem, not for the return process because then the consumer is aware and afraid that someone can take their parcel if they do not close the locker, but for the collecting procedure.

Observations showed that the ones who performed the process carefully and read every description on the screen, they also missed to close the locker, until they went back to read the instruction on the screen. One problem was that many participants found the collecting process joyful and were interested to learn, but had no interested of taking the parcel out of the locker and close the locker slot. The observers often had to ask the participant to take the parcel out of the locker to continue the process.

5.4 Return process

There were two main areas discussed regarding the return process: the scanning of barcode and selection of slot size. Depending on what procedure the participant found hard to conduct and understand, it showed that they often had ideas to change it to the other. If one had problem with the pin codes one would like to change it to a barcode functions instead, and the other way around.

The topics that the participants brought to light themselves when it came to returning parcels was the idea and the scenario if a locker was full; what should one do as a consumer? Where to go? Is there any way to avoid this situation? How would it affect me as a consumer? etc. Different scenarios and questions were frequently asked here.

5.4.1 Barcode

The observation showed that the barcode scanning was the main problem for the participant when conducting the return process. There were several participants who did not understand where the barcode should be scanned; more than two participants wanted to start typing in the codes (from the barcode label) manually instead, see Appendix 8 (step 3). Due to technical aspects the researcher interrupted the participant if this occurred.

The observation showed that two participants held the barcode vertical or upside down and therefore the scanner could not read the label. Other participants did not hold the label close or still enough, which also made it hard for the scanner to read the label. One participant tried to scan the barcode where the camera should be placed (above the screen). One man who held the barcode vertical suggested an improved barcode reader that could read in different directions. Most of the time the participants understood where to scan, the screen showed where the label should be put. A couple of participants mentioned they were used to barcodes from self-scanning stations at the Swedish supermarkets.

Two participants asked for a return pin code instead of the barcode label. One of the participants, before receiving the return label from the researchers, asked "Do I get the return pin code as well?". The researchers explained that Zalando, the pilot e-retailer, sends a barcode label with the parcel. Further suggestions from consumers were a scan

function between phone and screen (QR-code or barcode), and a process like MAX-express (a Swedish fast food chain whom has started an express way of ordering food where you order at a screen and then collect your meal at the cashier).

5.4.2   *Selecting slot size*

Another problem with the returning process was choosing the right slot size to fit the consumer's parcel. It was observed that many consumers did not notice the size example signs on the locker. Instead they looked at the parcel. Observations showed that a few held the parcel against the locker to deicide slot size for the parcel, while others hesitated about the parcel size and wanted to discuss and hear the researchers' opinion. Participants often asked how they would know the size. In these scenarios it was difficult to be a good observer and not interrupt the participant in their way of choosing.

Five participants chose the wrong locker size and had to change from small to medium for their parcel when returning it. Even the chauffeur delivering the parcels chose the wrong slot size, since they were new at this task. Observations shown that the participants were so busy reading the information on the screen that they missed the signs on the locker doors. They are only asked to choose a size on the screen, the screen does not give a hint that there are size-examples on the locker that guide the consumer on which size to choose. The white signs (S, M, L, XL) on the locker were not clear enough, and most participants tried to find the answer regarding the size on the parcel instead. The problem was the parcel was market with an "S" (small) but would only fit in a medium sized slot (marked with an M). This is because there are no standards when it comes to parcel sizes.

The problem with choosing the wrong size of parcel locker, as well as scanning the barcodes wrong, should only be a first time experience. Once the consumer get used to return parcels in the locker it would be intuitive to look at the size signs to choose a size that will fit your parcel and hold the barcode against the scanner in the right way.

5.5   User interface

There were rarely any comments about the overall design of the user interface. One of the participants was a graphic designer, and mentioned that he liked the clean design of the parcel locker screen. He saw a trend that most layouts today were too detailed and decorated, which made them unclear. A couple of participants mentioned that it was easy to follow and that the screen provided a "step-by-step" guide so that they would have been able to perform the process without the interviewers being present. A 73-year-old man was relating to his age when he stated "the computer was easy to use even for an old man like me".

The researchers observed that when the locker opened, both in the collect and return process, the participant was so focused on the screen that they did not notice when and where the locker opened. The screen did not give clear enough instructions in this matter.

It was observed that the participants were sloppy when they read the instructions on the screen, and relied on the interviewers to guide and support them in the process. Many participants asked confirmatory questions, which made it seem like they knew what they should do but were be afraid of making mistakes in front of the interviewers. The overall assessment of what the interviewers observed, was that everyone who participated could have managed the process on their own.

5.6 Comparison to other SST

Nowadays, SSTs are a common part of everyday-life for many people. The SSTs are present at for example supermarkets, airports, libraries, metros, fast food chains, petrol stations, receptions at the dentists, parking areas, cinemas, gyms etc. People are more used to this kind of machines today compared to for example five or ten years ago. The participants mentioned other SSTs that are similar to the parcel locker, for example cigarette machines, safety boxes and self-cashiers, which indicates that they are aware of this type of technology. They are also familiar with using these kinds of machines, which makes it more intuitive to use the parcel locker.

The two most common self-service technologies, which the consumers by themselves compared to, were cigarette machines as well as self-service cashiers at ICA and Willys. Different participants also explained that the scanning process was similar to cigarette machines, where one scans a ticket. Other technical machines that consumers compared to were MAX-express, and safety boxes (which are machines where you can store for example your luggage). When the consumers thought of new functions and improvements of the parcel locker, those who mention comparisons with other SSTs related to these machines when they gave suggestions; "I don't want it to talk like the self-cashier at Willys".

Five participants (8 %) expressed that they were unsure how to handle the SST if something goes wrong or if they are in need of assistance in some way. Two stated that they did not like "where the world is heading", because of the overall decreasing interaction with people in the society.

5.7 Availability & Placement

The participants mentioned the availability aspect in different ways during the interviews. A couple of participants that did not live in Stockholm permanently wished for a parcel locker in their hometown. The participants also asked for a more frequent placement, to enhance availability. One participant had a certain request of parcel lockers at a minimum radius of a couple of kilometers from each home. If the participant already had a postal agent nearby, he or she would be more reluctant to go to the parcel locker if it was further away.

When asked where the participants would like the parcel locker to be placed, they gave suggestions like close to home, close to school or work, or close to some kind of commerce. Also near transportation alternatives like the subway, busses, or parking spaces, or near an already existing postal agent were frequently mentioned. More than

one participant joked about a wish that the locker should be placed outside their door. For an overview of how many times the different alternatives were mentioned, see Figure 22.
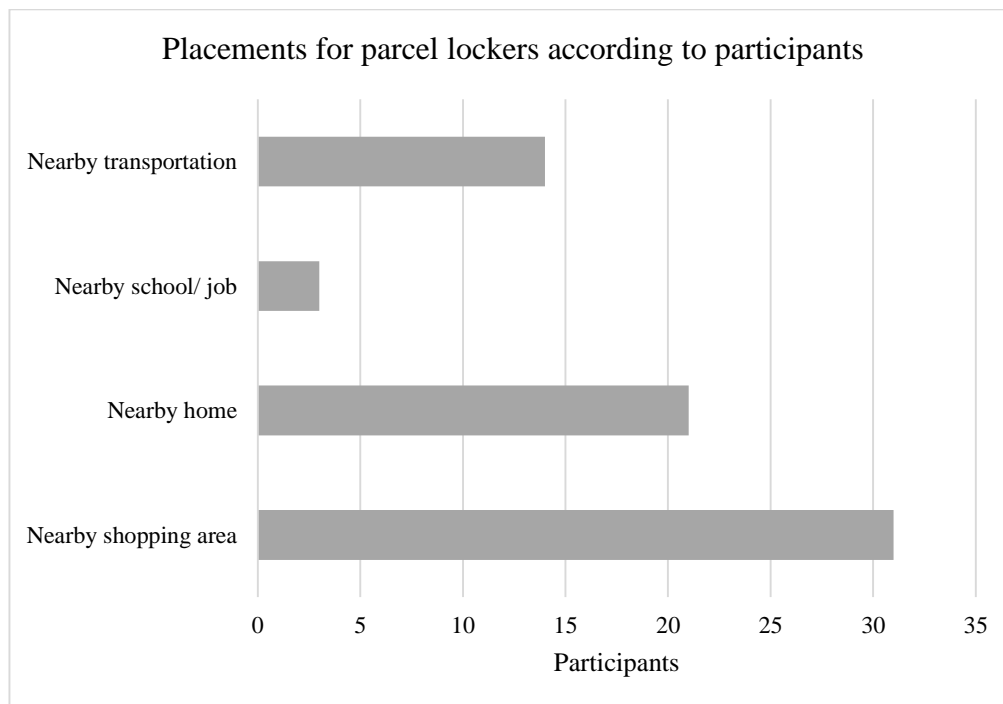
Figure 22 - Placements for parcel lockers according to participants

Figure 22 shows that most people prefer to have their parcel lockers placed near to a store and secondly near to their home. This is almost how it is today in Sweden regarding postal agents; people collect their parcels in a supermarket/store which should be close to your home address.

A majority of participants (32 participants) stated that they would like the placement of the parcel locker to be nearby a shopping area. Ten of those participants saw it as a benefit that the locker was placed in or near by a grocery store. In that way they could do errands and at the same time collect their parcels. Five participants (8 %) saw this as a drawback. One mentioned that she "would not be tempted to buy sweets" if the parcel locker was not placed near a store. At her postal agent she has to queue to collect her parcel at a kiosk, which sells and tempts with different sweets. Four participants (7 %) mentioned that they did not want to wait for the cashier to come to the specific postal agent desk.

Concerning if parcel lockers should be placed in supermarkets and stores, it was clear that eleven participants (18 %) related to a specific store when they told the interviewers about their postal agent. It depended on for example which Swedish supermarket it was

placed in. One participant pinpointed that there was a big difference between the two stores Hemköp and ICA.

When the researchers asked about how they experienced the postal agents, twelve participants complained about the placement. These participants were annoyed that the postal agents were far away or had been moved further away from their homes. Especially at Östermalm; more than half of those participants were disappointed that their postal agent had been moved to another location.

5.8   Security aspects
The security aspects can be roughly divided into two aspects. The security when the participants use the locker, and the security when the parcel locker is not used. Furthermore, there were three main topics that the consumers wanted to discuss in relation to security; the indoor/outdoor placement, video surveillance, and vandalism.

Eleven participants (18 %) had security as the reason for why they would not use the parcel locker again. When the participants use the locker, they are concerned about people passing behind them when they are facing the locker, and for robbery. They said that they would feel exposed or unsecure if they were about to collect something with high value from the locker. One older woman said that she did not like to withdraw money from the ATM next to the locker in Kista because she felt that this specific aisle in the mall felt dusky. She also felt that it was too close to the exits, so that burglars easily could run away with the money, therefore she would use another aisle further into the mall to withdraw the money.

When the parcel locker is not in use, the participants are worried that some might try to break in to the locker to steal packages or to vandalize it. When the interviewer asked if the locker felt secure, which was done occasionally when the participant had a harder time expressing ideas for improvements, a couple of people reached out and grabbed the locker to see if the locker door felt steady. One man stated, after grabbing the locker, that it should be impossible to break in to, while a young man did the same thing but stated the opposite; "A crowbar seems to be enough to break in.".

5.8.1   Indoor/Outdoor placement
When placing the lockers there has to be a balance between placing them to seclude, to avoid it becoming too desolated, and placing them where there are too much people in motion.

13 participants (22 %) mentioned themselves that they were more in favor of placing the locker indoors than outdoors, mainly because of safety reasons. The reasons the participants prefer the indoor placement are because of for example less risk for thieves, that there are security guards nearby, and that the place where the locker is placed is locked at night. Four participants (three of them were participants in Kista Galleria) suggested that the locker could be placed in a space similar to what are available for some ATMs; they are open around the clock but is still indoors. The majority of the

participants whom explained that they wanted a solution like the "ATM-room" where in Kista. It is still unclear why the response and suggestions of this feature was just in Kista but it could be that they have that ATM-function in their neighborhood and therefore suggests it. One participant had a similar suggestion, which was to place the locker near other high-security buildings like banks.

A couple of participants said that if the locker was to be placed outdoors, they would prefer if it were strengthened. One participant stated that the locker doors would not hold after a period of usage. He suggested that a bigger investment for steadier locker doors in an initial state should pay off in the long run. One participant asked if the locker had an alarm that was triggered when someone tries to break in.

5.8.2 Video surveillance

Five participants mentioned a need and a solution for security with video surveillance. They asked if there was a camera installed in the locker, or if this was a possibility. One even looked around and spotted a camera nearby, that had the locker in sight.

Currently, there are no security cameras installed in the locker. This is due to that it is only a pilot so far, and due to that there has to be permits in place. The consumer asking for it desires cameras especially if the lockers were to be placed outdoors.

5.8.3 Vandalism

Five participants (8 %) also mentioned the risk of vandalism. A young couple asked what to do if the whole locker was broken, if even the screen had been destroyed. Three other women, independently of each other, expressed their concern regarding the violence of today's youths and that they may destroy parcel lockers for no reason, therefore they did not want a parcel locker placed outdoors.

5.9 Unawareness

One barrier for using the parcel locker is the consumer unawareness. Only four participants out of 60, knew what a parcel locker was, see Figure 23. The interviews showed that 34 participants (57 %) did not know what a parcel locker was, while 18 participants (30 %) stated that they have seen the lockers but still did not known what it was or what it was used for, see Figure 23.

Have you heard of the parcel locker?
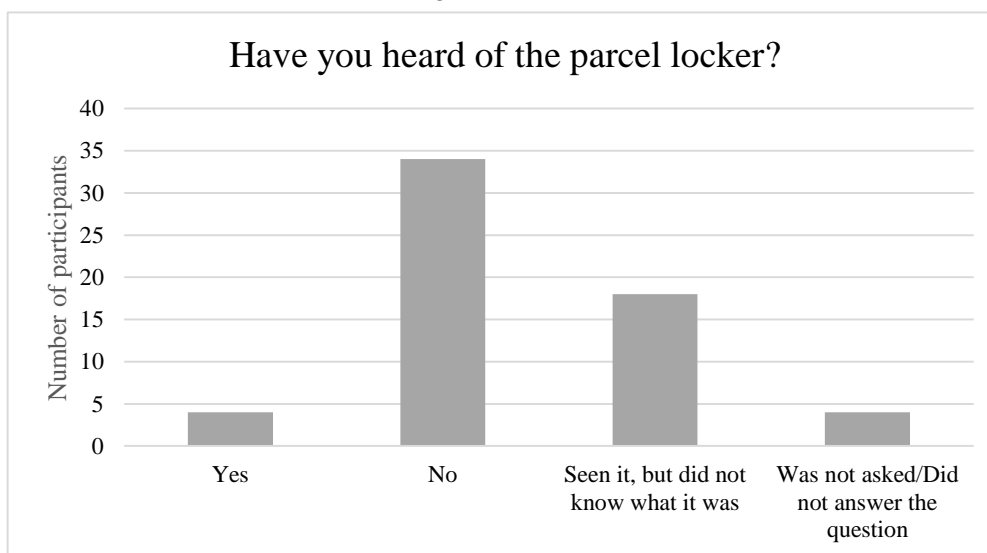
Figure 23 - Parcel locker unawareness

One participant suggested that PostNord should send out advertising about the lockers to the people living near the lockers, to make people aware of that they actually exists and how they can be used. He said that he passed by this locker many times when he went grocery shopping, but never knew how it was used and to what it was used for. Four participants expressed that the reason why they would not use it was because they did not know it existed.

5.10 E-retailers

Participants had questions about things that were more connected to the E-retailers. Two of the participants mentioned that they did not like that if you order online, you pay before you see the items that you bought; "If I buy something and get home and it doesn't fit, then I have already paid for it. This doesn't feel safe". Five of the participants were also concerned about not being able to feel the product before deciding on buying it. They felt insecure by this fact, and would rather go to a physical store. A couple of participants mentioned the freight costs, while others asked about a specific e-retailer and how they as a consumer would be able to use the parcel locker next time, e.g. "Next time I order my coffee, how do I get it to this machine?".

When it comes to the online shopping, four participants explained that they find the return process as an annoying extra step, which creates a risk, is time consuming, and costly, and therefore do not want to order online.

5.11 Other distribution channels - Parcel locker vs. Postal agent

The opening hours, accessibility, and personal service are subjects that the participants consider when using postal agents for collecting and returning parcels. The consumers need to see further gains to make an effort to learn something new to use the parcel lockers, otherwise they will continue with going to postal agents.

A number of participants had the perception that the postal agents would have more storage capacity and that the delivery time would be shorter when using the parcel lockers. Another question that four participants asked was "how long can the parcel be left in the parcel locker before it is sent back to the e-retailer?".

5.11.1 Participants' confusion regarding the postal distribution operators

The participants were asked to describe their thoughts of the postal agents and compare them to the parcel lockers. 25 participants (42 %) expressed that they were content or found the postal agents "okay". 24 participants (40 %) had complaints, often towards placement of their postal agents, queues, opening hours or personal service. The rest did not have an opinion, which was mostly because they had never gone to a postal agent. One participant was very pleased, and said "I have always got the right parcel at the right time with fast deliveries to the postal agent". But there were others that sometimes did not know which postal agent to go to when collecting their parcel. Different e-retailers use different agents, which turned out to be a problem because this was not always stated on the advice of delivery that was given to the consumer. One participant said that she felt this uncertainty sometimes when she wanted to return a parcel as well, because she did not know which agent to go to.

5.11.2 Opening hours

Ten participants (17 %) compared the opening hours between the postal agent and the parcel locker. Those participants that mentioned opening hours have either mentioned or complained about that the postal agents has narrow opening hours, or have expectations or thoughts that the parcel locker will lead to extended opening hours. One participant stated that he did not sleep, so he wanted the opportunity to collect and return parcels around the clock.

5.11.3 Queues

The queuing is a topic that half of the participants brought to light and wanted to discuss, without researchers asking any direct question about it. 14 of the participants (23 %) in the experiment agreed on that using the parcel locker would result in shorter waiting time and queues when collecting or returning a parcel. Nine of them did not have any suggestions why it would decrease the queuing time. The remaining five participants explained that at agents they have to queue with people whom are not doing any postal matter, but instead are buying hot dogs or lottery tickets, which can be

annoying for the consumers whom only wants to collect their parcel. Three participants expressed that it is time consuming to have to shout out for help at the agents if the cashier is occupied with other services.

The preconception of the parcel locker being faster than collecting or returning at a postal agent could be because of other SSTs, which the consumer experience faster, like self-checkouts at supermarket and airports. It could also be the overall preconception that new technology is faster. After trying the parcel locker, the participants had the perception that the parcel locker would be faster and have less queues than the postal agents.

5.11.4   Personal service

17 participants (28 %) liked the quickness of the procedure of the parcel locker, while others were frightened of its impact on human contact and service. One participant states that the biggest difference between the parcel locker and other alternatives is the fact that you do everything yourself, the lack of personal interaction.

Ten participants (17 %) mentioned that they enjoyed the personal service and the interaction with the personnel at the agents, and one felt that the locker is boring and cold. They appreciate the help they can get if something goes wrong or if something is wrong with the parcel. They find that they can get help with the return label, if a parcel is broken, plastic bags, taping the bag etc. Others expressed the loneliness and own responsibility. One mother stated "I do not want this future for my children" and was referring to robots and non-human procedures in one's life. She explained that she as a social person likes interaction and the only good thing with a parcel locker would be for those people who do not want any human interaction in their life.

17 participants (28 %) asked about scenarios, for example what would they do if something goes wrong (5 participants), what happens if the parcel is broken, or if the parcel can be stolen (4 participants). Other scenarios were if you could send a parcel to a friend or family member with the parcel locker (2 participants) or what would happen if the locker were full (3 participants). It was observed that the responsibility they felt if the self-service technology procedure failed was unpleasant.

Three participants associated postal agents with bad personal service. They had experienced unpleasant staff and would prefer the parcel locker since they then collect and return their parcel on "their own terms". One younger participant also mention that he does not have to interrupt what he is doing, such as listening to music or talk on the phone, to pick up or return a parcel. One participant experienced that the parcel locker would improve the service rate for him, since he would not have to worry about clumsy stand-in personnel at the agents.

5.12 Other distribution channels - Parcel locker vs. Home delivery

There was an additional delivery service to postal agents, home delivery, which were discussed during the interviews. One participant stated "Never home delivery!", and an

additional four participants (7 %) said that they have bad experiences with home deliveries. The participants mention that the problems with the home deliveries are for example that the chauffeur does not call to ask for the entry code to the door and therefore fails to deliver the parcel, or that they are bad at being on time. Two participants (3 %) exclaims that it is not on their conditions; they do not want to adjust to being home at a specific time, but would rather collect it themselves if they can chose a specific time. They explain that today when people work they cannot expect one to be home all day just to receive a parcel.

When the participants were asked how they consider different delivery methods many ranked postal agents and parcel lockers equally while they would never choose home delivery if it was not for a heavy parcel that they cannot collect themselves. One younger participant mentioned that she likes home deliveries of heavier parcels because she does not have a car. The weight aspect was the most frequent answer (5 participants, 8 %), in terms of when the participants would choose home delivery. As long as it was not too heavy they prefer to collect it themselves. A 300 kg bed and a washing- and dishing machine were examples of things people had had delivered to their door.

An older participant explained that she and some of her friends are afraid to open the door due to for example burglars and thieves, and because of this do not prefer home deliveries. While a retired couple said that they prefer home delivery and that nowadays they can wait at home compared to others who work.

The ranking of delivery options showed that the power over your time spent were more important than the convenience of not have to go and collect the parcel yourself. The ranking of home delivery versus going to collect the parcel oneself, shows that the Swedes in this interview are used to collect at agents. They expressed that they want to continue to collect parcels at agents or at parcel lockers as long as home delivery is unreliable and the delivery time-window is unacceptable long. The consumer would choose home delivery if it was more on their conditions in terms of delivery time. It is clear that this process is not customized for the final consumer since all consumers except from retired people, whom also explain that they out of few can stay home to collect their parcel and delivery.

5.13 Improvement suggestions from the participants

When the participants were asked what could be changed or how they would describe the perfect parcel locker, they mentioned functions and configurations that could be added, removed or changed.

5.13.1 Sounds

Regarding sounds from the parcel lockers the opinions were divided. Two people asked for voices who guided the consumer through the collecting and returning process; a voice that tells you exactly what to do. Two participants referred to that people with bad sight need this function in order to be able to use the parcel locker. One man told us that his wife has bad sight and would need a voice, instead of reading the screen.

While one participant praised that it was good without voices compared to supermarkets' self-scanners, which they found annoying.

Two participants asked for noises only for some procedures, like a beeping sound when a slot opened or if one forgot to close the locker after using it. Today, the locker door makes a clicking sound when it opens, but it was observed that this could be hard to hear, especially if the surrounding had a high level of noise. When it came to a noise for the closing process, this should be considered since open lockers can be seen as a dangerous setting, e.g. people walk into the locker, unwanted things can be put into the locker and even children can climb into the big sized lockers (large and extra-large). One participant also asked for an alarm if someone was trying to break in to the locker.

5.13.2   Service phone
A woman explained that she was from Taiwan and told us that there they have phones to use at the parcel lockers for customer service if the locker or screen is broken. She explained that it could be a good point in terms of service and safety, since consumer service should not be dependent on technical failure.

5.13.3   Plastic bag machine
A feature a young man asked for was a plastic bag machine. If you want to return a parcel you get new plastic bag to place your item in as well as a bag to carry the parcels you collect. He explained how hard it would be for him to collect several small packages and carry them home, especially in Sweden where the weather with rain is common. One woman asked for a similar solution; empty cartons being available at the parcel locker, so one could ship back items you want to return in these cartons.

5.13.4   C2C function
There were three participants who wanted to send and receive personal packages. This can be seen as a C2C-function. One of the participants immediately added after this idea "then a scale is needed, I wonder how you would pay?". Participants that asked for these extra features explained that they had relatives abroad and would like an easier and cheaper way of sending small parcels. Two participants that never shopped online sent packages regularly to family members outside of Sweden, and saw a way of using this parcel locker without being an e-consumer.

5.13.5   Drive through function
One participant, who worked as a driver, requested parcel lockers close to parking lots. He wanted to extend it to a drive through. He was joking, but on the other hand he really found it to be a good idea for him to collect a parcel from his car, since he is driving every time he is working. The same participant wished for the opportunity to identify your parcel by scanning your driving license. A driver always brings their license so for those people it would not be inconvenient to bring it, according to the participant.

5.13.6 Additional languages

Another suggestion from a participant was to be able to select more languages on the screen (today it is only provided in Swedish and English). He explained that in Kista there are many people with different nationalities. The researcher experienced this at all locations, people not understanding Swedish or English.

5.13.7 Color

When questioned about the design of the locker as well as "The perfect parcel locker", five participants (8 %) first thought of the color. The opinions regarding the color were diverse but only one participant really liked the color. "The color is clean, I'm glad you don't combine yellow and blue". This participant explained that blue and yellow is not a good combination, especially now in Sweden when there is an increasing racism in the Swedish society. She continued with expressing "A yellow color is also a sign for warning, in combination with blue it is double trouble". Therefore this participant appreciated PostNord's new colors in light blue and white. While other participants asked for yellow on the locker, since they relate yellow to the Swedish postal service. One woman that wished for a yellow locker explained that the first time she saw the locker she did not connect it to the Swedish post at all. At first she thought it was a modern coffee machine and her second guess was a safety box.

When people explain their ideas about the parcel locker color, they related it more to other companies like airlines, the public transport in Stockholm (SL), or hospitals. One participant exclaimed, "I love colors! Bright colors!" and then she pointed at the locker and explained how PostNord's color reminds her of airplanes or hospitals, and described that she was not content with the color. An older lady exclaimed, "It is deadly ugly" when referring to the color.

5.13.8 Capacity

Participants expressed that in a future state the lockers would be frequently used. Therefore, more screens were required as well as an extension of the number of locker slots, to increase the capacity as well as the efficiency. The ones who wanted more screens (3 participants) explained how they see people being able to use the locker at the same time and therefore reduce risk of queues. Others who wanted more and bigger lockers (3 participants) explained that the popularity of e-commerce is growing. One explained her worries about storage capacity in comparison to agents. When they questioned why there were so few slots, it was explained by the researchers that the lockers could be build out and extended. One man asked for more different slot size alternatives to choose between.

5.13.9 Sign

A young woman asked for a big sign above the locker, she thought the text on the locker explaining its purpose was not enough. She said that she did not know what the locker was used for, and said that the sign would answer this question for her.

5.14 Summary

Regarding the participants, their online habits were quite similar and did not depend on age. When it came to gender, the men had been shopping more online but it was not that big of a difference. 82 % of the participants had the experience of shopping online. The general idea, stated by more than 75 % of the participants, was that the parcel locker was easy to use. The problems encountered in the collect and return process were choosing the right slot size, opening and closing of the locker slots, and the pin- and barcodes.

Reasons for using the locker were the fast process and the perception that it would lead to less queuing time. The participants found the user interface easy to understand. Some liked the fact that it was an unmanned service, while others were worried about losing the personal contact and the help you can get from the cashiers at the postal agents. A big barrier was the unawareness; only 7 % knew what a parcel locker was, 57 % had never heard of it or seen it, while others had seen it but did not know what it was. Another barrier was the security of the locker. The participants also questioned how they would get their parcel to the locker. Regarding placement, most participants wished for a parcel locker nearby a shopping area, while other examples were: near home, job/school or transportation.

The participants had their own improvement suggestions. Concerning functions there were a wish for sounds, a service phone, a plastic bag machine, a C2C function, a drive-through and additional languages to choose from. Regarding design, other colors, more capacity, and clearer signs were suggested.

6 Results & Discussion

This chapter puts the experimental findings in relation to the Frame of Reference, and presents specifications based on these. Furthermore, different business models are applied to the findings both to summarize them and to put them in a broader perspective, which will be helpful for PostNord in their continuous work.

Figure 24 explains the structure of chapter 6, which aims to answer the two research questions as well as further discuss the topics from chapter 5. Chapter 6 consists of four main parts; Synthesis from the experiment, Public procurement specifications, Parcel locker SWOT according to the participants, and Positioning the experimental findings.

Synthesis from the experiment

Software
• Sounds
• Written instructions
• Comfort zone
• Capacity
• Using SSTs

Hardware
• Speakers
• Color
• Video surveillance
• Plastic bag machine
• Payment function & Scale
• Service phone
• Drive through
• Sign

Placement
• Indoor/outdoor
• Store perception

E-commerce
• Uncertainty
• Unawareness
• Return process

Public procurement specifications

Software

Hardware

Parcel locker SWOT according to the participants

Strengths

Weaknesses

Opportunities

Threats

Positioning the experimental findings

Osterwalder business model

Porter's five forces framework

Figure 24 - Overview of results

The first part, section 6.1, consists of synthesis from the experiment, built upon the results from chapter 5 in combination with a frame of reference linking. To be able to summarize and discuss all the 60 participants' ideas relevant to PostNord, the synthesis was build up with four main subjects: Software, Hardware, Placement and E-commerce.

The second part in Figure 24, presented in section 6.2, has the main purpose to answer the second research question, *How does the consumer evaluation influence specifications set for future public procurement processes for parcel lockers?*. Participants' suggestions regarding the parcel locker configuration was derived into specifications, divided into software and hardware specifications, see Figure 25, which could be used in PostNord's next public procurement specifications.

Suggestions from consumers	**Actors involved**	**Recommendations**
Software Sounds Written instructions Comfort zone Capacity Using SSTs **Hardware** Speakers Color Video surveillance Plastic bag machine Payment function & Scale Service phone Drive through Sign	Suppliers	**Public procurement specifications**
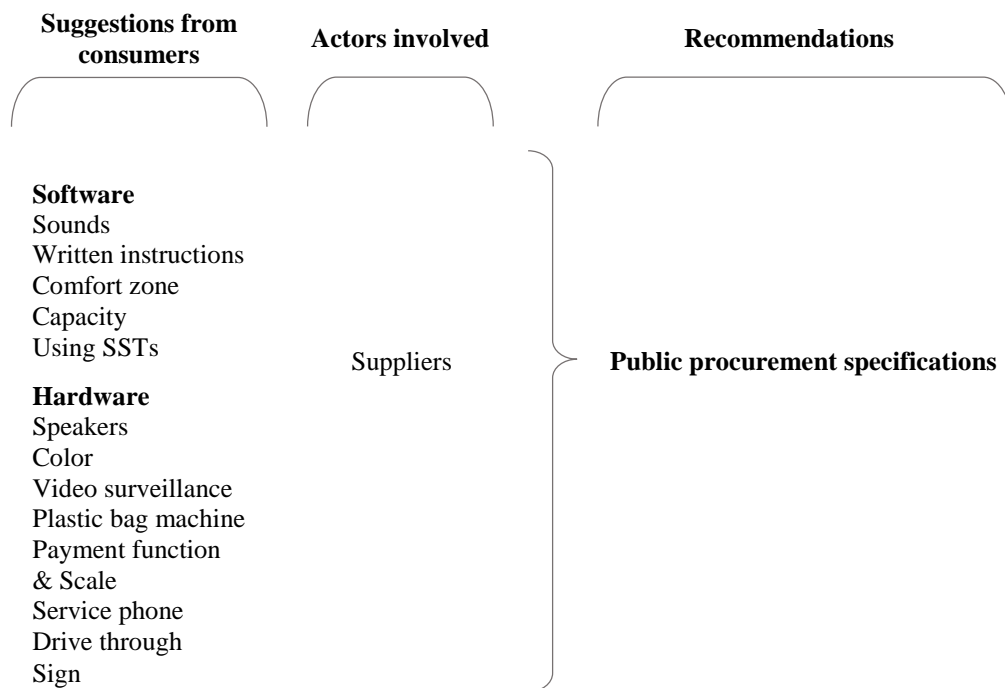
Figure 25 – Parcel locker configuration derived into specifications

The third part, in Figure 24 and section 6.3, consists of a SWOT-analysis with the aim to highlight the main consumer aspects of the parcel locker into key issues for PostNord. Furthermore, the SWOT-analysis was conducted to summarize chapter 5 and concretizes the 60 participants' experiences in the experiment (research question 1: *How does the consumer experience the parcel locker?*).

The fourth part in Figure 24 consists of business models that put the consumer evaluation into a broader perspective, with the objective of positioning the result for

PostNord in a more general context. This part was done to see and speculate on how the parcel locker would fit PostNord's business model in an eventual implementation. These business models do not contribute to answering the two research questions, but are of importance for the company. The Osterwalder business model and the Porter framework can be found in Appendix 13 and 14 respectively.

6.1 Synthesis from the experiment

The consumer experiences were divided into four main parts; software, hardware, placement and e-commerce. The four different parts affect actors that PostNord has to work with. Software and hardware functions need to be discussed with the parcel locker supplier, the placement needs to be negotiated with for example storeowners or municipalities, while the e-commerce part requires cooperation with the e-retailers.

6.1.1 Software

Five software aspects were identified and discussed; sounds, written instructions, comfort zone, capacity, and using SSTs. Software is defined as the instructions needed for the computer integrated in the parcel locker.

6.1.1.1 Sounds

One important factor for additional sounds from the parcel locker was to consider people with bad sight. For them, another way of receiving the pin codes would also be considered. Just like the parcel locker asks for comfort zone for people who are unable to reach all lockers, the parcel locker should take people with bad sight into account. Since a lot of people does not like the talking voice all the time, it would be preferable as an additional choice and not as a set standard. Several others, not just those with bad sight, saw the potential of a guiding voice as an improvement of the locker. Another improvement for people with bad sight could be the potential of enlarging the text on the screen, e.g. to be able to type in the pin codes. A beeping sound if the consumer forgets to close the locker, could improve the collect and return process as well.

6.1.1.2 Written instructions

Regarding not closing the slot in the collect process, this could also be avoided with a notification or hint, not just with a sound. This could be done both with a written instruction at the screen (which it is for the time being) and a notification on the locker doors, that kindly asks the consumer to close the locker slot.

Participants were not aware where the locker slot would open. This could be prevented by providing the screen with a "map" that shows which locker slot that opened. A warning of which slot that will open will reduce risk of getting hit as well as blocking some of the locker doors, with for example bags.

To have more languages to choose between is a valued point, since Sweden is a multi-culture country with residents from all over the world. Though, to have both Swedish and English language option will reach out to the majority of the people living in

Sweden, and adding more language options will create more administrative work for PostNord.

6.1.1.3   Comfort zone

PostNord should reevaluate the question regarding the area of the comfort zone. The comfort zone is designed to fit people in wheelchairs. But observations showed that the lower slots are not that convenient and customized for elders. There should be more clear information about the consequences of the answer to the question if you can reach all the locker slots. An idea is to provide a picture of which slots that are a part of the comfort zone.

6.1.1.4   Capacity

PostNord needs to listen to the participants' concerns regarding capacity. It could be to build up a system that makes the consumer know in advanced, before going to the parcel locker, if there will be a free space for their returning parcel (like in multi-storey car parks that have signs that tell you that there are still free spaces, before you drive in). Otherwise a person can go to a parcel locker that is full and therefore will be denied to return the parcel. This will be a dissatisfying experience for the consumer. If this scenario occurs, the consumer should at least be guided to a second place where to return their parcel. This problem would not occur in the same extent at an agent, since the personnel could be more flexible and probably fill the storage even more, even if the agent would be considered overcrowded. Worth mentioning is that Denmark has not encountered the problem with overloaded parcel lockers since the start in 2008, according to Trine Klink Pedersen, Development consultant at PostNord Denmark.

6.1.1.5   Using SSTs

In relation to how consumers work with technology in general, Scherer et al., (p. 184, 2015) presented "the Value-in-Context" with arguments both for SST as well as for personal service channels (Figure 9). These statements were similar to the answers from the interviews in the experiment, e.g. consumers "enjoy doing it themselves". This was an answer participants reasoned several times if they were in favor of the parcel locker. Though Figure 9 also states that personal service will be in favor if the "tasks are equivocal", most participants expressed that the process with the parcel locker was easy, though participants also stated that there was a worry regarding the lack of personal service.

Wang et al. (p.400, 2013) stated that young males, "early adapters", are more likely to use SST. In this experiment it was not shown that a specific group would be more likely to use the parcel locker nor found it better than another group. Though, it could be seen that elder (>70) did not shop online as much, which can indicate that they would not have the need for a parcel locker. Worth mentioning is that only four participants with an age over 70 were interviewed.

The preconception that SST would reduce queues was shown in the experiment. In literature this differs, some states that they are lacking evidence if SSTs has been more

efficient (Kokkinou and Cranage, p.435, 2013). Though, without doubt this depends on the SST and personnel efficiency and capacity. The time saving aspect is one of the incentives to use SST, which was seen in the experiment since many participants mentioned their happiness that the process was quick and easy.

6.1.2 Hardware

Hardware is defined as the physical parts and components of the parcel locker. The following hardware descriptions are built on both functions based directly on the consumers' wishes from the interviews, but also from additional functions and configurations that will be needed to implement in order to fulfill these wishes.

6.1.2.1 Speakers

If sounds are to be implemented in the software, the locker will need speakers integrated in the hardware.

6.1.2.2 Color

It could be of trouble that the PostNord color, light blue, is rather new for the Swedish consumers. In combination with the new parcel locker it is even harder for the consumer to guess what type of machine it is. If the color of PostNord had been used for many years, the consumer would at least know that it is a product belonging to PostNord.

When it comes to colors, PostNord also has to decide whether they should stick to their own color or if they should sell it as advertising space for stakeholders. There is a fine line in this matter; one has to be careful since consumers, e-retailers or the lessor (the company or others providing the placement for the locker) are offended by the commercial. For e-retailers a scenario could be that H&M might not want to send their parcels to a parcel locker that is covered in commercial by one of their competitors. For lessors an example could be that ICA does not want a parcel locker in their store that contains commercial for COOP, another grocery store. There is a balance for PostNord to consider; to get extra revenue or create sub optimization because of unwanted arguments with consumers and business partners.

6.1.2.3 Video Surveillance

Security cameras would be desirable if the lockers are further implemented, because the participants feel more secure if there is some kind of surveillance. The security aspect is of importance since it seems to be one of the main arguments for not using the locker again. Video surveillance could be a solution to decrease consumers' anxiety and can combat for example theft, burglary and vandalism.

6.1.2.4 Plastic bag machine

The idea with providing bags to carry your collected parcels is innovative, but not practical from PostNord's point of view. A plastic bag machine would imply that the parcel lockers has to be equipped with a payment function, that the software has to be updated, and that regular maintenance regarding replenishment of bags has to be done. The request for bags to carry your parcels may imply that the parcels provided by the

e-retailers could be more ergonomically designed (although, handles on the parcels are already provided by some e-retailers).

6.1.2.5 Payment function & Scale

There are several obstacles with the idea of a plastic bag machine; additional features that would have to be added to the lockers are scales and a payment function. The parcels have a maximum weight limit of 20 kg, and the consumers have to be able to pay the freight cost. The payment function will also come in handy if PostNord would like to provide a C2C-service at parcel lockers. PostNord would extend the use of the machine, and users that are not e-consumers would also be able to use the parcel locker for other errands like sending parcels to family and friends.

The payment function is an aspect that has already been discussed at PostNord, but they have decided that for the moment this is a service that only the postal agents will provide. The parcel locker cannot replace the agents, since the agents have additional services that PostNord has to provide to the Swedish consumers, for example cash on delivery (C.O.D), which means that you pay when you collect your parcel instead of in advance.

6.1.2.6 Service phone

The idea about a service phone is of interest, but there is a great risk that this phone will be used for the wrong purpose, for example kids making prank calls. To have easy access to a service number you can call if you encounter any problems is important. Currently, you have to press a question mark on the screen, where there is general information and a service number included, but this is not clear enough. A couple of the lockers also had a small sticker with the number next to the screen, but not the locker at which the woman who mentioned this idea was interviewed. This sticker should be on all lockers, and is preferable if the whole screen is shut down. To have access to the service number in different ways is preferable to avoid that the user is feeling omitted when trouble or technical breakdowns occur.

6.1.2.7 Drive-through

The drive-through service was an innovative idea, although a drive through would be hard to implement with today's technologies for parcel lockers. The lockers would have to be completely re-designed to meet this requirement. But to meet the participant's wish, which probably is to have the parcel locker close to his car for loading, the parcel locker could be placed at parking lots or car parks. These kinds of solution are already available in other countries.

6.1.2.8 Signs

It is a good idea to make the purpose of the locker more clearly to the consumer, by adding more or bigger signs. But one thing to consider is the risk of vandalism. When the interviewers got to Kista, there were people that had ripped the information posters that were hanging at each side of the locker. Someone had also made scribbles on these posters. This does not reflect well on PostNord. So far, no one has scratched or

scribbled on the metal, so the things that are ruined are more or less easily replaced. Signs could also be preferable due to that few people were aware of the PostNord's color. Therefore, clear signs that explain that this machine belongs to PostNord could make future users consider using it when they pass by.

6.1.3 Placement

The need of recognition can be a reason for why the consumers have a hard time of changing their pattern of where to collect and return parcels. Since as consumers, we are used to our habits, it can be an explanation why participants chose the options "Supermarkets" and "Close to home" as the most popular alternatives of placement from the participants, see results in Figure 22. It was introduced in the first step in Armstrong's Buyer decision process (p.157, 2012), that in term of consumer behavior, the consumer has a need of recognition. This need of recognition is of interest to discuss in terms of placement of parcel locker for Swedish consumers.

6.1.3.1 Indoor/Outdoor

The interviews with participants clearly showed that the ones who had an opinion regarding outdoor or indoor placement, the indoor placement was preferred. 22 % mentioned it without being asked. The participants discussed the placement in relation to safety and convenience and the researcher did not have to ask if it should be placed out- or indoors, they came to that conclusion themselves by answering other questions.

If the parcel locker is placed in a mall the opening hours normally exceeds the postal agents'. This would also be the case if the placement were in a grocery store. Even if the postal agents often are located in these stores as well, they often have more narrow opening hours than the rest of the store. A way for the consumers to be able to collect and return their parcels whenever they want is to place the parcel locker outdoors.

PostNord should focus on placing the lockers indoors, or at ATM-room solutions, to satisfy the consumers regarding the answers from participants in this experiment. Furthermore, an indoor placement is usually a cheaper investment (according to Johan Littmarck, Product Manager at PostNord). Though one have to consider the trade-off of 24-hour access, which is rarely the case for indoor placement.

6.1.3.2 Store perception

An additional factor to consider is if the lockers were to be placed in a store; the consumers' preconceptions about this specific store will also influence the relationship to PostNord. The upside is that PostNord gives the consumers the possibility of personal contact and that the store can provide in terms of service, like cleaning around the locker, and open/lock the entrances. If parcel lockers are placed in stores, PostNord has to be aware that for some Swedish consumers, their perception of which store is of importance.

6.1.3.3 Distribution

In literature last mile distribution has a trade-off in terms of efficiency and consumer convenience. For PostNord this could be letting the end consumer choose home

delivery, postal agents or parcel lockers, or not let the consumers chose and deliver to the parcel lockers directly to avoid unattended home deliveries. For now, the parcel locker in Sweden is seen as an alternative for the consumer, but PostNord Sweden should learn through the Danes on how to optimize last mile distribution with help from a parcel locker network. A good way for PostNord to use the parcel locker in Sweden would be to fill up the gaps on the map where no postal agents are found, e.g. Östermalm. Early conclusions, both from pilot statistics (Figure 13) and from interviews with participants, show that it would serve its purpose for PostNord since participants require shorter way to collect and return their parcel, which creates a need for the parcel locker. As seen in chapter 4, the parcel locker at Östermalm is more frequently used than the other three parcel lockers. It was highlighted during interviews that there is a lack of postal agents in the area near the Östermalm placement, which is not the case for the other locations. This can explain the deviant result.

Gevaers, et al., (p.5, 2010) present five different types of delivery methods, in Sweden there are only three at the moment: collection points (postal agents), attended home deliveries (consumers being home to sign) and unattended deliveries (mail box). While postal offices are disused and parcel lockers are not fully implemented. If the parcel locker should cover or compensate for home delivery, the placement of the lockers must be available and conveniently put, to not let the consumers down. The answers regarding home delivery from the consumers, is that most are not happy regarding the service, therefore parcel locker solution would be of interest for Sweden too. Though the parcel locker cannot replace home delivery when in it comes to heavy parcels, even if most lockers can cope 20-25 kg, this weight restriction might be too high for some consumers. If parcel lockers should replace home delivery to some extent, this matter needs to be evaluated more in terms of consumer service.

6.1.4   E-commerce
Four e-commerce aspects were identified and discussed; shopping habits, unawareness, uncertainty, and the return process.

Salomon et al. (p.4, 2013) stated that purchasing is a three-stage process containing pre-consumption, consumption and post-consumption, with value creation for the consumer at each stage. PostNord is mostly visible at the last stage, when the consumer is about to collect their parcel ordered from the e-retailer. But PostNord could have gains in being more visible in the two first stages as well, by making the consumer aware of the parcel locker as an optional distribution alternative.

6.1.4.1   Shopping habits
If PostNord with the e-retailers' help can get the consumers to see the benefits with using the parcel locker, then they have created a need that the consumers did not know they had. According to Kotler and Gustafsson (p.72, 2003) it is nowadays, in a society that has everything, all about creating new needs.

Regarding the participants existing shopping habits, they mostly bought clothes, but also shoes, books, and media. This support the choice of Zalando as the pilot company, since they are a big e-retailer in fashion, providing clothes, shoes and accessories. The graph in chapter five (Figure 20), also showed that it would be of interest for PostNord to have collaborated with an e-retailer providing books and media, since this also was common to buy online according to the participants.

More e-retailers have to join the concept of parcel lockers, in order to create a wider range for the end consumer. This is an important topic for PostNord to work upon. How they will collaborate with their customer, the e-retailer, and how they together reach the end-consumer.

6.1.4.2   *Unawareness*
The unawareness is something PostNord has to consider and work upon to get the consumer aware of an additional way of collecting and returning their parcel. For this matter, the e-retailer also has to highlight the opportunity for their customers to use the parcel locker instead of postal agents. They cannot increase the number of parcel lockers and the distribution network without having the e-retailer collaborating to make the consumer aware and eager to use the parcel locker.

In the beginning, instructions on how to use the locker and frequently asked questions (FAQs) could be posted at the sides of the locker, to avoid unaware and uncertain consumers. PostNord has to be clear towards the end consumer on how they can use the parcel locker. For example, if it should only be available for e-commerce or if other areas like C2C-offers also should be available for the consumer.

On the locker it clearly states that PostNord operates it, but the consumers are unaware of at which e-retailer they can order to receive the parcel at the lockers. The consumers must be clearly informed about this. Both because they perhaps would want to try it if they only knew about it, or avoid people choosing the parcel locker as their delivery point without knowing about it. This could be stated together with the instructions and FAQs.

Another factor to consider, which was noticed during the interviews, was that the implementation of the parcel locker could lead to even bigger confusion on where you can collect and return your parcel. The consumers could get frustrated if they expect to collect at a postal agent and then has to look for a parcel locker in a mall instead. Of course it could also have the opposite effect, that consumers that get directed to a parcel locker without being aware of it, could get pleasantly surprised and start using it. But the question is if this is a risk PostNord is willing to take.

A challenge for PostNord could be that they are not in direct contact with the end consumer in the buying-moment on the e-retailers website. Because of PostNords' customer relationship and physical flow, discussed in chapter 4, they have to rely on their customer, the e-retailer, to provide the end consumer with the right information and make them aware of the parcel locker as an additional delivery alternative. The

consumers must be aware of which e-retailer that is connected to PostNord in order to use the parcel locker, which is often not clearly shown on the e-retailers' websites. PostNords' branding is something that confuses the consumers, which makes it even harder to connect the parcel locker to the company, e-commerce and certain e-retailers.

Freedom of choice is something that the company Bring (p.4, 2013) claims is the key words for successful e-businesses. PostNord needs to tie as many e-retailers as possible, or at least the right ones, to the parcel locker system for it to be attractive to the consumers. This new service point needs to be visible at the e-retailers website so that the consumer is aware of the possibility and gets the freedom of choice.

Lin and Sun (p.462, 2009) explain consumer satisfaction as the state of how well the consumer's pre-purchase expectations are met with the post-purchase experience. Armstrong (p.18, 2012) states that if the performance exceeds expectation, the consumer will be highly satisfied or delighted, which he claims is a postulate for the consumer's satisfaction to evolve into a sense of loyalty to the company. He also states that a delighted consumer will be more susceptible to continue the relationship with the company. This was the case with the Pilot-consumer that was interviewed. He had chosen the parcel locker as the delivery point by mistake. When he went to collect his parcel at his usual postal agent, they re-directed him to the parcel locker. The consumer could have been disappointed in the confusion of where to collect the parcel and how to carry through the collect and return process. This could have affected his perception towards PostNord and the e-retailer in a disadvantageous way. Fortunately, he thought that the parcel locker was so convenient that he chose to shop online a second time, and chose the parcel locker again (worth mentioning is that this was the second time he ordered online, so he was not an experienced e-consumer).

6.1.4.3 Uncertainty
The participants' uncertainty regarding not seeing and feeling the product they buy online is an opportunity for improvements for both the E-retailers and PostNord. From the E-retailers side, the payment terms need to be completely clear, and the consumer must feel absolutely sure that what they pay will be refunded without hassle if they would like to return the items. Regarding PostNord, they could provide a dedicated place in connection to the locker where the consumers can open their parcels and then return it immediately if they are not fully satisfied with the product. This dedicated place could be as simple as a table or some sort of seating, but could also involve for example a fitting room.

A dysfunctional and unsatisfied delivery to consumers will affect their whole experience of e-commerce. Therefore it is essential for PostNord to deliver in a professional way and satisfy the consumer, since they have the final link in this distribution channel. If this distribution channel does not work, the consumer will re-evaluate their buying behavior, in terms of maybe choose another way of buying and exclude the e-commerce channel in their evaluation of alternatives in the buyer decision process discussed by Armstrong (p.157, 2012).

When it comes to the return process, PostNord should have a tight collaboration with the e-retailer so the return process is easy for the consumer. The label is sent with the parcel, or has to be printed out before the consumer returns their parcel. The returning process is available for all PostNord's MyPack parcels, not just the parcels ordered through the pilot company. How the consumer should know this, which parcels that can or cannot be returned, is something PostNord has to declare thoroughly to make the consumer aware and secure regarding the process.

6.2   Public procurement specifications

The software and hardware functions from section 6.1 were estimated according to implementation potential and the importance for the consumers, see Figure 26. The implementation potential is based on how easy and how much worth it would be for PostNord to add the service. The importance for the consumer is based on both how often it was mentioned and how the researchers observed the significance in the consumers' requirements.
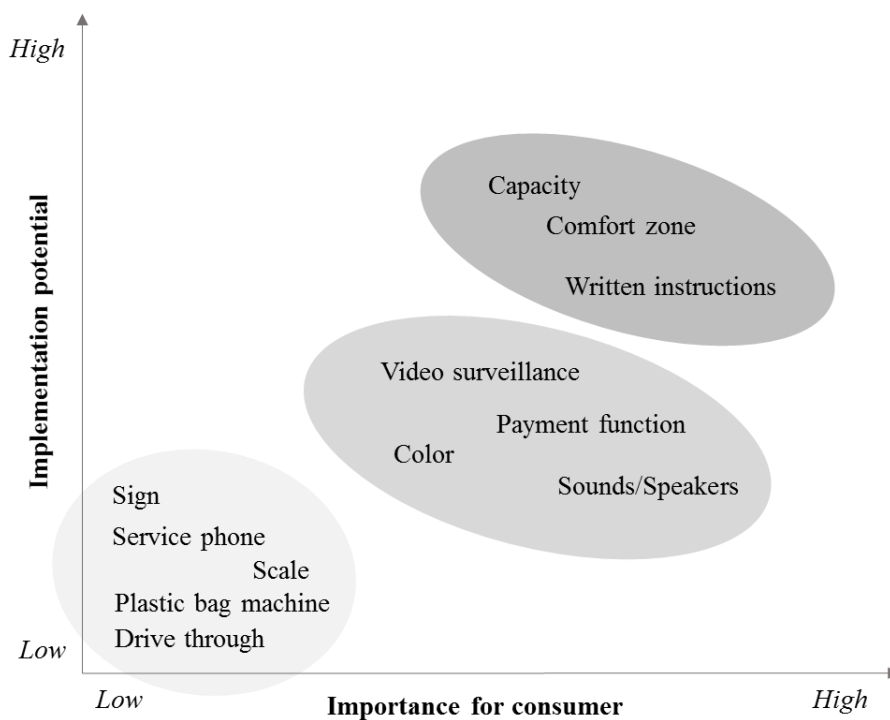
Figure 26 – Specification evaluation and grading

The dark shaded specifications in the top right corner show the functions that should be prioritized in the purchasing specifications. The lighter shaded oval in the middle shows specifications that are important for the consumers but harder to implement for PostNord. The lightest oval in the bottom left corner should not be taken into

consideration, due to low importance for the consumer as well as a somewhat complicated implementation process for PostNord. The recommended specifications can be found in the two sections below, 6.2.1 and 6.2.2, divided into software and hardware specifications. In each section, the specifications are prioritized in terms of which specifications the researcher recommend that PostNord should work upon until the next public procurement process.

6.2.1 Software specifications
1. Comfort zone
2. Written instructions
3. Sounds
4. Capacity

6.2.2 Hardware specifications
1. Video surveillance
2. Payment function
3. Speakers
4. Color

6.3 Parcel locker SWOT according to participants

To be able to summarize the key issues in chapter 5, a SWOT-analysis was conducted by grading the consumer aspects in terms of importance (0-10) and frequent answers (0-10), see Appendix 10. The higher grading, the higher the importance is seen and the more common the answers were. The consumer topics with the grade over 25 (five times five), were gathered in a classic SWOT-analysis, see Figure 27. These are the topics that would be reasonable for PostNord to elaborate on, and are presented one by one in the following four sections. These were also the main points used when developing the recommendations presented in chapter 8.

Strengths	Weaknesses

Strengths
- Ease of use
- User interface
- Queues

Weaknesses
- Technical scenarios
- No personal service

Parcel locker SWOT according to the participants

Opportunities
- Availability (locations where you cannot place a postal agent)
- Opening hours
- Home delivery
- C2C

Threats
- Unawareness
- Security aspects
- Well developed postal agent distribution network

Figure 27 - SWOT-analysis, consumer opinions & behavior

6.3.1 Strengths

6.3.1.1 Ease of use

More than 75 % of the participants found the parcel locker easy to use and perceived the process as quick and convenient. No one in the experiment expressed that the parcel locker processes was difficult. This is important if people want to use the parcel locker again. Therefore, both common score (8) and importance score (9) were set high.

6.3.1.2 User interface

Just like ease of use, the screen was clear and easy to understand. Few people talked about the user interface, but observations showed that the participants understood and worked well with the screen of the parcel locker, therefore the common score was set mid-high (5) and the importance score (7) was set high.

6.3.1.3 Queues

The most frequent answer regarding why parcel locker would be good, was due to that it would be "faster", "quicker" and "have less queues" than postal agents. 23 % of the participants had the perception that it would be faster than the postal agent. It was found as an important topic for the participants since in the experiment, the participants mentioned it themselves and wanted to discuss or elaborate on it with the researchers. It is a "strength" that participant believes that implementation of parcel locker will reduce queues and waiting time. The participants' perception and future believes of reduced queues at parcel lockers, leads to both high common score (8) and importance score (8).

6.3.2 Weaknesses

6.3.2.1 Technical scenarios

Questions from participants were not frequently asked, though the questions researchers received were scenarios how they would do in the future if different problems occurred with the locker. Therefore this topic got a rather low common score (3). This worry of technical problems should PostNord take into consideration, therefore it has a high importance score (9), since it would be a barrier for PostNord to reach these consumers and gain their trust.

6.3.2.2 No personal service

SST is related to technical problems, though personal service is also associated to SSTs. In terms of personal service the Swedish consumers are used to the postal agents and their personnel. This topic could be a "Strength" and a "Weakness" depending on how the consumer has experienced the service at the postal agents. The combination of that participants are content with the agents and their service (42 %), and the participants' complaints of the lack of personal service, gives this topic a rather high Common score (6). The idea that the participants would lose the social and comfort aspects with personal service is something PostNord should listen to and therefore a rather high importance score is set for this topic (8).

6.3.3 Opportunities

6.3.3.1 Availability (locations where you cannot place a postal agent)

The question where the participants want the parcel locker gave different answers. 14 participants wanted it close to public transportation. Here is an opportunity for the parcel locker, in comparison to postal agents, since they can be placed in entrances to subways or train stations etc. The majority, 31 participants wanted it close to their homes. In this matter parcel lockers can also gain opportunity in comparison to postal agents. This topic was given a high importance score (8) due to participants find it annoying if the collection and returning of parcels has to be a detour in their everyday life. Since the question about availability was asked by the researchers to every participant, and answered by 90 % of the participants, the common score was (9).

6.3.3.2 Opening hours

17 % mentioned opening hours themselves when comparing to agents. It is one of the main things that parcel locker can be better at than agents, but it was not that frequently mentioned; common score (4) and importance score (8).

6.3.3.3 Home delivery

Almost all participants that discussed home delivery would chose agents or the parcel locker before home delivery if the parcel was not too heavy. Only one retired couple said that they would prefer home delivery because they can stay home, on the other hand other elderly did not want home delivery due to thieves or burglars. The common score (5) and the importance score (7) are set.

6.3.3.4 C2C

It was not that many that asked for the additional feature of being able to send your own parcels and packages, but the ones who requested it found it very important. The ones who wanted easier ways to send parcels abroad or to other places in Sweden asked for cheaper and easier ways to do this process. Therefore the common ranking (4) was not that high while the importance factor was set high (8).

6.3.4 Threats

6.3.4.1 Unawareness

More than half of the participants had no idea what a parcel locker was. Several had seen the pilot parcel locker but very few, four participants, knew what a parcel locker was. Though few participants mentioned and discussed the unawareness. The consumers must know what a parcel locker is to be able to make the choice to use it, therefore it can be seen as a threat for the parcel locker if the unawareness is high. Therefore the common score is rather low (4), furthermore the importance score is set high (8).

6.3.4.2 Security aspects

The security aspects were mentioned frequently by the participants, often in combination with other themes like location, reasons for not using the parcel locker, video surveillance, to conduct the process independently, and vandalism. The parcel locker must be and feel secure to get people to use it with trust. Therefore both common score (8) as well as the importance score (8) were set high.

6.3.4.3 Well-developed postal agent distribution network

Almost half of the participants (25) expressed that they were pleased with the postal agents. Other participants did not have an opinion since they did not use postal agents, and only three participants found the service unpleasant. If the consumers are content with the agents, the need for parcel lockers will not be as high. The risk for less demand can be seen as a threat for the implementation of parcel lockers in Sweden. If the participants are satisfied with agents, there is no need for parcel lockers and should therefore be seen as the biggest threat for this business. Both common score (9) and importance score (10) were set high.

7 Conclusion

This section concludes the report by answering the research questions and presents a critical reflection on the method that was used.

7.1 How does the consumer experience the parcel locker?

The consumer evaluation, which was an experiment built up with 60 participants, showed that the parcel locker is user friendly. All participants were observed to find the process easy to conduct and no one expressed that the parcel locker procedures were hard to manage. Reasons for using the locker were the fast process and the perception that it would lead to less queuing time. Reasons for not using the locker were the lack of personal service and uncertainty regarding the security aspect.

The consumer experience was mainly positive. Regarding if the consumers would need the parcel locker is harder to answer, it is a novelty on the market and it was difficult for the participant to express ideas on if, how, or why they would use it. The main threat for the parcel locker implementation, in terms of consumer evaluation, is that according to 42 % of the participants in this study, they were satisfied enough with the postal agents to not see the need for new solutions like parcel lockers. Though almost the same amount of participants 40 % had complaints regarding placement of their postal agents or queues at their agents. Furthermore, in terms of placement, the consumers wished for the parcel locker being placed near a store or near home, which is the current placement of postal agents. Though in terms of placement, both statistical analysis from the pilot results as well as results from interviews shows that there are distribution holes in the postal agent network.

Another big challenge is making the consumers aware of this delivery option. Almost all participants, 93 %, were unaware of the parcel locker and how it could be used. It is still unclear for the consumers how and where they can order to get the parcel delivered to the locker.

7.2 How does the consumer evaluation influence specifications set for future public procurement processes for parcel lockers?

Already in the second step in PostNord's public procurement process, specifications are set. Here both software and hardware specifications derived from consumer aspects can be set for upcoming purchasing of parcel lockers. The researchers recommend that in terms of software, PostNord should focus on evaluating the comfort zone, implement a capacity system, improve the written instructions provided on the screen, and implement sounds in terms of spoken instructions and a sound for making the consumer aware of the opening and closing of the locker door.

When it comes to hardware, PostNord should focus on implementing a video surveillance system due to security reasons, together with speakers to provide the sound.

These suggestions are of main importance, and should be considered for the next public procurement. Some of the suggestions may be introduced and altered on the current parcel lockers too, to improve the user experience for the Swedish consumer.

7.3 Reflection on Method

The reflection focus on discussing and critically look upon: the structure of the interview and observation guide, incentives for the participants to join the experiment, the structure of the experimental process, and the structure of the analysis.

7.3.1 Structure of the interview guide and observation

The structure of the Interview guide was open-ended questions. This choice of structure created some difficulties in concluding and summarizing 60 participants' expressions and ideas. It would be easier if some questions were more grading or that participants could only choose from options. This would create a foundation of answers, easier to conclude and express in statistical results. Though PostNord already has the "E-baromenter" that provides similar statistical information of e-commerce each year. This thesis aimed to find personal evaluations of consumers, therefore open-ended questions were found important for the researchers.

The observations could be more informative and specific. Even though there were two researchers, it was hard to write down all observations and at the same time interview the participants. If the interviews were recorded, more focus could have been on the observations. In the beginning it was harder for the researchers to note procedures that the participants did or did not due, e.g. not closing the locker. If fewer interviews were done per day and specific sub-processes were in the observation guide, it would have been documented in more detail.

7.3.2 Incentives for the participants

It was hard for the researchers to estimate how many interviews that could be conducted during the limited time period. It was also hard to get consumers to participate. It would have been easier if the participants knew that they would get a gift or a payment if they joined the study, but this could affect the answers of the participants. To avoid bias, the method was built up without incentives for participants. Although, it could be questioned how much it would actually affect the participants' evaluation of the parcel locker processes.

7.3.3 Structure of the experimental processes

The participants could not read the pin codes themselves, so the researchers had to interfere and help out to read out load or help to type in. This reading problem was unexpected; it was not shown during the test experiment at PostNord's head office. It would be hard to prevent anyway, if the participants had a lot to carry or did not bring reading glasses. Though if the researcher were more prepared for this problem, they could have an action plan on how to act equal for this user, e.g. only read out load, or type in the pin codes, to conduct every study in the same way.

Another problem was that the participants did not close the locker. This could be due to that the participants thought the experiment was over, and the procedure should maybe have been explained better beforehand, to avoid that researcher interfered and asked the participants to take out the parcel and furthermore asked them to close the slot.

Finally, how much the researcher's interaction influenced a positive attitude of the participants is hard to tell. Just because the participant found it easy to use does not mean they will use it again or have a need of a parcel locker.

7.3.4   Structure of the Analysis

The analysis was conducted by code words for different questions and observations to find themes and combine them. Combining different groups of participants could be of interest too, but was not done in this study. The coding patterns sometimes affected the researchers in getting too stuck into specific subjects or themes. This was avoided to read through the Excel data base as well as letting others read the report and critically look through structure and choice of themes.

8 Final Recommendations

This chapter provides final recommendations for PostNord followed by recommendations for further research.

According to the participants the experience of the parcel locker was convenient, but the experiment did not show a real need from the consumers. However, the experiment neither shows a tendency of reluctance towards using the locker. The purpose with this thesis was not to decide if the parcel lockers should be implemented or not, but rather to identify needs and wishes from the consumers. The decision regarding implementation will consider both a calculation of costs as well as an e-retailer evaluation, in addition to the end-consumer evaluation, though this was not conducted in this thesis. Furthermore, a risk analysis of competitors should be looked upon, to understand the future market and what market shares to expect.

The consumers that has been ordering through Zalando to the parcel locker, has been a part of PostNord's pilot. These consumers should be asked to evaluate the process of buying online and order it to the parcel locker. These consumers have done the whole process, from choosing the parcel locker on the e-retailer's webpage to collecting it at one of the parcel locker, and maybe even returned their product with the parcel locker. Their ideas and opinions are of importance for PostNord too, in terms of the Swedish consumer evaluation. During the experiment, the researchers only got the chance to interview one consumer that had conducted this process.

Following recommendations were derived from the consumer experiment, and should be taken into consideration by PostNord:

- Place the lockers indoors – to avoid anxiety concerning the security aspects.
- Create collaborations with e-retailers – to reach a wider target group and their needs.
- Post instructions and frequently asked questions, FAQs, at the lockers – to avoid unawareness and uncertainty.
- Re-evaluate comfort zone limits – there needs to be a decision regarding which group to target. Observations show that elderly had problems reaching the lower slots.
- Evaluate distribution network – for example both interviews and statistics from the pilot show that the parcel locker at Östermalm is popular. There could be several factors why this parcel locker is frequently used, though one reason can be the lack of postal agents in the area. Find similar gaps of postal agents in the network, where the parcel locker really can fulfill a need.
- Improve written instructions – in terms of how to type in the two pin codes, where the slot will open, and explanation of the purpose of the comfort zone.
- Until the next public procurement process – evaluate the need for video surveillance, spoken instructions, and C2C-function. These functions will

demand a big investment and therefore careful considerations in terms of evaluating the actual need from the consumers is required.

8.1 Further research

- With this thesis the researchers hope to have inspired others to continue conducting consumer evaluations through experiments regarding Self-Service Technology for Swedish consumers.
- This study has focused on the end consumer. With a new service point, the last mile distribution network needs to be optimized to fit the parcel locker. Studies on this distribution problem for 3PLs could be of interest to look into.
- It would be of interest not only to have the parcel lockers situated in Stockholm, the capital. Patterns and trends of using the parcel locker in different parts of Sweden would be of interest, since the country is big and the consumers might have diverse ideas of parcel locker and postal service in general depending on geographical influences.
- Also, this thesis has only explored and evaluated the Swedish consumer. A study on the Norwegian and Finish consumers' experiences could also be of interest, since the postal system somewhat differs.
- Another idea is to look into specific consumer groups. There might be special needs and wishes from certain professions or different age groups.

9 References

Agatz, N., Fleischmann, M. and van Nunen, J. (2008). E-fulfillment and multi-channel distribution – A review. *European Journal of Operational Research*, 187(2), pp.339-356.

Armstrong, G. (2012). *Marketing*. Harlow: Pearson.

Bagozzi, R.P. (1992), "The self-regulation of attitudes, intentions, and behavior", Social Psychology Quarterly, Vol. 55 No. 2, pp. 178-204.

Blom, Anna. (2011). Postmodernt. *Svenska Dagbladet* [online] Available at: http://www.svd.se/kultur/postmodernt_5953461.svd [Accessed 26 Jan. 2015].

Boyer, K., Frohlich, M. and Hult, G. (2004). *Extending the supply chain*. New York: American Management Association.

Bring, (2013). *The E-commerce Report 2013*. [online] Available at: http://www.bring.dk/hele-bring/nethandel/tips-og-gode-rad-om-webshop/_attachment/425077?_ts=1416e0aa770 [Accessed 23 Feb. 2015].

Caruana, A. (2002). Service loyalty. European Journal of Marketing, 36(7/8), pp.811-828.

Chaffey, Dave. (2009). *E-business and E-commerce management: Strategy, implementation and practice*. Fourth edition. Edinburgh: Pearson Education Limited.

Collier, J. and Kimes, S. (2012). Only If It Is Convenient: Understanding How Convenience Influences Self-Service Technology Evaluation. Journal of Service Research, 16(1), pp.39-51.

deMarrais, K. (2004). Qualitative interview studies: learning through experience, *Foundations for Research: Methods of Inquiry in Education and the Social Sciences* (pp. 51–68). Mahwah, NJ: Lawrence Erlbaum.

Ehandel. (2014). *PostNord kör igång med Paketautomater i Stockholm* [picture]. Available at: http://www.ehandel.se/PostNord-koer-igaang-med-Paketautomater-i-Stockholm,4408.html, [Accessed 18 May 2015]

Gevaers, R., Van de Voorde, E. and Vanelslander, T. (2010). Characteristics and typology of last-mile logistics from an innovation perspective in an urban context, TRB 90th ANNUAL MEETING pp.2-14.

Gold R., (1958). Roles in Sociological field observations. *Social Forces, 36*, 217-223.

Groth, J. and Dye, R. (1999). Service quality: perceived value, expectations, shortfalls, and bonuses. *Managing Service Quality: An International Journal*, 9(4), pp.274-286.

Heinemann, G. and Schwarzl, C. (2010). *New online retailing*. Wiesbaden: Gabler.

Henriksson Fjeldstad, A. (2014). *Säkrare returer med paketautomater*. [online] Available at: http://www.svt.se/nyheter/regionalt/nordnytt/sakrare-returer-med-paketautomater [Accessed 23 Jan. 2015].

Holmström, J., Ketokivi, M. and Hameri, A. (2009). Bridging Practice and Theory: A Design Science Approach. *Decision Sciences*, 40(1), pp.65-87.

Hsin Chang, H. and Wang, H. (2011). The moderating effect of customer perceived value on online shopping behaviour. *Online Information Review*, 35(3), pp.333-359.

HUI Research, Svensk Digital Handel och PostNord, (2014). *E-barometern helårsrapport 2014*. [online] Hui.se. Available at: http://www.hui.se/statistik-rapporter/index-och-barometrar/e-barometern [Accessed 13 Feb. 2015].

International Post Corporation, (2010). *Secure Electronic Parcel Lockers- Postal Industry Overview*. [online] Available at: http://www.ipc.be/~/media/Documents/PUBLIC/Markets/e-lockers.ashx [Accessed 20 Jan. 2015].

Johnson, G., Whittington, R. and Scholes, K. (2012). *Fundamentals of strategy*. Harlow, England: Financial Times, Prentice Hall.

Jonsson, P. and Mattsson, S. (2005). *Logistik*. Lund: Studentlitteratur. (Book)

Kokkinou, A. and Cranage, D. (2013). Using self-service technology to reduce customer waiting times. *International Journal of Hospitality Management*, 33, pp.435-445.

Kotler, P. and Gustafsson, R. (2003). *Kotlers marknadsföringsguide från A till Ö. S*undbyberg: Pagina/Optimal.

Kull, T., Boyer, K. and Calantone, R. (2007). Last-mile supply chain efficiency: an analysis of learning curves in online ordering. *Int Jrnl of Op & Prod Mnagemnt*, 27(4), pp.409-434.

Kvale, S. (2007). *Doing interviews*. London: SAGE Publications.

Lancioni, R., Schau, H. and Smith, M. (2003). Internet impacts on supply chain management. *Industrial Marketing Management*, 32(3), pp.173-175.

Lin, G. and Sun, C. (2009). Factors influencing satisfaction and loyalty in online shopping: an integrated model. *Online Information Review*, 33(3), pp.458-475.

Merriam, S. (2009). *Qualitative Research- A Guide to Design and Implementation*. San Francisco: Jossey-Bass.

Meuter, M., Ostrom, A., Roundtree, R. and Bitner, M. (2000). Self-Service Technologies: Understanding Customer Satisfaction with Technology-Based Service Encounters. *Journal of Marketing*, 64(3), pp.50-64.

OECD, (2011). *OECD Guide to Measuring the Information Society 2011*. [online] OECD Publishing. Available at: http://browse.oecdbookshop.org/oecd/pdfs/free/9311021e.pdf [Accessed 22 Feb. 2015].

Osterwalder, A., Pigneur, Y. and Clark, T. (n.d.) (2010) *Business model generation*. John Wiley & Sons, Inc., Hoboken, New Jersey.

PostNord, (2012). *Annual Report 2012*. [online] Available at: http://www.postnord.com/arsredovisning2012/sv/PostNord2012-ar-sv.pdf [Accessed 20 Apr. 2015]

PostNord, (2013). *Annual Report 2013*. [online] Available at: http://www.postnord.com/globalassets/global/english/document/reports/annual-reports/2013/postnord-annual-report-2013.pdf [Accessed 23 Feb. 2015].

PostNord, (2014). *E-commerce in the Nordics 2014*. [online] Available at: http://www.postnord.com/globalassets/global/english/document/publications/2014/e-commerce-in-the-nordics-2014.pdf [Accessed 23 Feb. 2015].

PostNord, (2015a). *Om oss.* [online] Available at: http://www.postnord.com/sv/om-oss/ [Accessed 17 May 2015].

PostNord, (2015b). *Postombud.* [online] Available at: http://www.posten.se/sv/Kundservice/Sidor/Postombud.aspx [Accessed 17 May 2015].

PostNord. (2015c). *Paketautomat* [picture] Available at: http://www.posten.se/sv/Kundservice/Sidor/paketautomat.aspx#tab3, [Accessed 3 Feb 2015]

Ritzén, J. (2015). Postens paket flyttar in i trapphuset. *DN*. [online] Available at: http://www.dn.se/sthlm/postens-paket-flyttar-in-i-trapphuset/ [Accessed 1 Apr. 2015].

Salem Khalifa, A. (2004). Customer value: a review of recent literature and an integrative configuration. *Management Decision*, 42(5), pp.645-666.

Scherer, A., Wünderlich, N. and von Wangenheim, F. (2015). The Value of Self-Service: Long-Term Effects of Technology-Based Self-Service Usage on Customer Retention. *MIS Quarterly*, Vol. 39(No. 1), pp. 177-200/March 2015.

Solomon, M., Russell-Bennett, R. and Previte, J. (2013). *Consumer behaviour*. Frenchs Forest, N.S.W.: Pearson Australia.

Stock, J. and Lambert, D. (2001). Strategic logistics management. Boston: McGraw-Hill/Irwin.

TT, (2014). Nya besparingar för PostNord. *Dagens Nyheter.* [online] Available at: http://www.dn.se/ekonomi/nya-besparingar-for-postnord/ [Accessed 20 Jan. 2015].

Wang, C., Harris, J. and Patterson, P. (2013). The Roles of Habit, Self-Efficacy, and Satisfaction in Driving Continued Use of Self-Service Technologies: A Longitudinal Study. *Journal of Service Research*, 16(3), pp.400-414.

Wang, M. and Huarng, A. (2002). An empirical study of internet store customer post-shopping satisfaction. 3, pp.632-638.

Weele, A. (2010). *Purchasing & supply chain management*. Andover: Cengage Learning.

WIK-Consult, (2013). *Main Developments in the Postal Sector (2010-2013)*. [online] Available at: http://ec.europa.eu/internal_market/post/doc/studies/20130821_wik_md2013-final-report_en.pdf [Accessed 22 Jan. 2015].

Yin, R. (1994). *Case study research- Design and Methods*. Third Edition, Thousand Oaks: Sage Publications.

10 Appendix 1 – Introduction to Participants

10.1 In Swedish

Hej,

Vi gör en forskningsstudie om paketautomaternas framtid i Sverige. Skulle du vilja testa denna paketautomat och berätta vad du tyckte?

Du kommer få testa att hämta ut samt returnera ett paket. Vi börjar med några allmänna frågor och efter du testat automaten kommer några korta frågor om hur du tyckte den var att använda. Det tar runt 5 minuter.

Kortare versioner:

- Hej! Vet du vad det här är?
- Hej! Vill du testa paketautomaten?
- Hej! Vill du prova denna och svara på frågor om hur den var att använda?

10.2 In English

Hi,

We are conducting a research regarding the parcel lockers future in Sweden. Would you like to try this parcel locker and tell us what you think?

You will be able to try the collect and returning process. We will start with some overall questions, and afterwards you will be asked some basic questions how you experienced the parcel locker. This will take about 5 minutes.

Shorter versions:

- Hi! Do you know what this is?
- Hi! Do you want to try the parcel locker?
- Hi! Do you want to try this and answer questions about how it was to use?

11 Appendix 2 – Swedish Interview Guide, Experiment-consumers

	<25	25-40	40-55	55-70	>70

Plats:

Tid:

Kön:

1. Har du handlat på nätet?
JA
NEJ

När handlade du sist på nätet?
Vad handlade du då?

_____

2. Vad handlar du på nätet?

☐ Media/ Böcker ☐ Kläder/ Skor ☐ Hemelektronik inkl.
datorer
☐ Smink ☐ Sport/fritid ☐ Heminredning/möbler
Annat:

_____

_____

3. Hur ofta hämtar/returnerar du paket hos ombud?

_____

Hur tycker du detta fungerar?

_____

_____

4. Har du hört talas om Paketautomaterna?
JA
NEJ

5. **Hur tyckte du den var att använda?**

_____

_____

6. **Vad hade kunnat förbättras med paketautomaterna?**

_____

_____

7. **Vad var det bästa med paketautomaten?**

_____

_____

8. **Finns det några anledningar till varför du inte vill använda den igen?**

_____

_____

9. **Var hade du önskat att Paketautomaten var placerad?**

_____

_____

10. **Hur skulle du beskriva den perfekta paketautomaten?**

_____

_____

11. **Vad tycker du är den största skillnaden jämfört med ombud?**

_____

12 Appendix 3 – Swedish Interview Guide, Pilot-consumers

< 25	25-40	40-55	55-70	> 70

Plats:

Tid:

Kön:

1. **Varför valde du att få ditt paket levererat till paketautomaten?**

   _____

   _____

2. **Upplevde du att det var lätt att hitta paketautomaten som alternativ leveranspunkt på hemsidan?**
   JA
   NEJ

3. **Hur ofta handlar du på nätet?**

   _____

4. **Vad handlar du på nätet?**

   _____

   _____

5. **Hur ofta hämtar/returnerar du paket från ombud?**

   _____

   Hur tycker du detta fungerar?

   _____

6. **Hur tyckte du den var att använda?**

   _____

   _____

7. **Vad hade kunnat förbättras med paketautomaterna?**

_____

8. **Vad var det bästa med paketautomaten?**

_____

_____

9. **Varför vill du/vill du inte använda den igen?**

_____

_____

10. **Var hade du önskat att Paketautomaten var placerad?**

_____

11. **Hur skulle du beskriva den perfekta paketautomaten?**

_____

13 Appendix 4 – English Interview Guide, Experiment-consumers

<25	25-40	40-55	55-70	>70

Place:

Time:

Gender:

1. **Have you been shopping online?**
   YES
   NO

   When was your latest buy online?
   What did you buy then?

   _____

2. **What do you buy online?**

   ☐ Media/ Books computers   ☐ Clothes/ Shoes   ☐ Electronics incl.

   ☐ Make up   ☐ Sport/leisure   ☐ Interior /furniture
   Other things:

   _____

   _____

3. **How often do you collect/return a parcel at agents?**

   _____

   How do you experience this?

   _____

   _____

4. **Have you heard of the parcel lockers?**
   YES
   NO

83

5. How did you experience the parcel locker? How was it to use?

_____

_____

6. What could be improved with the parcel locker?

_____

_____

7. What was the best thing with the parcel locker?

_____

_____

8. Are there any reasons for not using it again?

_____

_____

9. Where do you want the parcel locker to be situated?

_____

_____

10. How would you describe the perfect parcel locker?

_____

_____

11. What do you think is the biggest difference compared to the agents?

_____

14 Appendix 5 – English Interview Guide, Pilot-consumers

Place:

<25	25-40	40-55	55-70	>70

Time:

Gender:

1. **Why did you choose to get your parcel delivered to the parcel locker?**

   _____

   _____

2. **Did you experience that it was easy to find the parcel locker as an alternative at the e-commerce site?**
   YES
   NO

3. **How often do you shop online?**

   _____

4. **What do you shop online?**

   _____

   _____

5. **How often do you collect/return parcels at agents?**

   _____

   How do you experience this?

   _____

6. **How did you experience the parcel locker?**

   _____

7. **What could be improved with the parcel locker?**

   _____

   _____

8. **What was the best thing with the parcel locker?**

   _____

   _____

9. **Why would you / would you not use it again?**

   _____

   _____

10. **Where would you want the parcel locker to be situated?**

   _____

11. **How would you describe the perfect parcel locker?**

   _____

15 Appendix 6 – Observation Guide

Static information (for each day):

- Location
- How is space allocated by the locker?
- Date

Variable factors:

- Time
- Surroundings (stressed, calm, crowded, few people…)
- Participants' mood (happy, bad mood, calm, stressed, …)
- Nonverbal behavior
- Informal and unplanned activities (forgets to close the locker)
- "What does *not* happen" – especially if it ought to have happened
- Direct quotations or at least the substance of what people said

Our own behaviors:

- How is our role affecting the scene we are observing?
- What do we say and do?
- What thoughts are we having about what is going on?

16 Appendix 7 – The Collect Process

1. Receive PINs by SMS and e-mail.

The SMS, which the consumer receives when the parcel is available in the parcel locker can be seen in the picture above. Translation of SMS: "Your parcel from Zalando c/o PostNord can be collect in the parcel locker in Liljeholmen, Galleria Liljeholmstorget. Level 1. Type Pin code 1: 9785, Pin code 2: 2541 when you collect your parcel. Best Regards, PostNord"
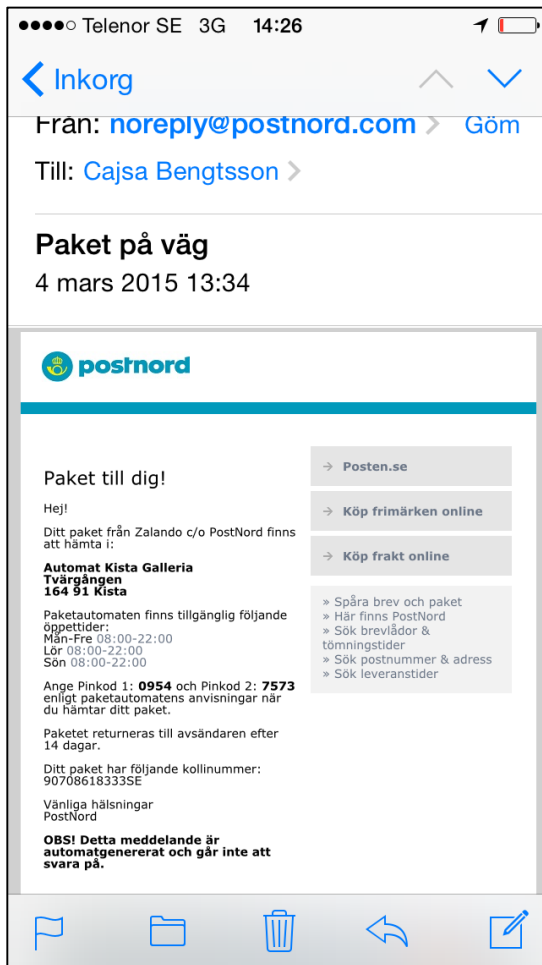
The e-mail, which the consumer receives when the parcel is available in the parcel locker.

2. Click "Pick up parcels" on the screen.

3. Enter PIN1, click continue.
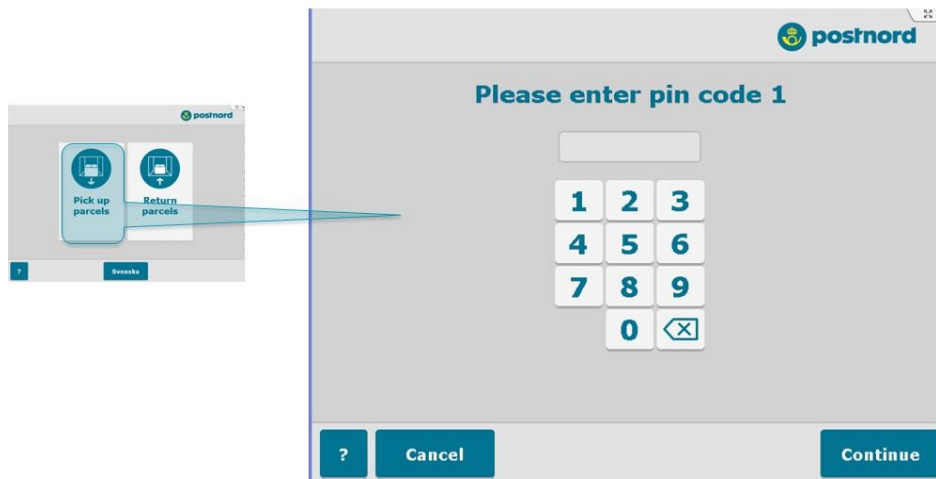
4. Enter PIN2, click continue.
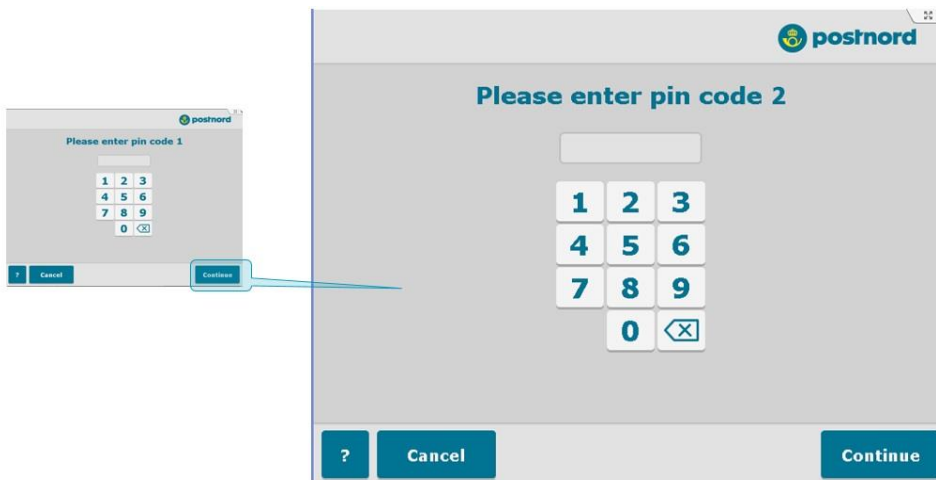
5. Locker door containing the parcel opens.
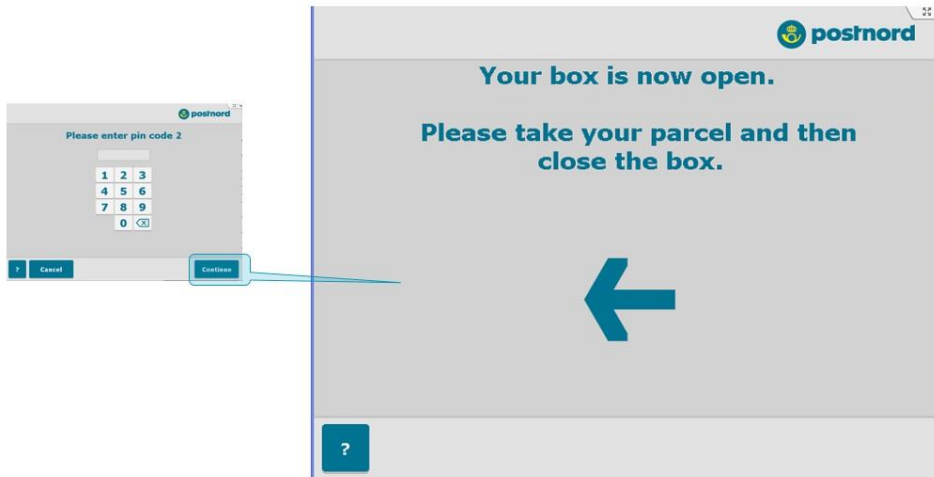
17 Appendix 8 – The Return Process

1. Attach label on parcel.
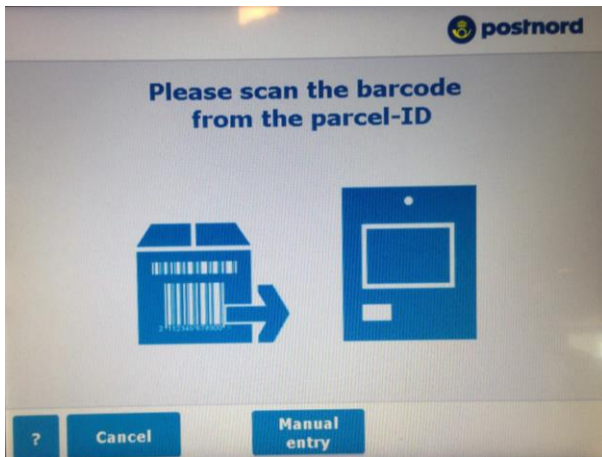
2. Choose "Return parcels" on the screen.

3. Scan the label.

4. Choose suitable locker slot size (S, M, L, XL).
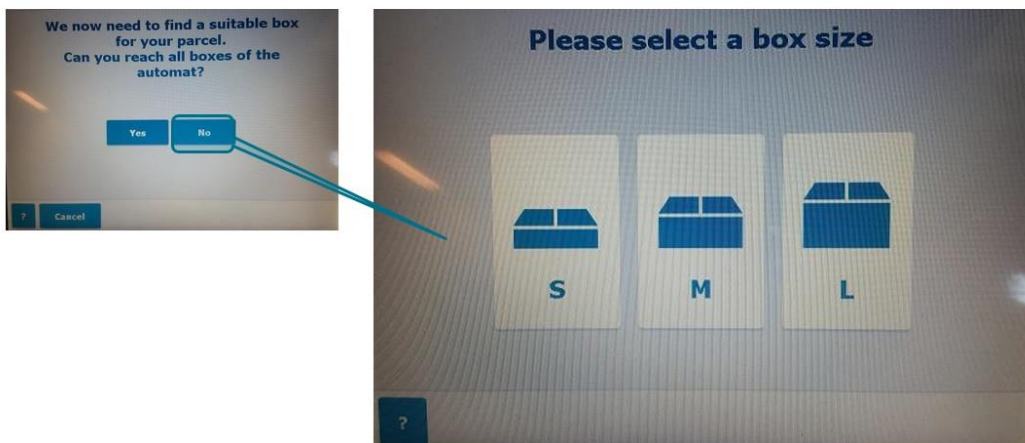
5. Change size.
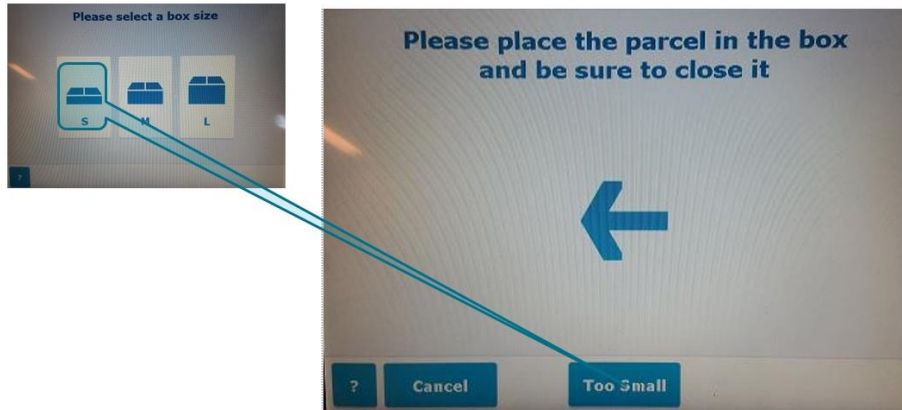
6 . Close the slot that is too small.
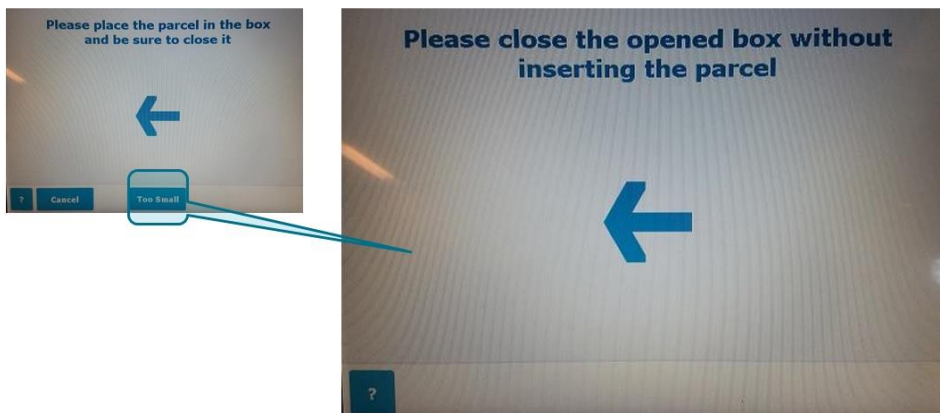
7. Chose new slot size.
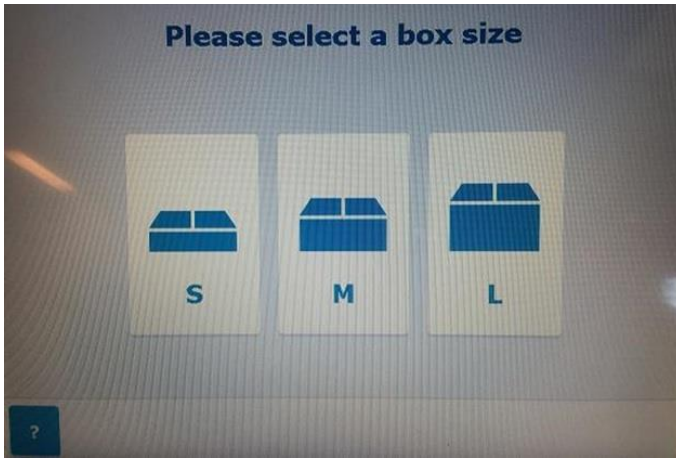
8. Close the locker door.
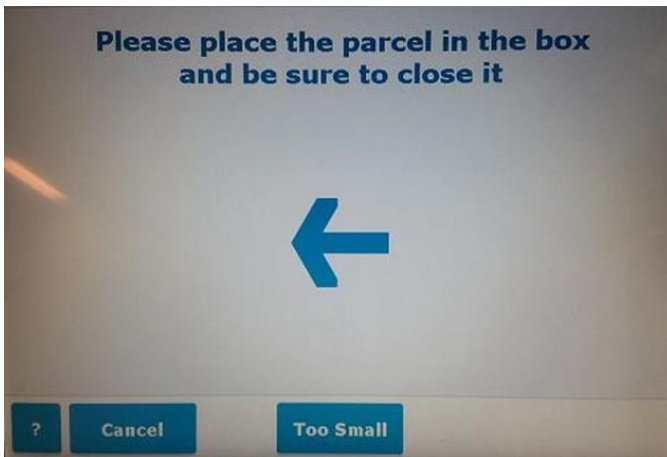
9. Enter e-mail to get receipt.
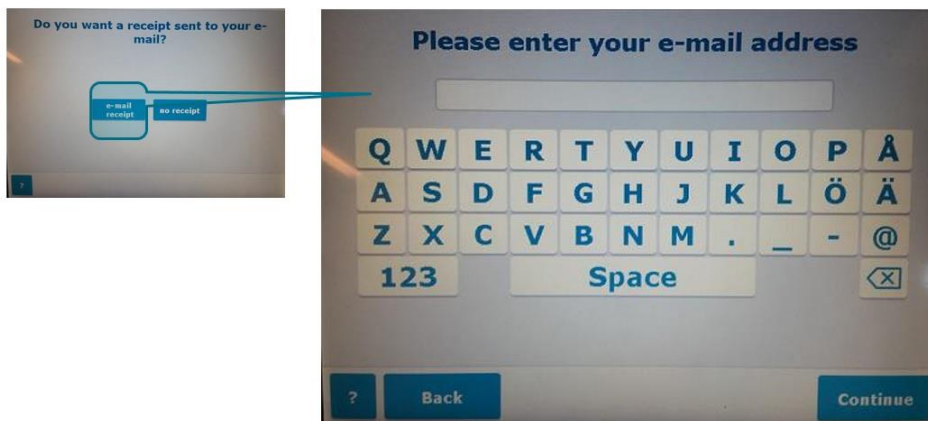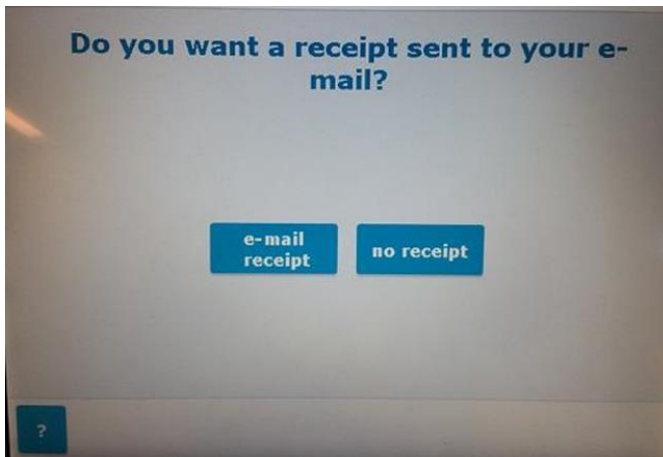
18 Appendix 9 – Comfort Zone

Comfort zone	Highest shelf	Touchscreen	Barcode reader
122 cm	167,5 cm	119 cm	9,7 cm
38 cm			
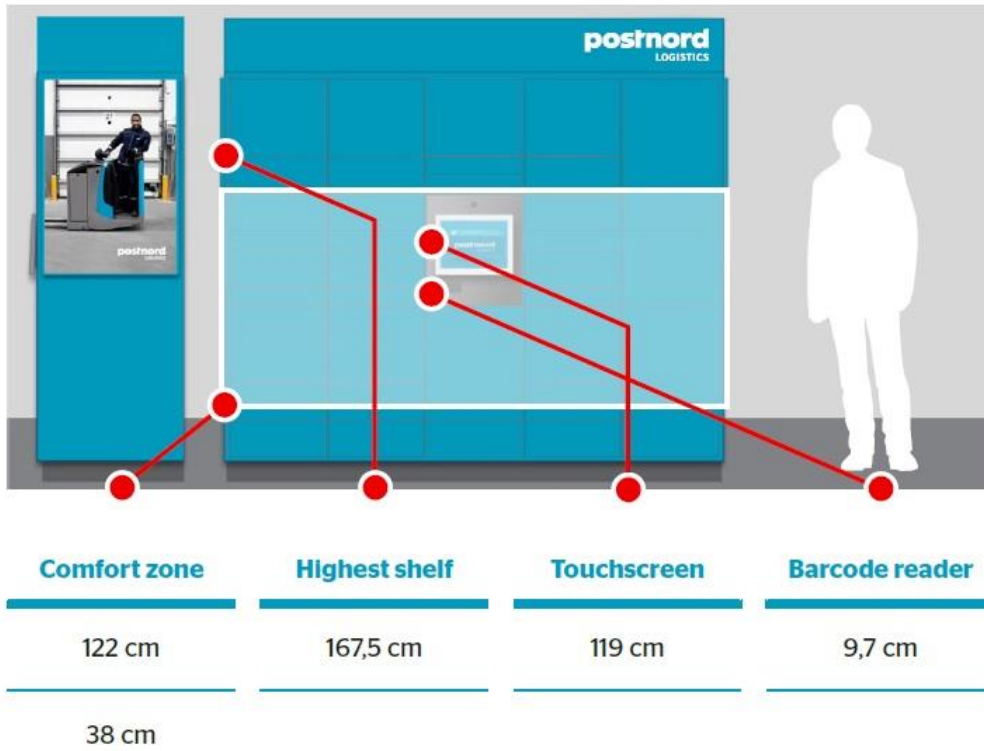
19 Appendix 10 – Consumer SWOT-analysis

Consumer Topics	SWOT regarding the parcel locker	Common (0-10)	Importance (0-10)	Result
Postal agent distribution network	Threat	9 *	10	**90**
Ease of use	Strength	8	9	**72**
Availability	Opportunity	9 *	8	**72**
Security aspects	Threat	8	8	**64**
Queues	Strength	8	8	**64**
No personal service	Weakness	6	8	**48**
User interface	Strength	5	7	**35**
Home delivery	Opportunity	5	7	**35**
Opening hours	Opportunity	4	8	**32**
Unawareness	Threat	4	8	**32**
C2C-funcion	Opportunity	4	8	**32**
Technical scenarios	Weakness	3	9	**27**
Closing of the locker	Weakness	7 *	3	21
Capacity	Weakness	4	5	20
Comfort zone	Weakness	5	4	20
Opening of the locker	Weakness	2	9	18
Confusion postal operators	Threat	2	7	14
Sounds	Opportunity	2	7	14
Pin code	Weakness	5	2	10
Scanning	Weakness	2	4	8
Service Phone	Opportunity	1	7	7
Choosing size of the locker	Weakness	2	3	6
Color	Opportunity	5	1	5
Plastic bag machine	Opportunity	1	2	2
Additional language	Opportunity	1	2	2
Sign	Opportunity	1	1	1
Drive through	Opportunity	1	1	1

*Due to experiment. Some topics were commonly mentioned by the participants due to the interview guide.

20 Appendix 11 – Overview of Participants

Participant	Location	Date	Time	Gender	Age
1	Arken	2015-02-25	12:17	Man	55-70
2	Arken	2015-02-25	12:30	Woman	40-55
3	Arken	2015-02-25	12:34	Man	25-40
4	Arken	2015-02-25	12:43	Man	55-70
5	Arken	2015-02-25	12:40	Man	55-70
6	Arken	2015-02-25	12:50	Woman	55-70
7	Arken	2015-02-25	13:10	Man	40-55
8	Arken	2015-02-25	13:30	Woman	25-40
9	Arken	2015-02-25	13:15	Man	55-70
10	Arken	2015-02-25	13:30	Man	25-40
11	Östermalm	2015-02-26	11:30	Woman	55-70
12	Östermalm	2015-02-26	11:49	Woman	>70
13	Östermalm	2015-02-26	12:00	Man	25-40
14	Östermalm	2015-02-26	12:10	Man	55-70
15	Östermalm	2015-02-26	12:20	Woman	40-55
16	Östermalm	2015-02-26	12:30	Woman	25-40
17	Östermalm	2015-02-27	14:36	Man	25-40
18	Östermalm	2015-02-27	15:05	Man	55-70
19	Östermalm	2015-02-27	15:15	Woman	55-70
20	Östermalm	2015-02-27	15:24	Woman	25-40
21	Östermalm	2015-02-27	15:30	Woman	<25
22	Östermalm	2015-02-27	15:50	Man	40-55
23	Liljeholmen	2015-03-02	15:40	Man	25-40
24	Liljeholmen	2015-03-02	15:50	Woman	55-70
25	Liljeholmen	2015-03-02	16:05	Man	25-40
26	Liljeholmen	2015-03-03	09:40	Woman	40-55
27	Liljeholmen	2015-03-03	10:00	Man	>70
28	Liljeholmen	2015-03-03	10:10	Man	55-70
29	Liljeholmen	2015-03-03	10:20	Man	<25
30	Liljeholmen	2015-03-03	11:00	Man	55-70
31	Liljeholmen	2015-03-03	11:20	Man	55-70
32	Liljeholmen	2015-03-03	11:40	Woman	40-55
33	Liljeholmen	2015-03-03	11:50	Man	40-55
34	Liljeholmen	2015-03-03	12:00	Man	55-70
35	Kista	2015-03-04	12:00	Woman	<25
36	Kista	2015-03-04	12:00	Woman	<25
37	Kista	2015-03-04	12:20	Man	<25
38	Kista	2015-03-04	12:40	Man	25-40
39	Kista	2015-03-04	13:05	Man	55-70
40	Kista	2015-03-04	13:15	Woman	<25
41	Kista	2015-03-04	14:00	Woman	40-55

42	Kista	2015-03-04	14:50	Woman	25-40
43	Kista	2015-03-04	15:15	Woman	40-55
44	Kista	2015-03-04	15:30	Woman	25-40
45	Kista	2015-03-04	15:50	Woman	<25
46	Kista	2015-03-05	15:50	Man	<25
47	Kista	2015-03-05	16:00	Man	<25
48	Kista	2015-03-05	16:05	Man	40-55
49	Kista	2015-03-05	16:10	Woman	40-55
50	Kista	2015-03-05	16:20	Woman	40-55
51	Kista	2015-03-05	16:40	Man	40-55
52	Kista	2015-03-05	17:10	Woman	25-40
53	Kista	2015-03-05	17:20	Woman	55-70
54	Kista	2015-03-05	18:00	Man	<25
55	Kista	2015-03-05	18:00	Woman	<25
56	Bromma	2015-03-06	13:00	Man	>70
57	Bromma	2015-03-06	13:10	Woman	>70
58	Bromma	2015-03-06	14:45	Woman	25-40
59	Bromma	2015-03-06	15:15	Man	25-40
60	Bromma	2015-03-06	16:00	Man	25-40
61	Kista	2015-03-07	13:00	Woman	25-40
62	Kista	2015-03-07	13:25	Man	25-40
63	Kista	2015-03-07	13:45	Man	25-40
64	Kista	2015-03-07	13:50	Woman	25-40
65	Kista	2015-03-07	14:05	Woman	25-40
66	Kista	2015-03-07	14:10	Woman	55-70
67	Kista	2015-03-07	14:20	Man	40-55
68	Kista	2015-03-07	14:55	Man	25-40
69	Kista	2015-03-07	15:20	Man	25-40
70	Kista	2015-03-07	15:00	Man	40-55
Pilot consumer	Bromma	2015-03-06	15:00	Man	<25

21 Appendix 12 – Overview of Code Words

Code words
Surroundings
User interface
Opening hours
Availability
Queue
Personal Service
Pin code
Barcode
Safety aspect
New functions
Configuration/ Shape
User friendly
Comparison to other SST
Comparison postal agents
Home delivery
Other
Close to home
Close to stores
Transportation
Indoors/outdoors

22 Appendix 13 – Positioning the Experimental Findings, Osterwalder Business Model

This business model serves the role to position the end-consumer perspective with other business units for the parcel locker. The dark shaded part of the business model below is where the consumer interaction plays a main role. The Value Proposition needs to reach the Customer Segments through Customer Relationships and Channels.

If one looks at the business model below, and start with the Customer Segment block where this thesis focuses on consumer, PostNord is two folded. PostNord must serve both their customer, the e-retailers, and the e-retailers' customer which is the end-consumer. This is a special situation, which requires a multi-sided platform. The Customer Relationships are built by cooperation with e-retailers, but at the same time a self-service relationship (and customer service) towards the end-consumer.
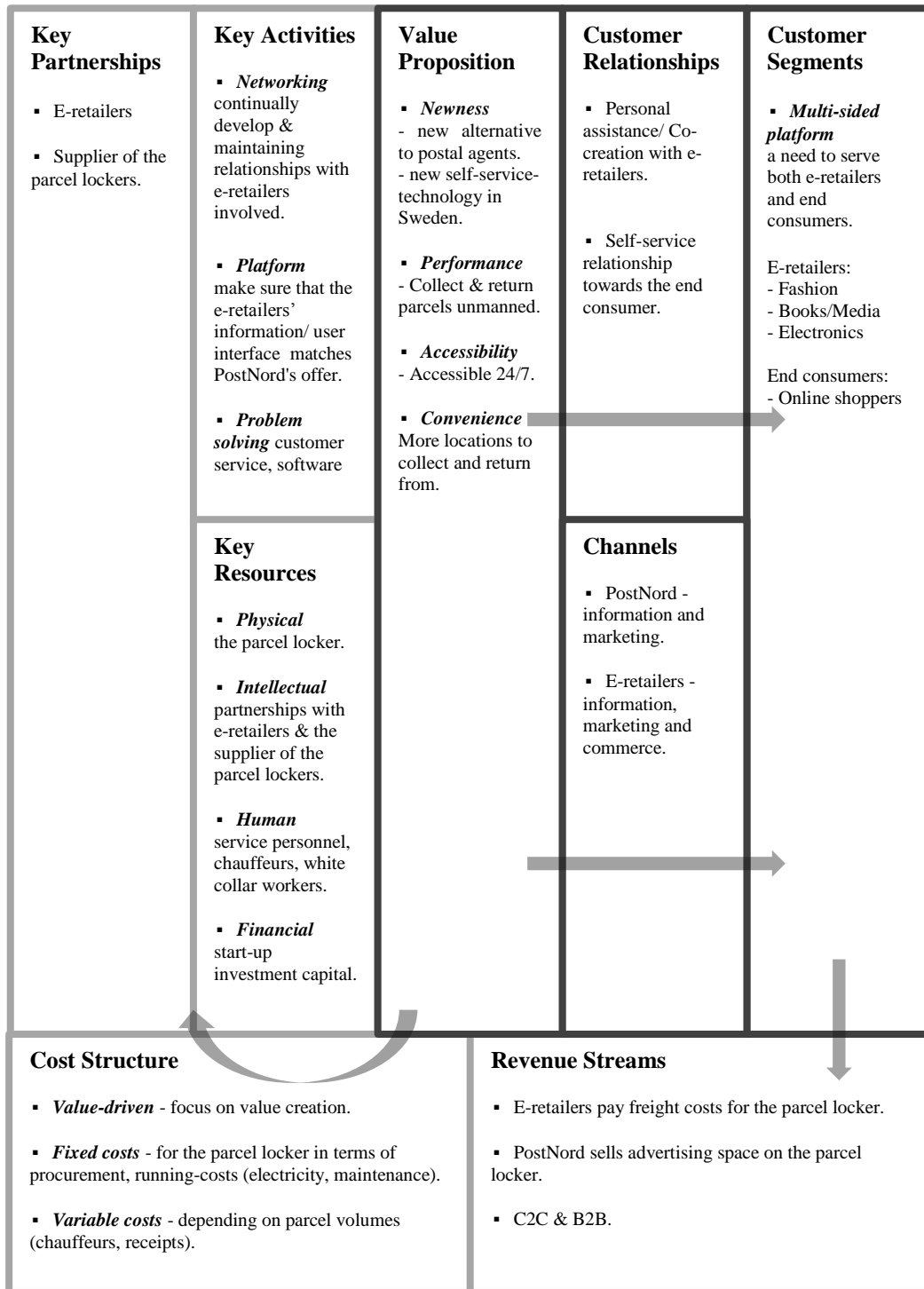
The Channels are essential for the business model of the parcel locker. Since the parcel locker is a novelty on the Swedish market the awareness is low. There is a need for extensive marketing and information about how to use the locker, which can help the consumer understand the Value Propositions. This responsibility lies on both PostNord and the e-retailers involved.

Furthermore the Value Propositions need Key Resources, they are needed to make the business model work, in this case the parcel locker service. The service requires both a physical resource in terms of the parcel locker, but additionally intellectual resources in terms of partnerships with e-retailers and the suppliers of the parcel locker. Human resources like service personnel and chauffeurs are needed, as well as financial resources for start-up and running costs.

Additionally, Key Activities are also required to create a Value Proposition. Since the business model will be built upon a physical product, the parcel locker, it requires Key Activities like networking by continually developing and maintaining relationships with the e-retailers involved, to make sure that the e-retailers' information/user interface matches PostNord's offer, and continuous problem solving through customer service.

PostNord is a third-party logistics provider (3PL), which means that they are depending on Key Partnerships with the e-retailers, to acquire profitable fill rates in the parcel lockers. They also need to have a relationship with the supplier of the parcel locker, in order to provide the parcel locker service. When the Key Resources, Activities and Partnerships are defined, the Cost Structure can be set-up. These are needed to deliver the Value Proposition, which maintains Customer Relationships and generate revenue. The parcel locker service focuses on value creation instead of cutting costs. The parcel locker acquiring cost and running-costs like electricity and maintenance will be fixed, while costs for chauffeurs and receipts will be variable, depending on parcel volumes.

Regarding Revenue Streams, the Parcel locker will only receive payments from e-retailers, since the end-consumer does not pay PostNord directly. Though, if a C2C-business would be created for the parcel locker, new revenue streams would occur, from the end-consumers too, though this will only replace the revenue the postal agents get from the same service. B2B-busienss could also occur if companies find the use for the parcel locker service, and therefore revenues from other businesses than e-retailer can be a future business opportunity. Other revenue streams could be branding the locker.

Key Partnerships	Key Activities	Value Proposition	Customer Relationships	Customer Segments
▪ E-retailers ▪ Supplier of the parcel lockers.	▪ *Networking* continually develop & maintaining relationships with e-retailers involved. ▪ *Platform* make sure that the e-retailers' information/ user interface matches PostNord's offer. ▪ *Problem solving* customer service, software	▪ *Newness* - new alternative to postal agents. - new self-service-technology in Sweden. ▪ *Performance* - Collect & return parcels unmanned. ▪ *Accessibility* - Accessible 24/7. ▪ *Convenience* More locations to collect and return from.	▪ Personal assistance/ Co-creation with e-retailers. ▪ Self-service relationship towards the end consumer.	▪ *Multi-sided platform* a need to serve both e-retailers and end consumers. E-retailers: - Fashion - Books/Media - Electronics End consumers: - Online shoppers
	Key Resources ▪ *Physical* the parcel locker. ▪ *Intellectual* partnerships with e-retailers & the supplier of the parcel lockers. ▪ *Human* service personnel, chauffeurs, white collar workers. ▪ *Financial* start-up investment capital.		**Channels** ▪ PostNord - information and marketing. ▪ E-retailers - information, marketing and commerce.	

| Cost Structure	Revenue Streams
▪ *Value-driven* - focus on value creation. ▪ *Fixed costs* - for the parcel locker in terms of procurement, running-costs (electricity, maintenance). ▪ *Variable costs* - depending on parcel volumes (chauffeurs, receipts).	▪ E-retailers pay freight costs for the parcel locker. ▪ PostNord sells advertising space on the parcel locker. ▪ C2C & B2B.

Business model in an Osterwalder structure of PostNord's parcel locker

The arrows in the business model show different interaction streams. Furthermore, the figure, with an Osterwalder structure shows a clear overview how PostNord's parcel locker business model would work. With a model one can clarify the organizational structure, which is of main importance in a start-up project like PostNord's parcel locker.

23 Appendix 14 – Positioning the Experimental Findings, Porter's Five Forces Framework

The five forces framework was conducted with the question in mind if PostNord should implement the parcel locker, not only through a consumer perspective. Just like the Osterwalder model the five forces framework aims to position the thesis, but also look at the parcel locker in general and take several complementary aspect into consideration. Depending on where the service is in its lifecycle, affects the power of Porter's five forces. Therefore an estimation on where PostNord would be in an industry life cycle (if implementing the parcel locker) was of interest, see figure below.

Few actors are currently on the Swedish market of parcel lockers, the potential for the market to grow is up-and-coming, due to the rising e-commerce, and the profits might be low due to the high investments put into the project, (Johnsson et al, p.33, 2012). This would be the case for a development stage, which PostNord would be positioned in if they implement parcel lockers.
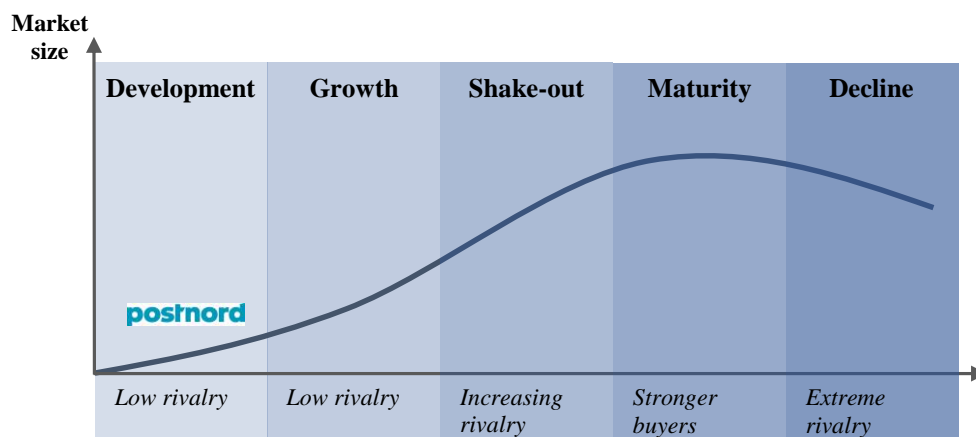
The industry life cycle, adopted by Johnson et. al (p.34, 2012)

There might be a fast change into the growth face, which means that more companies will join the concept of the parcel lockers. Therefore, it is important to conduct the five forces framework in a dynamic way, both from the current perspective, but also from a future perspective. The five forces are threat of entry, threat of substitutes, the power of buyers, the power of suppliers, and the extent of rivalry between competitors. Each "force" will be discussed separately, and the sub-headings used were suggested by Johnson et. al (pp.26-31, 2012).

Threat of entry

The threat of entry is determined by how easy it is to enter the market; the higher the entry barrier, the lower threat of entry from competitors.

- ▪ *Are economies of scale important?*

There are not that many lockers on the market yet, but many potential actors. Swipbox has implemented 60 lockers in Sweden. In five years, there will probably be more lockers on the market, which will make it harder to enter.

- *Access to supply or distribution channels*?
PostNord only cooperates with the e-retailer Zalando for the time being. PostNord will need to get more companies on board with the parcel locker concept. Mayor retailers may sign with competitors like DHL, Bring, Schenker etc. in the future.

- *Expected retaliation*: *will the cost be too high?*
History shows that competitors have tried the Swedish market before but retaliated, and example is the company Bring. But with an increasing e-commerce, they may try again, with their own lockers or by options like leasing or cooperate with a parcel locker provider. The more mature the market becomes, it will be harder to win market shares, but the company will have more information about the market situation.

- *Legislation or government action (for example patent or tariffs)*,
Legislation or government can put a stop to the parcel lockers being located at public places.

- *Differentiation (providing a product or service with higher perceived value than the competition)*,
There are other options like the parcel boxes in Hammarby sjöstad. This could in the future be standard to install these kinds of boxes, and in that case there would not be an as big of a need for parcel lockers. Other services like C2C (asked for in consumer interviews), are things that could be provided by competitors.

Threat of substitutes

Substitutes refer to a service that provides the same end result, but with a different way to get there. Threat of substitutes in this case could be for example home delivery, postal agents, or the click&collect service (where you order online but collect at the physical specific store).

- *The price/performance ratio (if a substitute is more expensive, it must exceed in performance)*
Home delivery service could improve by keeping timeframe, and postal agent service could improve with shorter queues and longer opening hours. This is likely to be a future scenario.

- *Extra-industry effects (looks outside the own industry to consider more distant threats and constraints)*,

A threat could be if the accessibility of more products in stores are improved (a reason today for shopping online according to the "E-barometer" is that there are more to choose from at e-retailers).

The power of buyers

The buyers are in this case the e-retailers, which are PostNord's consumers.

- *Are the market dominated by a few large buyers?*
  Today there is a wide range of e-retailers, but in the future the biggest e-retailers might get more power.

- *Can buyers switch supplier easily? (low switching costs),*
  Yes, today there is a tough competition between 3PL providers.

- *Buyer competition threat,*
  E-retailers might insource distribution.

The power of suppliers

Those who supply the organization with what it needs to produce the product or service a.k.a. the parcel locker suppliers.

- *Are the market dominated by a few strong suppliers?*
  There are a couple of powerful suppliers, and new Asian/American/global suppliers may enter the market.

- *High switching cost,*
  Changes in software or the fact that the parcel locker design will differ if you change the supplier of the lockers leads to high switching costs. The more lockers that are provided, the higher the switching cost will be.

- *Supplier competition threat,*
  Parcel locker suppliers might partner up with big e-retailer companies directly (Amazon has already done this in the US).

The extent of rivalry between competitors

Competitors are organizations with similar products and services aimed at the same consumer group as PostNord, for example Swipbox.

- *Competitor balance,*
  The market contains players of rather equal size with rivalries behavior.

- *Industry growth rate,*
  There is an opportunity for competitors to grow since it is a new market.

- *High fixed costs,*
  The parcel locker is an additional part of the distribution network. It will not replace the postal agents, so it will bring high fixed costs for PostNord. In the future the number of parcel locker will probably be higher, and so will the fixed costs.

- *High exit barriers,*
  The exit barriers will increase over time, because of higher number of lockers and more consumers. It would not be hard for PostNord to exit the market at this point since they only have a pilot running. The Swedish consumers are not expecting this service yet but in the future, if the lockers are implemented, it will be harder to exit without disappointing consumers.

- *Low differentiation,*
  There is only one company (Swipbox) in addition to PostNord offering parcel lockers in Sweden at the moment.

Summary

The five forces, see Figure, are rather low, which indicates that there is a chance to succeed and make a profit in this market. The researchers' speculations show that there might be a fast change in the extent of rivalry between competitors. There are different actors on the European market that are starting to extend their parcel locker distribution systems, and target the Swedish market. Therefore it shows the biggest change in five years.

Porter's Five Forces
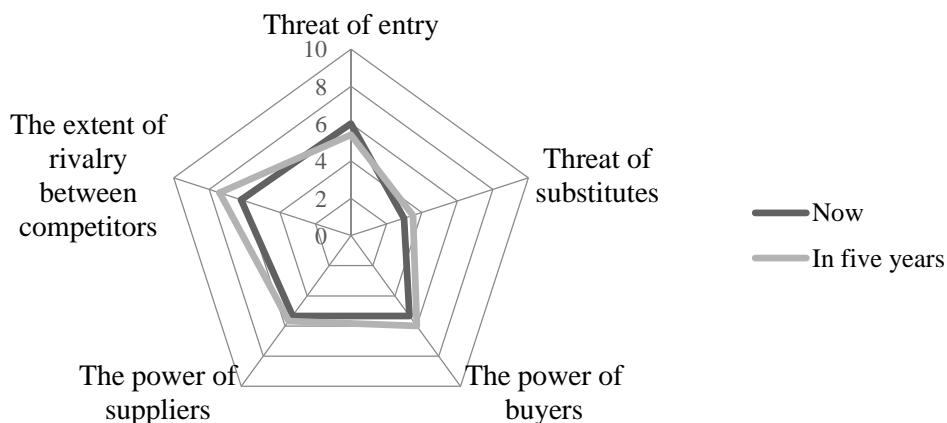
Porter's five forces framework for PostNord's parcel locker

Porter's Five Forces	Now	In five years
Threat of entry	**6**	**5,4**
Are *economies of scale* important?	8	5
Access to supply or distribution channels?	8	5
Expected retaliation	7	8
Legislation or government action	2	2
Differentiation	5	7
Threat of substitutes	**3**	**3,5**
The price/performance ratio	4	5
Extra-industry effects	2	2
The power of buyers	**5,3**	**6**
Concentrated buyers	5	6
Low switching costs	9	9
Buyer competition threat	2	3
The power of suppliers	**5,3**	**5,7**
Concentrated suppliers	6	4
High switching cost	8	9
Supplier competition threat	2	4
The extent of rivalry between competitors	**6,2**	**7,4**
Competitor balance	8	9
Industry growth rate	8	6
High fixed costs	7	8
High exit barriers	4	7
Low differentiation	4	7

Grading Porter's five forces