From postmen to e-commerce service provider

A new service solution for PostNL Retail

Graduation report
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Preface

Almost a year ago, when searching for my graduation project I wanted to do something in e-commerce. A rapidly changing market with many exciting new developments. I could not have thought of a better place to graduate than PostNL where they have the challenge to deliver 700.000 parcels per day. I have worked on this assignment with great pleasure and had a wonderful time on the 16th floor with a magnificent view of The Hague.

I would like to thank a few people for their time, patience and help during the project. This project would not have been possible without the following people:

My supervisory team: Ruth, who always paid attention to the methods and reasoning in the report. Bart: who always came up with ideas to look at the problem from a different perspective and Jiska for all her time and linking me to people within PostNL.

The entire PostNL retail team for the warm welcome and all lunches together.

All the people and organisations for the interviews providing me with valuable insights for the project.

All my friends for the lovely drinks on Friday after a week of hard work

And finally, Irene all the way from Berlin for your endless support and our fun weekends in Berlin.

Enjoy reading!

Koen

Abstract

In the Netherlands, around 700.00 parcels per day are delivered by PostNL. The first part is delivered directly to people's homes; the second part is delivered to a retail location where people then pick up the parcels themselves. This assignment was about the second flow of parcels, more and more consumers are choosing to pick up their parcel at a retail location, but the locations cannot handle the increasing volume anymore. This led to the following research question: Design a new PostNL service solution enabling consumers to receive their parcel in the way they prefer. The solution should lower the pressure on the current retail network and be adapted to the changing future context.

As a next step in the process, research has been done into market conditions and consumers. Consumers were interviewed to create a customer journey about the order and shipping process. Consumers visiting a parcel point were interviewed as well as employees and owners of the parcel point. Lead users who came up with a solution for the problem themselves were also interviewed. Many consumers experienced the parcel points as a necessary evil because they are not at home during the day and therefore depend on a parcel point. They prefer to receive their package at home and do not want to go to a parcel point after work. They also indicated that picking up a parcel takes more time than just the transaction; they have to park, wait in line and wait for an employee to find the parcel. Some consumers also indicated that it was difficult to arrange something officially with PostNL.

Subsequently, further research was done into where the frequent online shoppers live and whether this group had specific characteristics. It appears that frequent online shoppers are generally younger and receive a minimum of 5 parcels per month. PostNL does not have a shortage of capacity in every district; some districts still have a lot of retail locations available or fewer parcels are delivered to retail in a specific district. Based on the research, the Vinex districts and the high-rise districts around the city-centre have been selected as areas where the most improvement is possible. Various concepts have been devised to solve the problem, taking into account the insights of the research and the requirements from PostNL.

The final proposed solution is a roadmap making use of lockers to receive parcels and a platform for more customer-oriented and efficient shipping. The lockers are placed at the entrance of the high-rise apartment buildings, so PostNL can always deliver the parcels at the home of the consumer. In the subsequent phases of the roadmap, the lockers are opened to retailers who deliver their goods themselves and other couriers who can use the locker for a fee. In the final phase of the roadmap, the couriers will collaborate even more, which leads to more efficiency and therefore sustainability. On the platform, the shipping wishes of the consumer ordering online are shared with the participating couriers so that they can offer a price for this request. Couriers can base their price for example on their available capacity and whether they already have to deliver a parcel near the address. PostNL earns a percentage on every transaction via the platform. The downsides and recommendations of this solution are included at the end of the report.

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Reading guide

This report is divided into 14 chapters and of course, it takes a lot of time to read them all. This reading guide has been added to make it easier for the reader. Pages with an important explanation or reasoning have a bright orange triangle at the bottom right of the page. Pages on which a chapter is summarized have a slight orange tint. By reading the following pieces you are able to quickly understand this graduation project:

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Chapter summary

Important highlight

CHAPTER ONE

ASSIGNMENT

This chapter provides a general introduction of the project to understand the raison d'être of the assignment. Starting with an introduction to the world of e-commerce and parcels and an explanation about the growth of volume at PostNL. The chapter ends with the assignment and the research question.

Overview chapter

1.1 general introduction
1.2 increase in parcel volume at PostNL
1.3 Assignment and research question

1.1 Introduction to the assignment

The e-commerce market is booming! People are ordering more and more online, and the value of orders is increasing. Thuiswinkel.org, the Dutch advocacy group for the e-commerce market, expects this growth to continue at a steady pace (GFK Netherlands, 2019). PostNL is preparing to deliver more than 500 million parcels in 2021, an 100% increase compared to the 251 million parcels delivered in 2018 (Verhagen, 2019). The increasing e-commerce market and associated volumes are, of course, great news for post and parcel provider PostNL.

However rapid growth always has its darker sides, also in the e-commerce world: small retailers in older shopping centres are struggling to compete with large online retailers, society is putting immense pressure on employees for our same-day-delivery options and all the vans driving in and around our streets are not exactly beneficial for the environment. All of these problems are complicated but need to be solved in order to create a sustainable market. However, the main challenge for PostNL at this moment is to prepare their network for the rapidly increasing volume.

The PostNL delivery network is a widespread logistics machine with thousands of vans, parcel points and post offices (PostNL, 2019). PostNL currently ships around 700.000 parcels per day for webshops, consumers and companies. The increase in volume and the changing demands of the market and consumer is putting pressure on the network.

1.2 The rapid volume growth of parcels

The current increase in volume and the expected future volume increase can be explained by several factors. The most obvious one is, of course, the expansion of the e-commerce market, which has been increasing with around 10% each year in the past century (GFK Netherlands, 2019). A rapidly developing market also attracts new entrants, which caused a massive competitive battle on price. To push these competitors out of the market, PostNL focussed on obtaining more and more volume for lower prices (le Clercq, 2019). However, at the same time, this caused the profit per parcel to decrease, deteriorating the financial position of PostNL. Nowadays, the strategic focus is on increasing the profit per parcel by, for example, adding additional services.

For the future, an even steeper increase in volume is expected. Exact figures are strictly confidential as they are valuable for competition. However, a rough outline for the coming years can be provided. Due to narrower time frames and enhanced communication, consumers can easily indicate that they are not at home and choose a different delivery day or location. Based on this development, PostNL operations decided to stop the second delivery attempt and bring the package directly to retail, causing a peak next year. However, this will relieve the whole network in the future. An external factor influencing the retail volume is the decision of the Europian Union to drop the VAT exemption on imported parcels under 21 euro (Rijksoverheid.nl, 2019). Those parcels, mainly from Chinese webshops, all have to be processed and paid for at a PostNL location, causing extra stress on the retail network. The overall growth and the internal and external factors accelerating the pressure on the retail network are displayed in figure 1 In figure 1. Confidential information has been left out; the remaining information comes from the presentation from Carlos Mendes Aguiar at the PostNL capital markets day (Mendes Aguiar, 2019).

1.3 The assignment

Besides traditional delivery at the consumers front door, PostNL has several other options for consumers for receiving their parcels. Pickup points for parcels in shops have been around for a couple of years, customers select a point in their neighbourhood, and

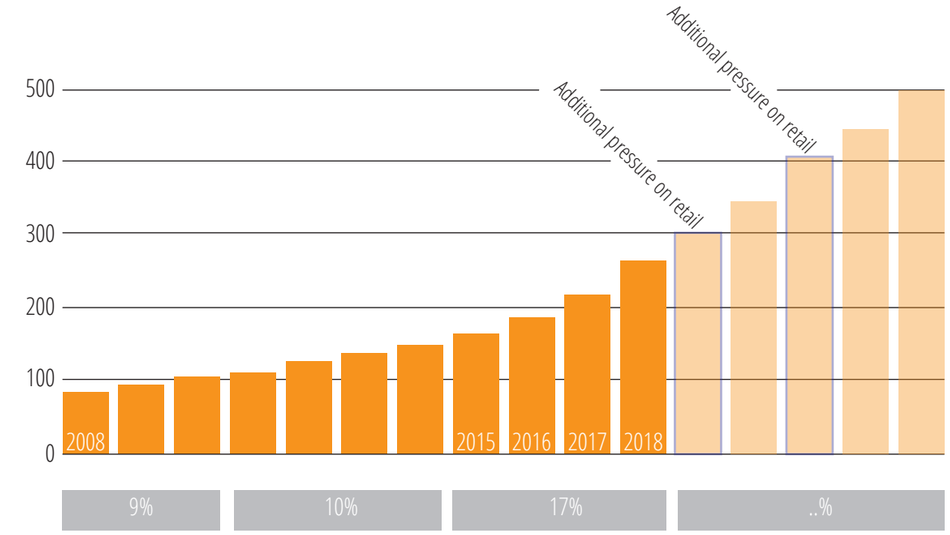

Figure 1 - historical and expected growth in parcelvolume PostNL

the parcel is delivered to a pickup point. In recent years there has been a massive increase in consumers using the pickup points to receive their parcels. This causes several problems at the pickup points: employees working at the shop are busy with PostNL customers picking up parcels and can spend less time on the shop's own customers, consumers have to wait for a long time when the employee is looking for the parcel, and perhaps the most important the shops have limited space and cannot accommodate the current number of parcels.

Merely increasing the space reserved for parcels at a parcel point will not solve this issue, handing out parcels requires workforce which is often the limiting factor at the small points. Also, increasing the number of pickup points is not possible as PostNL only co-operates with premium shops and the number of stores willing to cooperate is currently low. These circumstances resulted in a specific question from PostNL: to design a future uncrewed service station for parcel distribution to lower the pressure on the current retail network. This question was challenged and reframed as it is an question with an already determined direction for a solution. First, we have to find out why consumers use the parcel points so much; are consumers less often at home? Is it perchance due to the inability of PostNL to deliver in specific timeframes? What annoyes consumers in the current process?

The research question was taken one step broader at the start of the process: Design a new PostNL service solution to enable consumers to receive their parcel in the way the consumer prefers. The solution should lower the pressure on the current retail network and be adapted to the changing future context. This new solution must, of course, be feasible for and implementable by PostNL or future partners.

Design a new PostNL service solution enabling consumers to receive their parcel in the way they prefer. The solution should lower the pressure on the current retail network and be adapted to the changing future context.

CHAPTER TWO

CONTEXT

This chapter provides an introduction to the operating context of PostNL. The first section explains the roots and heritage of PostNL and the strategy for the future. The influence of the government through legislation on the postal and parcel market is explained afterwards. In the second section, the current locations and future developments are discussed to give an insight into the current way of operating

Overview chapter

2.1 History PostNL
2.2 De postwet
2.3 PostNL strategy
2.4 Mission department retail
2.5 PostNL reputation
2.6 Current PostNL locations
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2.8 Summary

2.1 History PostNL

PostNL is one of the oldest and largest companies in the Netherlands. PostNL was founded in the year 1799 when the Dutch government nationalized the postal business (PostNL, Wij zijn, 2019). Back in the days the letters and cards were delivered by foot or with a small carriage. Nowadays PostNL is an international mail, parcel and e-commerce machine, operating in 13 countries serving millions of people.

In the first years the focus was on delivering letters. From 1881 PostNL started delivering parcels all over the Netherlands. In 1926 the first post agency was created, not a post office, but a PostNL service point in a shop owned and operated by another business, similar to the service points as we know now. Afterwards, PostNL had its own post agencies in every major city in the Netherlands. In the recent years due to changing market demand and less mail they were shut down. The last PostNL post office, located in The Hague closed in 2018 (Kaaden, 2018).

Due to nationalisations, separations, and merges, PostNL had different names in the past 220 years. After the nationalisation, PostNL started as "Staatsbedrijf der Posterijen" in 1928 they were renamed to Staatsbedrijf der Posterijen, Telegrafie en Telefonie better known under the famous acronym PTT. In 1986 the privatisation started with the Postbank now operating as ING. Afterwards, the company was split into a telecom group and postal group. In June 1998 Royal PTT Nederland NV was formally split up in the TNT Post Group N.V. and Royal KPN N.V.

TNT Post Group N.V. operated as PTT Post till 2002; they shortly used the name TPG Post between 2002 and 2005. After selling TNT Express to FedEx in 2011, they created a new identity and branding and are currently operating as PostNL in the Netherlands (PostNL, 2019).

Interesting to know is that PostNL has a history of cooperating with designers (Vermeulen, 2019). As a more than two-century old Dutch company with a heritage of collaborations with famous designers they feel committed to proceed with this strategy. Great examples are the famous red mailbox designed by Emile Truijen, the new brand identity developed by VBAT, and the bags & trolleys of the mail deliverers designed by FLEX/Design.

2.2 De Postwet

Despite the privatisation of the postal market in 2009, PostNL must comply with specific conditions of the Dutch government captured in the Postal Act 2009 (Rijksoverheid, 2009). This so-called "Universele Postdienst" (UPD) determines the responsibilities for

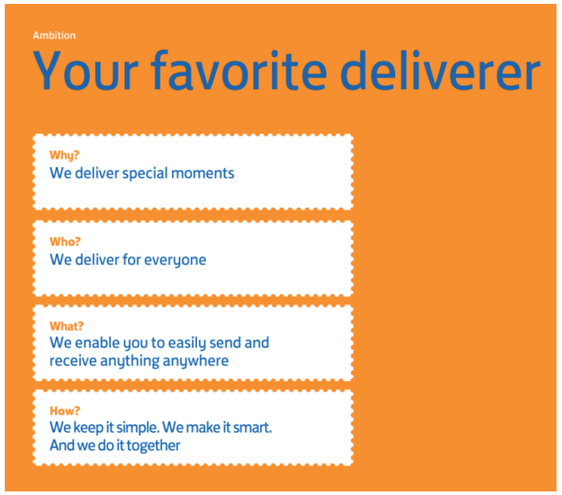


Figure 2 - The current PostNL strategy

essential services by PostNL for private individuals. The UPD will prevent the postal company from focusing solely on the lucrative parcels part of the postal market. In this way, the transport service for mail will remain accessible to the consumer.

PostNL has the legal obligation to provide services for mail with a weight of up to 2 kilograms, post packages with a maximum weight of 10 kilograms and registered and insured mail items. There is a maximum tariff for both letters and packages stated within the UPD. The return that PostNL is allowed to make on this service is also limited to 10%. The UPD also has regulations about the number of post boxes and service stations and obligates PostNL to ensure consumers have one in a reasonable range.

2.3 PostNL Strategy

PostNL changes from a traditional postal company into a postal and logistics e-commerce service provider (Verhagen, 2019). Mail used to be the majority of the business and turnover, but in the past years this had rapidly changed to e-commerce and parcels. PostNL expects that in 2020, 50% of the turnover will come from the parcel market (Mendes Aguiar, 2019). PostNL wants to meet this demand while at the same time, try to decrease the environmental impact of their operations.

In the past years, the focus of PostNL was to sustain the market share and create a financially healthy company after some tough years. In 2018 a new purpose and accompanying principles were formulated as shown in figure 2. PostNL wants to become "your favourite deliverer" focussing more on customer experience (PostNL, 2019). Shipping parcels is becoming more and more a commodity, so developing new services is essential to position PostNL as the premium option.

Figure 3 - summary of current challengens PostNL retail

2.4 Mission department retail

The most critical challenges for the retail department are to expand the current network and develop new locations for PostNL services. The number of parcels picked up in retail locations increases with 20% each quarter (PostNL, 2019), increasing the pressure on the current network. The current retail locations are struggling combining their daily business with the PostNL services they provide, as small business owners cannot afford to hire more employees. Increasing the number of retail locations is hard as brick and mortar retailers are struggling to survive and are not willing to act as a parcel location for the current compensation. Projects to increase the capacity of the current parcel points and projects for new types of (unmanned) locations are crucial to guarantee a future proof network!

At the same time, PostNL has the ambition to grow and is expanding to Belgium and in the future to Luxembourg (PostNL Belgium 2019). Currently, PostNL is acquiring new parcel points in Belgium and preparing the organisation for the roll-out. PostNL has massive amounts of data, and the retail department's wish is to use this data in a predictive way for example for predicting ideal new locations for parcel points and detecting full parcel points. The challenges for the retail department are summarised in figure 3.

2.5 PostNL reputation

What do today's consumers think about PostNL? It is interesting to compare the vision and strategy with the current perceived image of a company. A quick survey over WhatsApp (n=13) was executed with a straightforward question: what comes to mind when you think of PostNL? The results of this survey can be seen in figure 4. Most of the respondents immediately came up with parcels, their favourite postman and orange. There are also some negative phrases like "always too late" and "expensive".

Quickly browsing online search results in a lot of negative reviews and experiences of people (Tamminga, 2019). According to the statistics, PostNL receives complaints about only 6 out of 100.000 parcels (Meijer, 2019). However, those 6 out of 100.000 are affecting the image profoundly. Most complaints are about lost parcels or delayed parcels. However, there are also more general complaints about the parcel industry as a whole. People question all the diesel vans from different parcel providers in their street and dislike the amount of air in their packages.

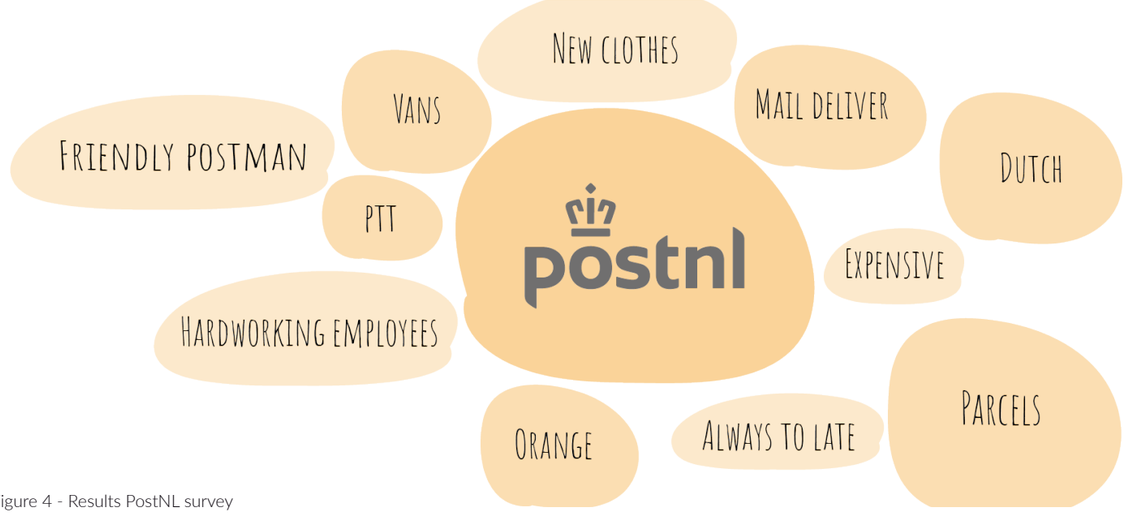


Figure 4 - Results PostNL survey

The current corporate branding of PostNL is based on its heritage and truly Dutch roots. PostNL wants to be the favourite deliverer who delivers a special moment ("PostNL Brand Portal", 2019). The Dutch roots are already recognised by the public and the special moment strategy is slowly gaining ground as some consumers mention "new clothes" instead of "parcel" or "delivery". In general receiving parcels is perceived as a pleasant and happy moment which is in line with the intentions of PostNL. E-tailers like Coolblue and Bol.com are responding to this moment using boxes with an amusing message.

2.6 Current PostNL locations

Currently, PostNL has approximately 3250 retail locations. PostNL does not own shops. All points are part of independent third-party retailers as well as prominent national retail formulas (PostNL, 2019). There are three main types of service locations: Parcel Points, Post Offices and Business Points. Next to that PostNL operates a stand-alone machine (the so-called "pakket- en brief automaat") (PostNL, 2019) and self-service solutions within current parcel points. Each service locations has its own service options (figure 5).

The PostNL network is based on the core network obligated by the Dutch postal law. Uncovered spaces in the network should be fixed as soon as possible to avoid fines. Additions to this network are based on fixed criteria like the population density and distance consumers have to travel. PostNL has long term contracts with a diverse group of large retail chains. Preference for new locations is based on the goods sold by the retailer, e.g. printing/office supplies are traditionally linked with postal services, or based on the relationship with the retailer.

For the future, there are some significant concerns. The flow of parcels send to parcel points is increasing, forcing PostNL to extend their network and increase the current capacity of parcel points. Internal PostNL calculations state that approximately 2500 extra parcel points are needed on top of the current 3250 parcel points. Maintaining the current network is already hard due to competition and the low availability of willing retailers, adding 2500 parcel points is almost an impossible mission. The future of the current network is also hard to predict. Large brick and mortar stores are struggling to survive, leading to weak financials and sometimes even bankruptcy increasing the pressure on the network even more.

2.7 PostNL Retail developments

To cope with the crowded parcel pickup points and busy delivery drivers, PostNL designed new products to facilitate their retail channels. New solutions focus on expanding the capacity of a current location by adding self-service elements or standalone self-service solutions and are shown in figure 5.

The "pakket- en briefautomaat" (PBA) is a standalone parcel locker for receiving and shipping PostNL parcels. Currently, there are around 50 machines in 10 cities; however, PostNL plans to have 300 machines up and running by the end of 2019 (Postnl, 2019). Consumers value the PBA and like to use it, but adoption takes some time. The capacity of the PBA is unfortunately rather small with 16 parcels. When the PBA is full, the delivery driver will drop off the parcel at a parcel shop, which sometimes causes frustration and confusion for consumers. The PBA is subject to a permit which has to be issued by the local municipality slowing down a fast roll-out.

Another development is the Scan&Go terminal which is used inside stores of current retailers. Consumers scan already franked parcels, for instance returns, at the machine and drop the parcel through the slot. The retailer empties the machine a couple of times a day. When using the Scan&Go consumers with a simple return package do not have to wait in line; however, most consumers still choose to use the desk with an employee, even when there is a queue (Postnl, 2019).

The newest addition to the PostNL portfolio which is currently being piloted (started 01-04) with retired PostNL employees is the "particulier uitreik-punt" or PUP. A PUP is a consumer who receives packages for his neighbours and earns a small fee doing this. They have set, but limited, opening times. With the PUP PostNL hopes to improve their service and at the same time improve social cohesion in a neighbourhood. However, handing out parcels at a consumers house can be perceived as less professional and less premium.

The current self-service machines inside pickup points are not used that often. Consumers prefer the staffed counter as they sometimes perceive the self-service option as hard to use or it is out of function. The "pakket- en briefautomaat" is gaining ground and really appreciated by consumers. However municipalities do not hurry with the permits as they do not see the value or struggle with placing large orange eye-catching structures on the street (Theeuwen, 2019).

	Pakketpunt	Postkantoor	Businesspoint	Pakket- en brievenautomaat
Ship (international) parcel	✓	✓	✓	✓
Pickup parcel	✓	✓	✓	✓
Parcel insurance	✗	✓	✓	✗
Postage stamps	✗	✓	✓	✗
Other services "RDW&VisPas"	✗	✗ ✓	✓	✗
Post office boxes	✗	✗	✓	✗
Batches of mail	✗	✗	✓	✗

Figure 5 - The different retail formulas and their services.

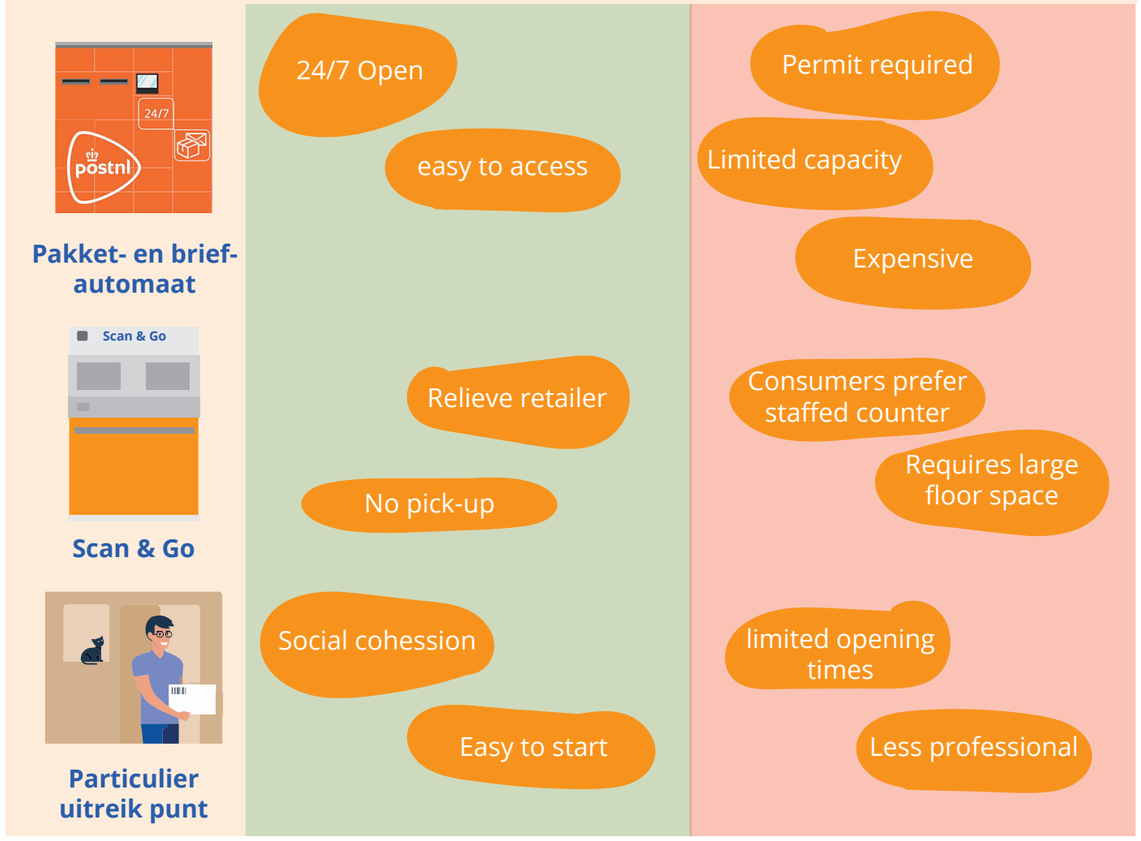


Figure 6 - PostNL retail developments advantages and disadvantages

2.8 Summary

PostNL has been operating as a postal provider for decades. This has given them a strong position in the Dutch market. The government still has much influence on PostNL, even after the company has been privatised. The Dutch Postal Act obligates PostNL to operate a network of mailboxes and assure delivery of mail within a specific period.

The past few years, PostNL focussed on the change from a traditional postal company into a logistics e-commerce service provider. The e-commerce and parcel activities are becoming the most essential part of the revenue within PostNL. Besides the increasing parcel volume within the Netherlands, PostNL is also expanding to Belgium. To cope with this enormous growth, PostNL is looking how to increase the capacity of current parcel points and whether other types of parcel points can also be opened. Currently, PostNL has around 3250 retail locations, and sourcing new locations is complicated as the availability of suitable locations is low.

To cope with the crowded parcel pickup points and the low availability of new parcel points, PostNL developed new products to solve this issue shown in figure 7. One of those developments is the Pakket- en briefautomaat (PBA). A standalone parcel locker used to ship and receive parcels. Unfortunately, a permit for placing is required, and the PBA is rather expensive. The Scan&Go is developed to let consumers drop simple packages quickly. However a retail location is still needed and it is not a solution for picking up parcels. het "particulier uitreik punt" is a concept that is currently being tested in which individuals hand out packages. However, this "particulier uitreik punt" does have limited opening times and is less premium than the current options.

Figure 7 - Visual summary of chapter two

CHAPTER THREE

3

APPROACH & METHODOLOGY

This chapter explains the different research approaches that were used during the project. First, the main research structure is described to give an overall overview. Afterwards, the different methods used in each phase of the project are listed and briefly explained.

Overview chapter

3.1 The design process
3.2 The used methods
- 3.2.1 Discovery phase
- 3.2.2 Define phase
- 3.2.3 Develop phase
- 3.2.4 Deliver phase

3.1 The design process

The design process used in this graduation project is the classic double diamond model defined by the Design Council UK in 2005 (Design Council, 2019). It has four stages or phases: (1)Discover, (2) Define, (3) Develop and (4) Deliver.

This model in figure 7 might seem like a linear and straightforward process, but in reality, it is not. The model is used as a tool to determine in which phase of the project you are currently working but bouncing back and forth is normal and even recommended. For me, the model was a guide during the process, helping me categorise and communicate information.

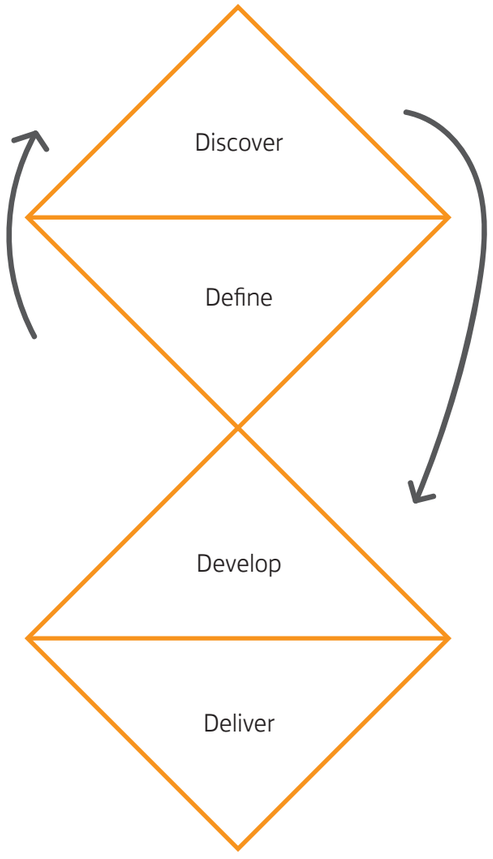


Figure 7 - The Design process

The model also stimulated trust during the process. During the first and third diverging phases, you sometimes feel lost or not able to prioritise the information. However, this is all just part of the process and part of that phase. Looking back at the model during those phases was reassuring and motivating

Besides the double diamond model, I did much qualitative research to gain deep insights into the consumer (figure 8). The main issue, in my opinion, with qualitative research, is that it is hard to convince stakeholders of a strategy based on qualitative research. They often argue that the sample size is too small or that answers are not quantified and that the results are therefore less reliable. To be ahead of this and solve this issue and base the new service on the qualitative insights obtained, I made use of the extensive pool of data of PostNL and self-collected data. I performed multiple data analyses to verify the qualitative insights with quantitative data. A great example is the insights obtained after some interviews that consumers in an apartment building are less often at home to receive their parcel and that neighbours there are also less willing to accept parcels. This qualitative insight could be verified with an analysis of PostNL data, which helped to convince stakeholders.

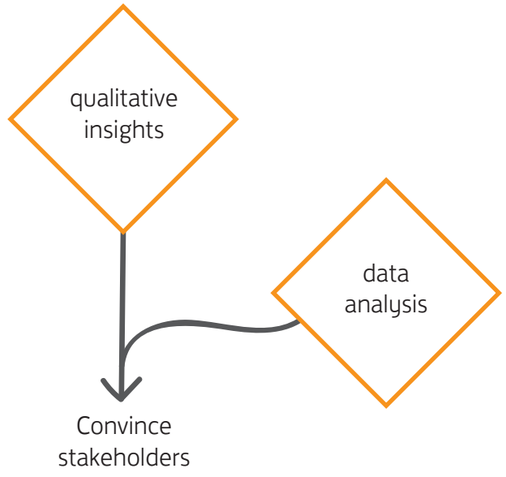


Figure 8 - Qualitative insights with data model

(1) Discover

The discovery phase is the first phase of a project. In this phase, you try to look at the context surrounding the problem. What is happening in this context? What stands out? In this case, the industry PostNL is operating in is was analysed: who are operating in this market? Are there new initiatives trying to disrupt the market? The current retail and service environment was analysed to gain insights into the current PostNL operations. It is essential to stay as neutral as possible and keep asking questions based on the answers you receive.

(2) Define

In the define phase, designers try to sort out the mess they created in the discovery phase. Arrange all the insights and summarise them. What are the most important insights? You might find out that additional information is needed and take a step back to the discovery phase. In the context of this graduation assignment, more information about the target group was needed. Preferable, there is a list of requirements or a creative brief at the end of this phase

(3) Develop

During the develop phase concepts are created based on the insights from the discovery phase and the requirements from the define phase. These concepts are continuously tested and discussed with stakeholders to improve and sharpen ideas. Tools like creative sessions or brainstorming are often used in this phase.

(4) Deliver.

In the final delivery stage, the chosen concept is completed. The solution for the problem defined in the second phase is finished into a new product, service or strategy or a combination of the three. This phase could include a final test and usually has a plan for implementation.

3.2 The used methods

3.2.1 Discovery phase

In the discovery phase, four areas (figure 9) were researched to create a full understanding of the context. These four directions are the customer journey, the retail context, the future users and the industry developments.

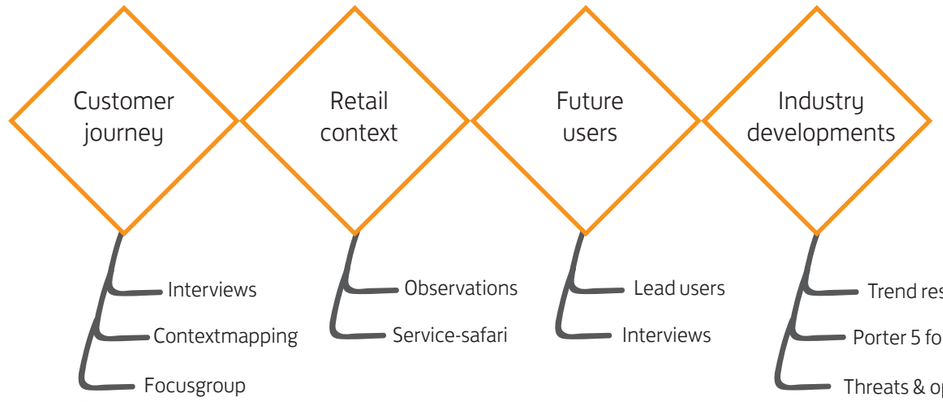


Figure 9 - The four research areas in the discovery phase

customer journey

To create the customer journey of the consumer ordering online, eight consumers were interviewed, and one focus group was organised to uncover insights. The interview and session aimed to look into why consumers order online and if there were flaws in the process irritating the consumer.

To obtain more rich information from the interviews, some elements from the context mapping method (Sanders & Stappers, 2018) were used. Context mapping helps consumers share more tacit and latent knowledge of which they are sometimes not aware that they have this information (Sanders & Stappers, 2018). Before the interview and session interviewees were asked to create a timeline of their online order process. During the interview, their ideal future timeline was created so so that differences are made visible. By asking questions about those differences and the new timeline, incentives and feelings of consumers could be discovered.

During the focus group, the same questions and timeline were used. However, during the focus group consumers were able to stimulate each other and co-create their ideal future parcel delivery journey.

Retail context

Finding out what consumers expect at a PostNL location and what their unfulfilled needs are helps determining future services. Consumers at a PostNL location in a Primera were interviewed about what they valued about the location, why they choose a specific location and how they feel about the location. This was done by observation of the users and asking them some questions with the use of small interview guide (Appendix 14.3). To experience what it's like to work at a PostNL location I took the responsibility to run the location for one day, handing out and receiving all the parcels from the consumers. This so-called service safari helps in understanding flaws in a current customer journey or employee journey.

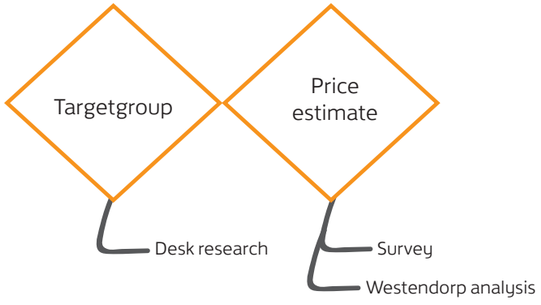
Future users

The Lead user theory is developed By Von Hippel (von Hippel, 1986) because normal market research analyses are typically not reliable in the instance of very novel products. In this case the interviewed lead users are consumers who created their own solution for receiving parcels. Six consumers who created their own parcel box for receiving parcels at home were interviewed to explore their motives and why they created a parcel box.

Industry developments

The parcel industry is changing rapidly and to create a successful new solution, it is critical to understand all those developments. In this area, the methods were not used as a strict guideline but more as a checklist. Using trend analysis, different trends could be identified, but even more essential, relations between trends were analysed. For example, the DEPEST model (Delft design guide, 2017) was not used as a method but acted as a checklist to verify if the research was broad enough and to ensure there were no blindspots. The same goes for the Porter five forces model (Porter, 2008) and the SWOT analysis (Delft design guide, 2017) ensuring all different parts of the industry were analysed properly.

The goal of this analysis was to create a complete coherent overview instead of a list of specific methods. All the different trends, observations and developments discovered during this research were printed on small cards so an offline analysis would be possible. The cards were shuffled around and clustered wich, in the end, led to two concluding tables: One about the developments in last-mile delivery and one table about developments in the parcel journey. Both of them are included in chapter four.



Fiugure 9 - Research areas in teh Define phase

3.2.2 Define

During this phase, design requirements are formulated bases on the insights uncovered in the first phase. In many cases, more information is needed to formulate a clear scope and verify if the problem really is a big issue. Especially in this phase, the approach of backing qualitative insights with data analysis was used.

Target group

To verify the assumptions made about the target group en find out the size of this group, publicly available statistics were consulted. Institutions like the Statistics Netherlands (CBS), Trade associations like Thuiswinkel. org and trend reports of couriers all provide statistical data. This data was evaluated to verify the size and habits of the target group.

3.2.3 Develop

Session

During the development phase, the process becomes more divergent, and the focus is on generating idea's to develop the final concept. In this phase, a brainstorming set was facilitated to generate a lot of ideas with fellow designers quickly.

The session started with a short explanation of the project and some information about the target group for the participants. After the introduction, the group was asked to formulate How-Tos and write them on a large piece of paper. How-Tos are problem statements written in the form of questions that support idea generation (Delft Design Guide, 2016)). Examples of used How-To statements are; *how you can receive something without being at home? Moreover, how can you ensure that people are at home when the delivery person comes?* Subsequently, the statements were passed on several rounds in which the participants should generate as many ideas as possible. After this; participants had to select an idea or a combination of ideas to create a new service.

Figure 10 - The card deck used during the creative session

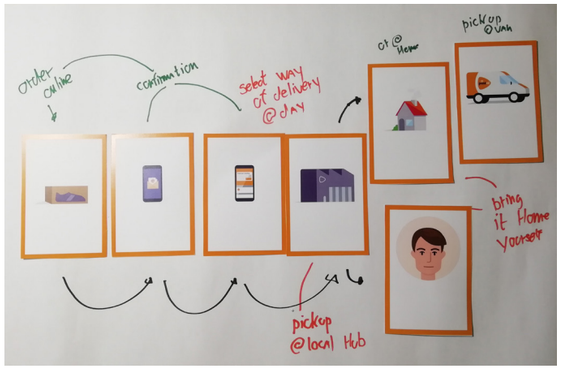


Figure 11 - A created concept by a participant

During the second part of the session, participants were challenged to create a concept out of the selected idea. To support them, they were provided with a card deck as can be seen in figure 10 with a various selection of icons. The cards were printed with locations, objects, means of transportation and emotions. The cards could be used to quickly explain the concept by creating a customer journey or to

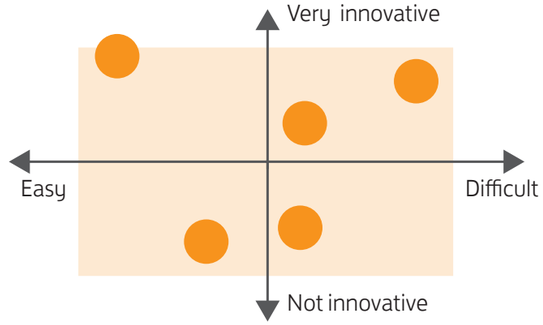


Figure 12 - The C-box model used during the creative session

demonstrate how stakeholders worked together. During a group discussion, the created concepts (figure 11) were discussed quickly and rated using the C-box from figure twelve. The C-box is a matrix that helps categorise ideas by mapping them out on feasibility and innovativeness. It helps to drop non-feasible and non-innovative ideas and creates a hierarchy in the other concepts. Out of the C-box, a pattern of consecutive concepts emerged which helped in creating the roadmap.

3.2.4 Deliver

Price estimate

To get an estimate on the price the target group was willing to pay for the new service, the Van Westendorp price sensitivity model was used (Van Westendorp, 1976). Participants in a Van Westendorp survey are asked to identify price levels at which they can infer a particular value to the new service. This is done by asking standard question four standard questions:

At what price would you consider the product to be so expensive that you would not consider buying it?

At what price would you consider the product to be priced so low that you would feel the quality could not be very good?

At what price would you consider the product starting to get expensive, so that it is not out of the question, but you would have to give some thought to buying it?

At what price would you consider the product to be a bargain—a great buy for the money?

After processing and analysing the data, the final result will be a graph with four intersecting lines as shown in figure 13.. The distance between the left and the right intersection can be seen as the acceptable price range; the future price should be within this range. The lower intersection is sometimes called the optimal price point although you cannot just assume this because some factors, which do have influence, are not included in the analysis.

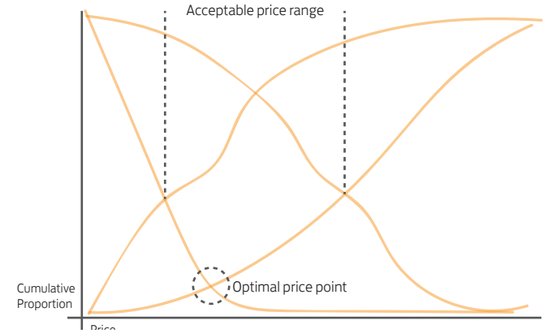


Figure 13 - The van Westendorp model

CHAPTER FOUR

MARKET RESEARCH

A classic and distinct start of a market analysis would be the analysis of the direct competitors. However, in the e-commerce market, there is much more going on (Figure 14). Large e-tailers start to do deliveries by themselves to save on costs and increase their customer experience. Start-ups and grown-ups are developing new technology and peer to peer delivery is taking off, especially in the food and last-mile segments. All of these developments influence the current and future market of PostNL. This chapter helps in getting familiar with the relevance of the new developments and how they will influence the current position of PostNL

Overview chapter

4.1 PostNL main competitors
4.2 Why webshops started there own delivery service
4.3 Developments in the last mile delivery market
4.4 Developments in the parcel journey
4.5 Implications
4.6 Summary of market research

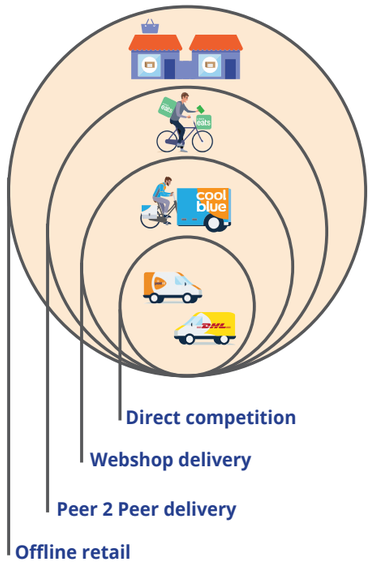


Figure 14 - classification of types of competition

4.1 PostNL main competitors

The parcel market in the Netherlands is dominated by two players: PostNL and DHL part of Deutsche Post. They account for almost 75% of the market for national parcels, both in consumer to consumer and business to consumer (Autoriteit Consument en Markt, 2019). GLS, DPD and UPS and a various amount of small parcel providers share the remaining part but are less known to consumers. DHL currently offers the lowest price for home delivery followed by DPD. (DPD, 2019) However, they offer fewer service possibilities like for example insurance. UPS offers an excellent service with included insurance and home pick-up; however, due to the high price, it is less used by consumers ("UPS - Nederland", 2019). All parcels providers offer home delivery and delivery to pick-up points. Competition in the current market is severe; e-tailers have colossal bargaining power and are willing to switch quickly.

The market for outbound international parcels is mainly controlled by PostNL due to it's a prominent presence in the Netherlands. The incoming international parcels are often delivered by carriers with an international network like DHL and UPS. However PostNL also has agreements with other foreign carriers to deliver their parcels.

	postnl	DHL	GLS	dpd	ups
Marketshare national					
Marketshare International outbound					
Locations	3240	1618	710	744	947
Price home delivery	€ 6,95	€ 6,75	€ 7,95	€ 6,50	€ 8,68
Price shop delivery	€ 6,50	€ 5,75	€ 7,95	€ 6,50	€ 8,68
Ship international?					
Max weight	20 KG	10 KG	32 KG	10 KG	20 KG
Pickup at home?					
Home/retail/locker Pickup options					

Table 1 - Offered services and prices of couriers in the Netherlands

4.2 Webshops starting their own delivery service

Online retailers and webshops are starting to partially deliver their orders with their own delivery network. In the Netherlands, webshops like Coolblue (figure 14) are delivering bulky goods and goods requiring additional services like instalment by themselves ("Emerce.nl", 2019). Also, the inner city on-demand delivery is an area where e-tailers are increasing their

Figure 14 - Coolblue employee delivering online orders

own activities (van Huijgevoort, 2019). Those specific activities are not a significant threat for PostNL at this moment but could evolve in a more severe risk. The reason webshops start to execute the delivery process by themselves is because this enables them to control the whole customer journey, from webshop order to the happy consumer at home. They have more control over delivery time, delivery status and communication about the delivery directly with the consumer (Essers, 2019).

However, when we look across the world, webshops start to deliver more and more parcels by themselves.

Figure 15 - Amazon employee delivering parcel

The most well-known example is Amazon, who currently uses their own vans and lockers to deliver all kind of parcels, not only the ones that require extra service (Amazon Logistics, 2019). By handling deliveries themselves, Amazon can speed up delivery times and deliver on time. Currently, Amazon is also selling its Prime memberships which guarantee free shipping and shipping within two days (Amazon.com, 2019). If they hand over the parcel to an external company, they lose control and might not realise their promised delivery time. Getting control over this logistics part, which is key is customer experience, is one of the most important goals for Amazon. Another advantage for Amazon is that they save on costs by delivering themselves and are less dependent on what carriers charge them.

In China, the big online retailers JD.com and Taobao are also starting their own delivery network. The logistics market in China is divided into a lot of small companies; there are no large companies with nationwide coverage. JD had to rely on disconnected local couriers (figure 16) who were not able to cooperate. As the speed and quality of delivery is very important, they started their own network (Qin, 2019). They now operate 65.000

Figure 16 - JD local courier delivery vehicle

employees with an ultrafast or ultra-luxurious delivery service. Luxury parcels get delivered by employees wearing white gloves. Three years ago JD created a spinoff of their logistics division and started delivering goods for other companies, becoming a major competitor for Chinese logistic companies.

Online retailers not only start their own delivery division for products requiring additional service. Direct contact with the consumer leads to better user experience as the consumer is better informed about his delivery. Couriers were not able to fulfil the demanded delivery times or volume leading to frustration at the consumer. E-tailers realised that they had to control the whole chain to innovate further. In some cases they became so good they started their own logistic provider competing with their former logistic partners. However, investing in an own delivery network requires a huge amount of capital.

4.3 Developments in the last mile delivery market

Exciting new developments for parcels are introduced every day. The majority of the developments is focussed on the "last-mile" in the delivery process: The phase in the customer journey where the parcel is delivered to the consumer. Parcels can be delivered at your own home, near your home or at a retailer. New delivery initiatives are often unmanned to save on costs and make 24/7 availability possible. The current PostNL delivery options and future options are listed in table two and explained below.

Drone delivery

Both Amazon and DHL started experimenting with drone delivery in 2013 for small packages up to 1 kilogram. Nowadays, dozens of companies run experiments with drones able to carry packages up to 30 kg (Byers, 2019). Two types of drone delivery are currently being developed: one focussing on full autonomous delivery based on GPS to the consumer and one focusing on larger drones delivering parcels to landing pads where parcels are further distributed (Madrigal, 2019).

Opportunities for PostNL are in the area of rural delivery where the delivery density is low and the ultra fast premium delivery; however, it is probably only profitable in big cities as a nearby warehouse is required. For the near future, drone delivery does not seem like a feasible option as it is also prohibited by law (Lange, Gordijn, Derriks & Gelauff, 2017).

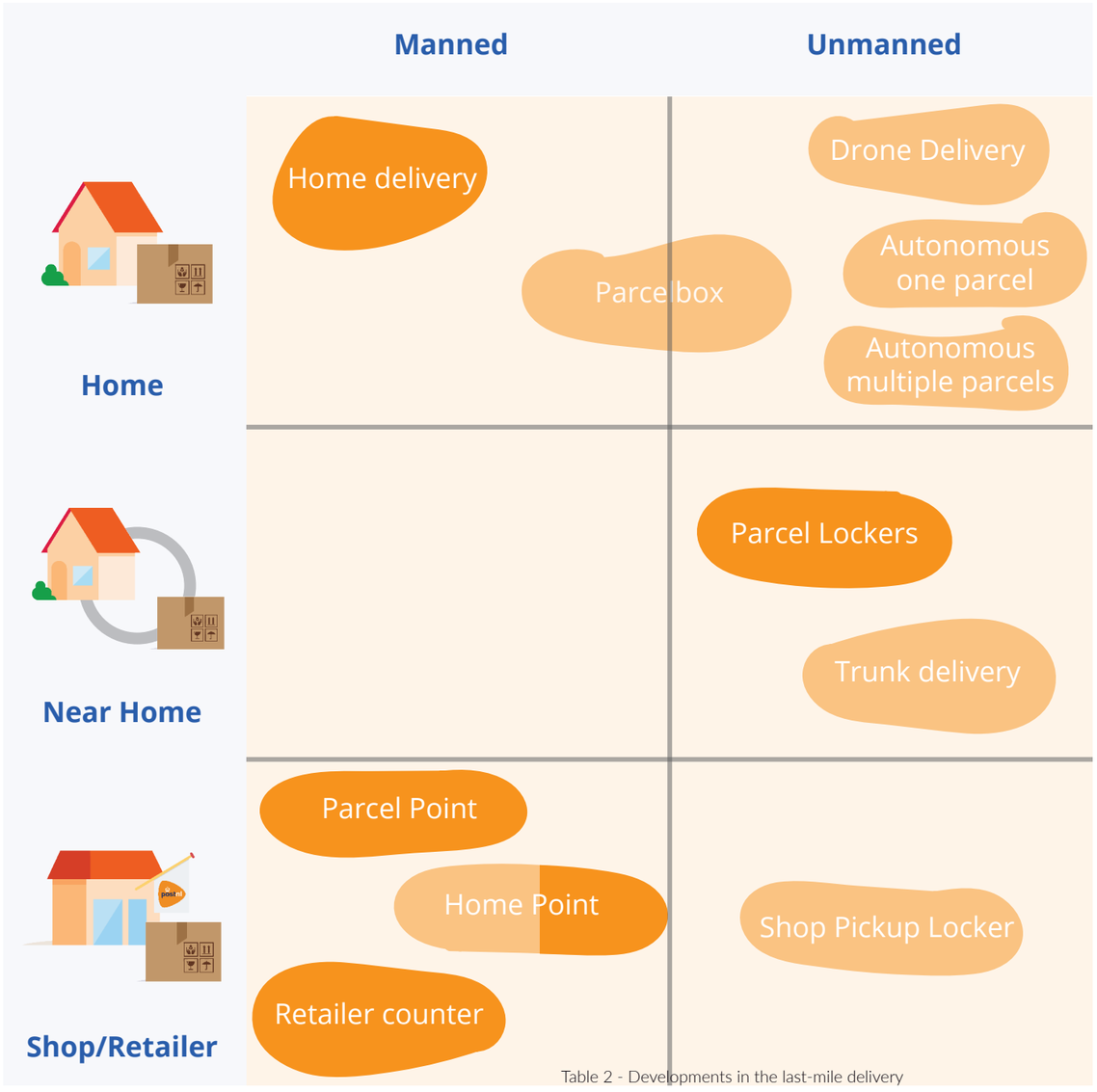


Table 2 - Developments in the last-mile delivery

One parcel autonomous delivery vehicle

Small vehicles autonomously deliver parcels from a nearby warehouse to consumers. Consumers unlock the vehicle by making use of a code or smartphone and retrieve their parcel. Australia post has been piloting with the autonomous delivery robot from figure 17 in Brisbane. Consumers perceived the autonomous vehicle as positive and favoured the almost on demand delivery (Australia Post, 2019).

Robots could be an attractive and feasible future option for last mile delivery in the Netherlands. The autonomous vehicle could share the sidewalk with pedestrians or make use of the bicycle lane. However, the capacity and security of the vehicles might be a risk, and a substantial investment is required.

Figure 17 - Australia post autonomous delivery vehicle

Multiple parcels autonomous delivery vehicle

Multiple parcels autonomous delivery vehicles are vehicles driving, autonomously from consumer to consumer, carrying parcels in separate compartments. The vehicle from Nuro (Nuro, 2019) delivers not only parcels but also groceries as it is equipped with cooled and heated compartments. Another interesting example is the system from German automotive company Continental, using large autonomous vehicles acting as public transport while at the same time carrying smaller delivery robots (Continental, 2019).

A disadvantage of the larger vehicles is that they have to share the road with normal cars and trucks increasing the speed and thus developing costs. However, manufacturers developing autonomous cars like Ford are currently exploring combining the transport of people and parcels ("The Verge", 2019). As the capital needed for development is extensive, this option is not realisable for PostNL. However, companies developing autonomous vehicles are a significant threat in the future as they seek for efficient use of assets and parcel delivery can easily be added to their portfolio.

Parcel lockers

During the check-out process, consumers can select a parcel locker instead of home delivery. In most cases, consumers receive a code on their phone and retrieve the package. Some lockers also have the option to drop already franked packages. Four types of lockers can be distinguished:

Parcel lockers owned by a parcel company

Both PostNL, the PBA in figure 18, and DHL currently have lockers in the Netherlands. People can receive and send parcels only in the locker belonging to the company that they are using, receiving a PostNL package in a DHL locker is not possible (Autoriteit Consument en Markt, 2019).

Figure 18 - Pakket- en briefautomaat PBA from PostNL

Parcel lockers owned by a service provider rented to a company

MyPup Rents parcel lockers to large companies so employees can use them to receive their parcels at work ("MyPUP", 2019). By renting a parcel locker, employees at reception counters do not have to accept the packages of employees.

Public parcel lockers owned and operated by a service provider

Parcel lockers providers like "DeBuren" ("De Buren", 2019) and "Parcel4me" ("Parcel4Me", 2019) provide parcel services for all postal companies. Consumers ship their package to the main office of the parcel locker provider from where it is distributed to a locker. Either the postal companies pay for this service or the consumers have to pay when they pick up the parcel. The notifications are sent by the parcel lockers providers instead of the shipping company.

Parcel lockers operated by stores

Walmart makes use of a Cleveron locker (figure 19) for picking up webshop orders. This locker is based on a warehouse where the packages are stored and picked up by a robotic device and a kiosk facing the customer. The locker can hold up to 500 parcels, but due to the high technical complexity, it is often out of use, making it impossible to retrieve any parcel ("Fast Company", 2019).

Figure 19 - Cleveron locker in use at a retail store

Home pickup point

Arisen from the concept of accepting a parcel for neighbours, private individuals hand out parcels in their neighbourhood. Homerr, a so-called social logistic network, pays consumers to act as a parcel pickup point for their neighbourhood ("Homerr", 2019). Homerr is used by DHL, the main competitor of PostNL. PostNL is currently (from March 18th) piloting with a "particulier uitreik punt" which works the same as the Homerr service although only for PostNL parcels. However, this service is less professional and premium compared to current solutions.

Parcel box

A low tech development is the parcel box used by a small group of consumers. A parcel box is a large, sturdy mailbox suitable for parcels like the one in figure 20. Delivers slide the parcel in the box and the box locks automatically after delivery (van der Ploeg, 2019). PostNL piloted the same concept; however, the investment was too high. The pressure on the PostNL delivery network is increasing, and new pilots are carried out.

Figure 20 - Box for receiving parcels

Trunk delivery

During the checkout process, consumers select car delivery and provide the sender with the details of the car. The delivery employee verifies the license plate and requests access ("Volkswagen", 2019). Another attractive B2B business model for trunk delivery is the restocking of vans at night of plumbers and installers with new parts and work stock for the next day ("SLS Benelux", 2019).

Figure 21 - DHL coruier delivering parcels to the trunk of a car

Implications

The current technological development for parcel delivery mainly focuses on the last mile, especially in the unmanned near home or at unmanned home category. This development can be explained in two ways: consumers do not want to be at home to receive their parcels and couriers try to increase the number of successful deliveries.

Due to the severe competition in the parcel market companies try to save costs, especially on personnel costs. A logical consequence are the unmanned options to receive parcels. Unmanned delivery vehicles might still take some time to raise momentum, but parcel boxes and lockers are becoming business as usual.

4.4 Developments in the parcel journey

Besides technological developments, striking things happen in the parcel journey as a whole summarised in table 3. Developments are concentrated in the first and last segments of the journey as they require relatively smaller amounts of capital to enter. Sorting packages requires relatively large investments in facilities resulting in less entrepreneurial activity in this part.

	Own assets	No own assets
Compare		Shipping comparison tools E-commerce shipping platforms
Pick-Up		Cainiao Logistics Network
Sort		
Lastmile Hub to Consumer	Freelance delivery drivers AH Thuisbezorgd Picnic Red je pakketje Ford autonomous delivery	
Lastmile Peer 2 Peer	Stadslogistiek Takeaway.com	Uberrush Postmates Doorman

Table 3 - Developments in the journey of a parcel

Shipping platforms

As in other industries, digitalisation and the accompanying platform industry, had a massive influence on the parcel industry. Platforms with various purposes have been introduced in the last ten years. Three different types can be distinguished.

E-commerce shipping platforms

Shipping platforms negotiate contracts with different postal companies, so both retailer and customer can select services from more than one shipping provider. The platforms have considerable bargaining power and offer retailers low fares compared to a direct contract with a postal company ("SendCloud", 2019).

Shipping comparison platforms

Shipping prices, maximum weight, destination and additional services options are becoming more critical. Comparing multiple factors and determine a suitable shipping company can be a hassle due to an overwhelming range of options. Comparison tools like Cheapcargo ("CheapCargo.com", 2019) and Parcelparcel ("ParcelParcel.com", 2019) compare shippers based on criteria selected by the consumer. Consumers buy a shipping label through the platform, which earns them a small provision.

Platform services for logistics networks

Cainiao does not own any sorting centres, warehouses or delivery vehicles. Their main occupation is linking all those assets from different companies, creating one big smart logistics network ("Bloomberg", 2019). Similar to the other platforms, Cainiao earns a small fee on each transaction.

Introduction of new vehicles

StreetScooter, a subsidiary of DHL, produces different electric vehicles for city delivery. They developed a fully electric vehicle to replace small diesel vans. They are used as delivery vans, used by municipal services and by mechanics ("Streetscooter GmbH Elektro Nutzfahrzeuge", 2019).

The vehicles produced by the French manufacturer Goupil are well known in the Netherlands as they are used by PicNic, the online supermarket, for their deliveries. The Goupil vehicles are smaller and have a smaller range compared to the Streetscooters. ("GEM France", 2019) The operating and purchasing costs, however, are also lower.

Companies like Urban Arrow ("Urbanarrow", 2019) develop e-bikes and cargo bikes, especially for delivery. They are environmentally friendly, easy to operate and not limited by traffic jams or low/no-emission zones.

Self-employed delivery drivers

PostNL already uses their own employed drivers as well as subcontractors working self-employed with their van as delivery drivers. Amazon is taking this way of working to the next level; people start their own delivery business through the Amazon Flex platform ("Amazon Flex", 2019), lease a van on the platform and start working for Amazon.

Food

Albert Heijn Online currently processes around 160.000 orders a week. Albert Heijn created a complete own logistic system for deliveries. To increase efficiency, AH is currently also delivering parcels of bol.com, also owned by Ahold ("Business Insider Nederland", 2019). Picnic, on the other hand, is a complete online supermarket, consumers order through an app and select a delivery moment from the fixed timetable. To become profitable Picnic also has to increase their efficiency and is also piloting with picking up returns from consumers ("Sprout", 2019).

Redjepakketje

Redjepakketje is providing same-day delivery for large e-tailers. Consumers pay an additional fee to receive their order the same day. Parcels are pickup directly at the e-tailer and shipped to the consumer without any other parties being involved in the process ("Red je Pakketje", 2019).

Peer to peer delivery

An increasingly popular way of transporting goods is peer to peer delivery. Companies like Uberrush, Postmates and doorman employ drivers on bikes, scooters or in cars (Price, 2019) Consumers order online, and their order is instantly delivered. Peer 2 peer delivery started in food delivery, where Takeaway ("Takeaway.com", 2019) is still operating the largest order and delivery system for restaurants, but it expanded to other goods. However, to be successful, it requires to be nearby warehouses.

4.5 Implications

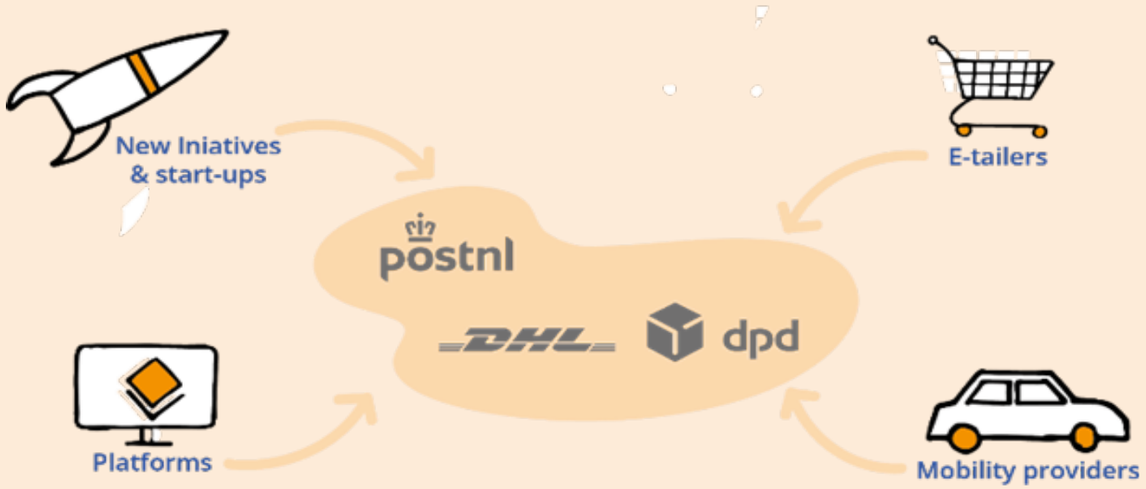
As said, developments are concentrated in the first and last segments of the parcel journey. Starting a new last-mile solution can be done with a small investment which lowers the barrier to enter this market. The relatice cost to enter the market are displayed in figure 22. At the start of the journey we can distinguish many new platforms. The platforms make it more easy to compare different parcel providers or facilitate an easy connection with a web shop. A revolutionary development is the platforms linking different networks of parcel providers together ensuring extensive coverage and fast shipping. Those platforms also try to make the industry as a whole more sustainable by reducing the amount of transport movements due to increased efficiency. The process of picking-up parcels and sorting parcels is less dynamic and harder to change as it requires large investments. For the future more platform-like solutions may emerge!

Figure 22 - the investment required to enter the market per phase of the parcel journey

4.6 Summary of market research

PostNL is not only competing with their classical competitors like DHL and DPD, but new ones are emerging. Platforms make it easy to compare and switch between different parcel shipping providers. New initiatives and start-ups try to conquer their market share while e-tailers also try to conquer part of the market. Mobility providers try to create new business opportunities by delivering parcels with autonomous cars. these developments are summarized in figure 23.

The majority of the entrepreneurial activity in the parcel market is happening at the start or the end of the customer journey. This can be explained by the high entry cost of the middle part, which mainly consists of sorting parcels. New last-mile delivery options might take over the handling and communication in this part of the process. In this case, PostNL would still be sorting the parcels but becomes an easily interchangeable company. However, to accelerate their growth, those companies also rely on PostNL.



Vertical integration is taking place in the parcel market by both parcel shipping providers and e-tailers. Parcel shipping providers are moving towards warehousing and fulfilment for web-shops while e-tailers start to deliver packages themselves.

Threats for PostNL

E-tailers try to expand their influence in the customer journey. Currently, they are partly delivering heavy parcels, parcels that acquire extra services and same-day delivery parcels themselves but looking for options to expand.

A diverse array of last-mile solutions is trying to gain its market share. The majority of the last-mile solutions communicates directly with the consumer skipping out the original parcel provider and thus decreasing the direct link with the customer.

A far future threat are mobility providers developing autonomous cars trying to use their vehicles as efficient as possible. When they are not in use to move people, they can be used to deliver goods and parcels.

Peer to peer delivery exists of local couriers shipping small amounts of parcels directly from a shop or distribution centre to the consumer. Specific delivery times and within-an-hour delivery are possible. Connecting different Peer-to-peer networks could lead to a new player in the market.

The bargaining power of large web shops in the current market is relatively high. Contracts are renewed every 3 to 5 years, so switching is easy. PostNL tries to cooperate closely with web shops to create a lock-in situation; a great example is the sorting centre next to the Bol.com distribution centre.

New last-mile delivery options are focussing on niche groups with special needs like ultrafast delivery or delivery at an exact agreed time. They exactly meet the requirements of the customer and have a dominant presence in their area. Competing with those niche players is hard for PostNL as it has more “one-size-fits-all” solutions.

The financial position of PostNL is currently weak. In the past years PostNL focussed on gaining volume and less on gaining profit. Now that they have a large part of the volume the focus is on exploiting this volume and increasing the profit per parcel ratio. However, PostNL is not able to invest heavily in new solutions.

CHAPTER FIVE

CONSUMER RESEARCH

When creating a new product or service, understanding the current and future needs of the consumer is probably the most crucial aspect. The consumers who are receiving parcels are the subject of study in this case. The overall goal of the research was to:

Create understanding of the way people receive their packages and want to receive their packages in the future.

The research was split into three parts: consumers at the parcel shop, lead-users creating their own solution for receiving parcels and a series of interviews with consumers about why they order online and how they receive parcels. Particularly interesting where the hurdles consumers currently face, how consumers would like to receive their parcel in the future, and what they dislike about the current system.

The research started with a series of interviews and a session to gain knowledge about how people choose between buying something in a store or buying online and if they did buy goods online how they moved through this process. The results of the interviews and session were combined into a customer journey. Based on the pain points from the customer journey, further research was done on the parcel shop and lead-users creating their solution for receiving parcels.

Overview chapter

5.1 What drives consumers to buy offline or online?
5.2 The current PostNL location
5.3 Lead users and the way they receive parcels
5.4 Summary consumer research

5.1 What drives consumers to buy offline or online?

Introduction of research

How consumers move through the process of buying goods and what decisions they make in this process could provide clues for future design directions. What drives customers to purchase something in a brick-and-mortar store or why are they buying certain products online. The following research was executed to gain insights and understand the consumer while shopping online or offline.

Method and set-up

Four interviews, two couple interviews and one session with 4 participants were hosted to collect as much information as possible. Participants were asked to

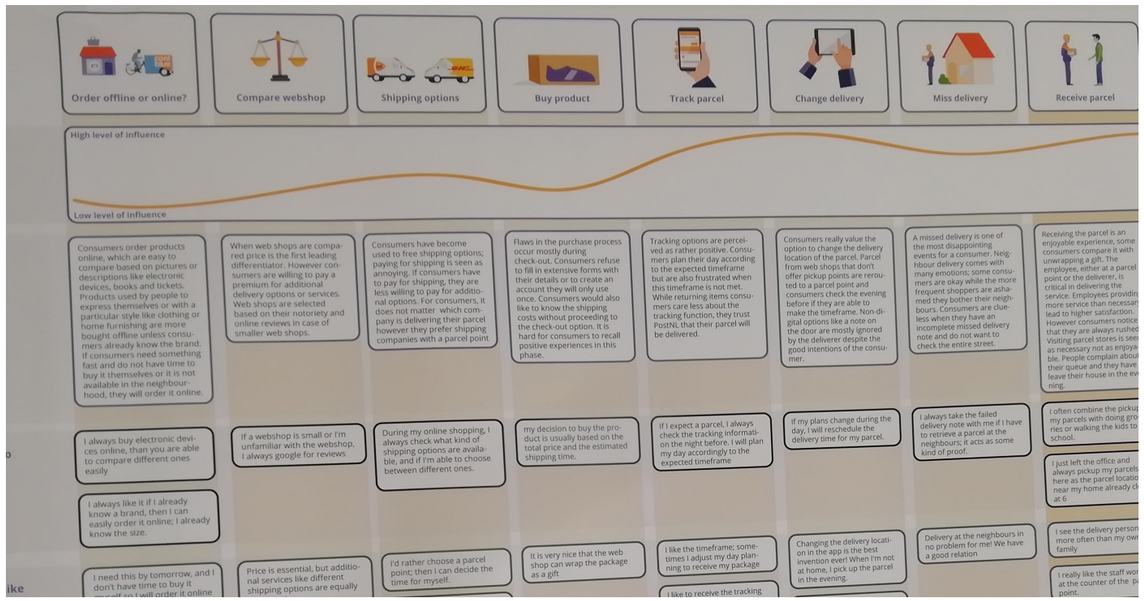


Figure 24 - The created customer jpurney based on the interviews (vergroot exemplaar in appendix)

think about recent purchases and their motive to buy those products online or offline. Together with the interviewees, I created a timeline of this process containing all the drivers, elements they like and elements they dislike. The interviewees did not receive any compensation except for my eternal thankfulness.

Results

After the first three interviews, a preliminary analysis was performed, and some questions were reframed as they were too strict or hard to answer for the interviewees. Afterwards, all the timelines were analysed, memorable quotes were transcribed from the recording leading to a big timeline with remarks and quotes which was translated into a digital customer journey shown in figure 24 and in detail in appendix 14.2

Customer journey

The customer is divided into 9 steps (figure 25), starting at the decision to shop online or offline until the return of a parcel. In each phase, the emotions or what people feel or experience are displayed in the bottom two bars. The actions that people take or what people do at each stage are explained in the middle. On top, the influence of PostNL on a specific step and a summary can be found.

Findings customer journey

The decision to shop online or offline is based on the available time of the consumer, how quickly they need the product, and if it is available in the neighbourhood. Consumers compare webshops based on price, shipping options and reputation. Consumers like if they can select multiple options like home delivery or parcel point delivery, paying for shipping is still seen as undesirable.

The actual process of buying is hard to influence by PostNL; consumers dislike that they have to create an account or fill in all their details. Tracking their parcel is valued by the consumers, some of them even adapt their schedule to receive the parcel. However, if the expected timeframe is not met, consumers get frustrated. Consumers appreciate the option to change the delivery location or time. Paying for this extra service is fine; however, it takes much time to do so. A missed delivery would cause much dissatisfaction, especially if consumers changed their schedule to receive the parcel. A part of the consumers accepts delivery at the neighbours however, it comes with many emotions.

Receiving a parcel, either at home or a at a parcel shop also has its pitfalls. Consumers don't want to visit the parcel shop in the evening, stay at home to receive the parcel and want their parcel to be delivered at home. Additional research in this phase has been performed to get a detailed insight into the consumer. The customer journey including all the comments from the interviewees can be found in appendix 14.2

Figure 25 - The nine steps of the customer journey

5.2 The current PostNL location

Introduction of research

The needs of the consumer currently using a PostNL location determine what kind of future service they expect! Consumers at a PostNL location in a Primera were interviewed about what they value about the location, why they choose a specific location, which way of transport they use to visit the location and how they feel about the location. The key insights of this research are summarised in figure 29.

Figure 26 - The author himself at the research location

Method and set-up

I took care of all the PostNL operations at the Primera in The Hague for one day (figure 26). Helping me gain insights into the day-to-day operations, and at the same time, I had the opportunity to ask consumers about their visit. During quiet moments I offered a consumer a coffee and asked if they had some spare minutes for a small interview. This interview most of the time took place at the counter shown in figure 27.

Figure 27 - The PostNL counter in the Primera used as research location

Results

After one day, I managed to interview nine consumers and received dozens of comments from other visiting consumers. The results of the interviews and the comments are combined below as they reinforce each other.

Which way of transport

This particular parcel point is located in small shopping area in a residential area with offices nearby. Visitors came by foot from the offices specifically to collect or ship a parcel; they perceived the walk as a small break. Nearby living consumers often combined the walk with buying groceries or walking their children to school. Several consumers also saved return parcels at home so they could drop them all at the same time. For larger packages, consumers would have liked to use their car, but parking near the parcel shop was almost impossible. Most consumers came by bike but were sometimes surprised by the size of their parcel and had trouble transporting it back home. Occasionally they returned to the store asking for tape or rope.

> *"Deze locatie is voor mij de enige manier om pakketten te ontvangen, overdag werk ik en mijn buren willen geen pakketten meer aannemen"*

What they appreciate and do not appreciate about the location

Consumers mentioned they like the explicit routing in the shop; it is immediately clear that consumers can ship and collect parcels at this location. However, they sometimes do not know if they have to queue at the regular counter or that they can proceed directly to the PostNL counter, which in most shops is located a bit further. In some cases they wait in between the two counters, causing a messy queue until they get a indication from the staff. Other consumers indicate that they are angry about the waiting time; they want to collect a parcel quickly. This angriness especially takes place when the people in front of them in the line have packages with additional services like import duties that need to be paid.

Figure 28 - The online map where consumer can select their parcel point

Why they choose a specific location

> *"Ik kom speciaal naar deze locatie voor de lieve mensen achter de balie"*

The essential factor in choosing a pickup location is the distance consumers have to travel, almost all consumers mentioned this as important. Also how they had to travel is essential to consumers, they prefer to go by foot or car. Opening hours are nearly as important; a few office workers mentioned that they pick up their parcels during lunch as they were not able to get to the parcel shop near their home in time after work. Another remarkable insight is the level of service that consumers perceive. In this case, there was another PostNL parcel shop close by which the consumers valued less. They had the feeling that they were a burden to the employees and that employees did not really search for the parcel and just told them that the parcel was still at PostNL. Most consumers used the online map (figure 28) on the PostNL website to select a parcel point.

How consumers feel about the location

Consumers also indicate that they sometimes feel guilty or embarrassed; they use the store only as a pickup point and never buy something from the retailer. An interesting observation is that the majority of the consumers already took their parcel out of their bag before entering the store. They hold the parcel almost like they are apologising for the fact they are only dropping off a parcel and not buying anything from the retailer. A few consumers also mentioned that the retailer often rushes the process of shipping. They have to choose quick how they want to ship their package, what kind of insurance is needed, and if they need a tracking code. This was especially the case with packages shipped abroad.

> *"Een locatie bezoeken kost meer tijd dan je denkt, je moet er heen, parkeren, in de rij wachten en wachten tot je pakket is gevonden"*

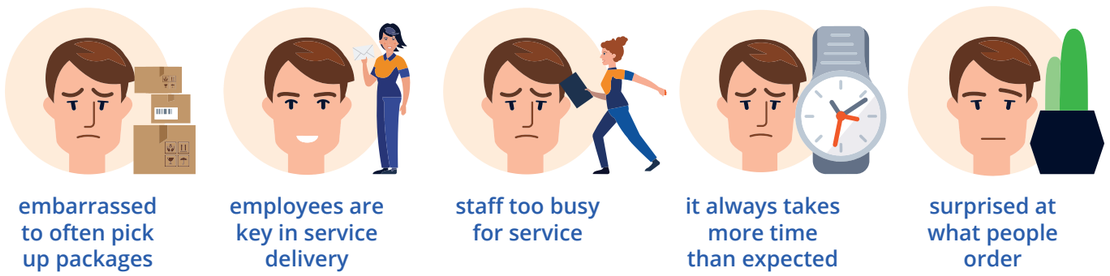


Figure 29 - Summary of research with insights

5.3 Lead users and the way they receive parcels

The Lead user theory is developed By Von Hippel (von Hippel, 1986) because usual market research analyses are typically not reliable in the instance of very novel products or in product categories characterized by rapid change,such as "high technology" products. Lead users are consumers that have certain needs that are currently rare in the market but could become more general needs in the future. Lead users often create their own solutions to fulfill their needs. Studying their needs and solutions gives you a small glimpse in the future.

Von Hippel defines three sorts of lead users: lead users in the target application and market, lead users of similar applications in advanced "analog" markets and lead users with respect to important attributes of problems faced by users in the target market. where analog markets are markets comparable to the target market. The search for lead users often is the hardest part of the process and can be time-consuming (Jeppesen & Laursen, 2009).

The big advantage of lead user research compared to conventential market research is that lead users are more aware of their future needs. Lead users are at the start of the adoption curve where they sometimes even have to develop their own products (figure 30) While normal consumers would answer your questions that they want a "faster" or "cheaper" product/service lead users might provide you with more specific information. Six consumers who created their own parcel box for receiving parcels at home were interviewed to explore their motives and why they created a parcel box.

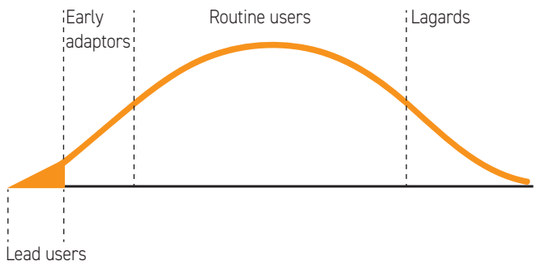


Figure 30 - Lead users and their place in the adoption curve

Method and set-up

Six consumers were approached based on the previous contact they had about the implementation of parcel boxes with PostNL, or they left a review about their experience with parcel boxes on the online tech forum Tweakers ("Tweakers", 2019). Two of the consumers were interviewed at their own home, three consumers via Skype and one via telephone. Consumers did not receive any compensation besides some information about the project. The main insights are listed in figure 33

Results

The six interviews contained much rich information. The participants were benevolent and eager to share information. During the skype interviews, consumers would walk outside to show everything of their parcel box (figure 31), and they shared interesting pictures with me. Two consumers even shared more information a few days after the interview.

Why purchase/build a parcel box?

Figure 31 - Parcel box used by consumer

The most frequently mentioned reason for purchasing a parcel box is to prevent a package from being delivered to the neighbours. Consumers did not like

> *"Ik wilde gewoon niet iedere keer mn buren storen als ik een pakket kwam halen"*

their neighbours were disturbed by the delivery man and that they had to disturb them again in the evening to collect the parcel. Also frequently mentioned was the hassle of going to a parcel point in the evening to collect the parcel, consumers pointed out that they just want to stay home after a day of work. Also, the carefree aspect is important; consumers do not have to think when they are home or check the tracking information.

Figure 32 - Parcel delivered incorrectly

The parcel deliverer

Parcel deliverers value the parcel box. Consumers notice that parcels are already signed as delivered while the driver is still driving because he is sure he can deliver the parcel. Consumers also received positive comments from the deliverers. However, some are in doubt of using the parcel box as they think it

> *"PostNL doet volgensmij helemaal niks om deze manier van ontvangen te ondersteunen"*

might be against company regulations. Well-intentioned instructions for the parcel box or the parcel box itself are sometimes overlooked by the delivery man as they are rushing to deliver their parcels (figure 32).

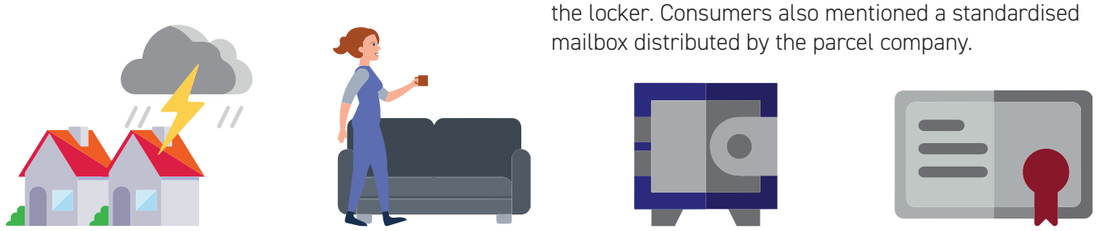


Figure 33 - Main insights lead-user research

The current issues

Consumers are experiencing various small problems with the parcel box. In some cases, their packages are still delivered to the neighbours or a parcel point instead of the parcel box as deliverers overlook the box or are afraid to use it. Packages are sometimes packed in such large boxes that they do not fit in the parcel box. Two consumers also mentioned that parcel addressed to their neighbours are delivered in the parcel box, causing people ringing the door in the evening. Also, it appears to be hard to make formal agreements with PostNL about the usage of the parcel box.

The risks

Consumers do not experience the parcel box as a delivery option with more risk compared to neighbour delivery of parcel shop delivery. They argue that a parcel can also be lost at the neighbours or a parcel shop. One consumer mentioned that he has a camera pointed at the parcel box for extra security. All consumers mentioned that trust is a crucial aspect of parcel boxes; they all trust their delivery drivers.

Other solutions

Some consumers used to have different solutions for receiving parcels before the parcel box or adopted a different solution after moving. They used an old chest or container to receive their parcels. Alternatively, they used a smart doorbell with a speaker and camera and instructed the delivery man to hide the parcel somewhere in the garden. A recently moved consumer, who has no garden anymore, was thinking of handing the key of his mailbox to the driver so he could store his parcels in there.

Other solutions for the future mentioned by the consumers include sharing their parcel box with their neighbours, which is striking as the main reason to buy a parcel box is not to disturb the neighbours. This might be explained by the fact that you do not have to disturb each other if both neighbours have the key of the locker. Consumers also mentioned a standardised mailbox distributed by the parcel company.

5.4 Summary consumer research

In short, there is much room for improvement, but we have to handle within the tension field of consumers needs and business requirements. The central insight from the research is that consumers would like to receive their parcel at home at a self-chosen specific time of day without the requirement to be at home and arrange this as smoothly as possible. The insights of the research phase are displayed in figure 34.

The new solution must work seamlessly with the current PostNL systems. Consumers do not want to spend time on formal arrangements about how deliverers have to drop-off the parcels. If arrangements are needed, PostNL should facilitate a solution allowing the consumers to share their delivery preferences.

Consumers care less about the safety of the delivery option than expected. Parcel boxes or safe-place delivery are experienced as a safe option to receive parcels. Consumers indicate that at every phase of the process, something can go wrong, even with home delivery. Delivery at the neighbours is problematic due to mutual relationships. Consumers living in an apartment building where, during the day, almost everybody is at their job mention they sometimes have to accept a large number of parcels for their neighbours and almost act as a small pick-up point.

The current parcel points are experienced as pleasant by the consumers. They value human interaction and the perceived high level of service at some of the parcel points. However, they still are experienced as a necessary evil. Consumers prefer to stay at home and do not want to visit the parcel shop in the evening.

Figure 34 - Main insights from research phase

CHAPTER SIX

THE TARGET GROUP

The research from chapter five provided many insights. However, before we proceed to develop new solutions, additional information was needed. Information about how consumers using retail locations currently live and where they live? Which consumers are responsible for the majority of the volume of parcels PostNL has to deliver? After determining a target group and and area where a solution is most needed, research has been done into how to approach this group. The chapter ends with a short summary answering all listed questions.

Overview chapter

6.1 The current delivery options
6.2 The profile of an online shopper
6.3 The layers of a Dutch city
6.4 What districts to target?
6.5 How to approach consumers in high-rise buildings
6.6 Summary

6.1 The current delivery options

Based on the previous studies conducted in chapter four, we can state that consumers have a strong preference for receiving their parcels at home or very close to their home. Delivery at the neighbours is acceptable in some cases; however, some consumers do not want their parcels delivered to the neighbours at all. They feel like they are disturbing their neighbours, or they already have a terrible relationship with their neighbours.

However, PostNL is not able to deliver all the parcels of the consumers at their own home at their desired time of day; the current way of operating simply does not allow this. Currently, there are four main ways of

Figure 35 - Current delivery options PostNL

delivery PostNL uses (figure 35), namely Retail, PBA, Neighbour delivery and home delivery. Retail and PBA delivery are more efficient compared to the other two; multiple parcels can be dropped off at once saving time and transport kilometres. However, opening times of the retail locations are critical; consumers become frustrated if they cannot collect their package after six o'clock.

As the pressure on the retail locations increases, PostNL looked for other solutions to deliver the parcel at the most preferred location of the consumer, their home! Pilots were executed with parcel boxes near the front door of the consumer and PBA were set-up in different neighbourhoods. The PBA's are still successful, but the parcel boxes turned out to be too expensive to create a sustainable business model for PostNL. to fulfil the needs of consumers a new solution should be developed. This new solution should facilitate consumers to always receive their parcels at or near their own home. This will reduce the pressure on the employees of the PostNL retail network.

6.2 The profile of an online shopper

To be able to find a suitable solution, it is essential to know more about the consumers who make their purchases online. Who are buying their goods online? What are they buying online? At what frequency? Various market parties and research agencies have investigated this so there is a large amount of data.

First of all: there should be a clear distinction in the statistics between online purchases for goods and online purchases for services like package travels or insurances. The lateral does, of course, not influence the number of incoming parcels for PostNL. However, categories like travelling, tickets and insurances are significantly influencing the current increase in online sales (GFK Netherlands, 2019).

Research of parcel courier DPD in Europe shows that frequent online shoppers are responsible for 88% of the parcel volume (Kantar TNS / DPD, 2019). They order 34 parcels per year on average. The same research also concludes that 45% of the online orders are placed by consumers between 18-34 years.

Thuiswinkel, the Dutch advocacy group for the

Figure 36 - 88% of all orders is placed by frequent online shoppers

e-commerce market did a similar research specifically for the Netherlands confirming the European statistics. They concluded that about 61% of online shoppers are living in a single or dual household (GFK Netherlands, 2019). In general, they are under the age of 40 years, although the older age groups now show relatively strong growth (GFK Netherlands, 2019). These statistics for the Netherlands are confirmed by het Centraal Bureau voor de Statistiek ("CBS Statline", 2019) in the Online winkelen monitor.

If we continue to zoom in on the buying behaviour of consumers, we can observe more exciting actions. The CBS Statline platform enables researchers to sort data based on different factors and variables. There are considerable differences in what is purchased online by which age group. The group ageing from 18-45 years shops online for physical products like clothing and electronics. The group ageing above 55 tends to use the internet more for online service purchases, especially holidays and to a lesser extent, insurance policies (GFK Netherlands, 2019).

Figure 37 - 45% of all orders is placed by people between 18-34 year

Conclusions

Based on the analysed data a number of conclusions can be drawn. The consumers frequently ordering physical products online are mostly between 18 and 34 years old. The frequent ordering consumers account for the majority of the online orders. The growth of online purchases of consumers of 55 years or older does not influence the volume of PostNL as those purchases are mainly non-physical products.

6.3 The layers of a Dutch city

Dutch cities are generally constructed according to a fixed pattern based on the historical development of those cities. Especially the classic older cities which have been developing since the middle ages can be described by this structure. Each layer of the city has its characteristics: the people who live in the area, the type of buildings and the available facilities. Each layer or district also comes with their own characteristics and problems.

Figure 38 - The city-centre district

City centre

The city centres (figure 38) are mainly constructed before the year 1800. They exist of monumental buildings and often offer space for retail, bars and restaurants. Accessibility by car is often hard due to heavy traffic congestion, public transport or bicycles are alternatives (Planbureau voor de leefomgeving, 2015).

As there is high availability of retail, sourcing new locations for PostNL is, in most cases, easy. However, when the options in retail are limited alternatives like the PBA or safe place delivery are hard to realise due to a lack of space or protected cityscapes.

The number of orders per person is slightly higher than the average in this area. This is confirmed by the CBS statistics as frequent ordering consumers like young single earners, and dual earners without children are commonly living in this area ("Centraal Bureau voor de Statistiek", 2016).

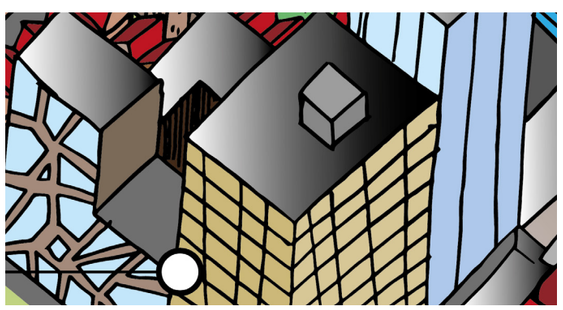


Figure 40 - The Mixed apartments & office buildings district

Mixed apartments & office buildings

Districts with mixed apartments and office buildings (figure 40) in high rise buildings are rapidly developing on the edge of city centres (Bouma, 2019). Driven by the consumer needs of living close to a vibrant city centre and public facilities, municipalities accelerate the development. Estimates show that the demand for this kind of housing is enormous; around 200.000 units are needed by 2030 (NVM, 2019). To make this amount more tangible: the municipality of Rotterdam has to build 50000 houses by 2040, the number of houses in total in a small city like Delft. To make it even more complicated, the focus will be on inner-city and near inner-city development.

Sourcing new locations for PostNL in these newly developed areas is rather hard. Retail locations are large and new and do not need an additional stream of consumers picking up parcels. Safeplace delivery is not an option as apartment buildings have no garden and entrances are shared. Another involved factor is that consumers hesitate to receive parcels for their neighbours.

The people living in this area are young single earners and dual earners with an above-average income; a large part of them is frequently shopping online. Receiving parcels is hard as they are often not at home; parcel point delivery is one of their preferred options but hard due to the capacity problems.

Figure 41 - 1930's neighbourhood district

1930s neighbourhood

The classic 1930's neighbourhood consists of low rise terraced houses. They are mainly built between 1900 and 1940 and suitable for families (Hulsman, 2019) They are often situated in a layer around the city centre. As the building density is high, parking space is limited, and traffic congestion is high.

The search for new locations in this area is more complicated compared to the city centre. Small shopping areas are competing with the city centre and outlets outside the city and are eager to attract more consumers. Safeplace delivery and delivery at the neighbours is an option. Families are the population group that occurs most frequently here.

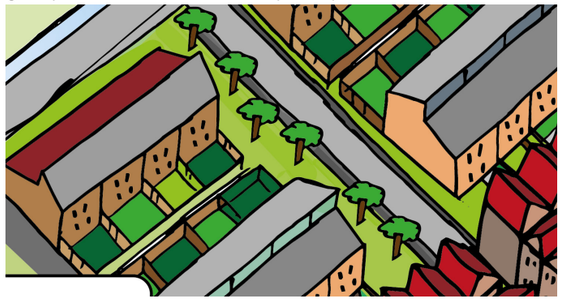


Figure 42 - Vinex neighbourhood

Vinex neighbourhood

Vinex areas (figure 42) are mainly constructed after 1990 to accommodate the growth of the Dutch population (Ministerie van VROM, 2005). They consist of terraced houses in a spacious environment with a lot of green areas around them. Vinex neighbourhoods are located far from the city centre and have excellent accessibility options.

Safeplace delivery is an excellent option for this district. Vinex areas are also very suitable for the PBA. Retail locations are mainly located in supermarkets and small shopping centres. Vinex areas can be very deserted during the day which results in a large number of failed deliveries and neighbour delivery is often not possible

Vinex areas are mainly populated by families with children. Social interaction is also higher compared to the city-centre or districts with high-rise buildings. Compared to other areas, there are a lot of online orders.

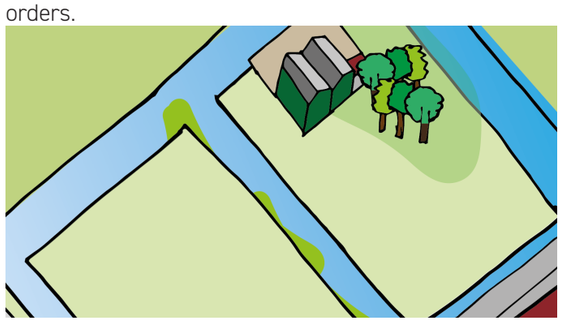


Figure 43 - rural area

Rural areas

Rural areas (figure 43) are the areas outside of the big cities. They exist of small cities and villages mixed with horticulture, cattle breeding and other companies. The price per square meter is low, and distances between houses are rather large compared to other areas

As social cohesion in these areas is high delivery at the neighbours in no problem. Delivery at a safe place is also standard because these areas often have a fixed, known delivery person. Due to the low availability of retail, it can be hard to source new locations; however, this can be solved by placing a PBA to fulfil consumer and legal obligations.

No specific population group is especially represented in rural areas; however, there is a small trend of young people moving towards more prominent cities.

6.4 Districts to target

Based on the executed consumer research and research into the different layers of a city (figure 44), it can be concluded that a one-size-fits-all solution, in this case, is impossible. Choices should be made about the targeted area in the city and the group of targeted consumers.

Retail locations can be used in every layer of the city; however, in crowded layers, locations have less space for packages and sourcing new locations is rather hard. The rise of the PBA is promising; it is suitable for any layer. It serves as a small retail location in remote rural areas but also serves as a solution for extra capacity in busy layers. Unfortunately, municipalities are not so keen on granting permits, especially not in the inner city, slowing down the process and creating more stress on retail locations in the two inner layers of the city. However, PostNL is currently working on solutions within the new branch called "Stadslogistiek"

During the interviews with inhabitants of the mixed apartments and offices area, some interesting insights were discovered. The majority of the inhabitants uses service point delivery as they work during the day. They also mentioned that if they stayed at home to receive a parcel, they also had to accept multiple parcels for other consumers in the building! They were especially irritated that they would be disturbed multiple times by consumers collecting their parcels in the evening.

Another exciting opportunity lies within the Vinex districts. Consumers in these districts are frequently ordering online. As they are mostly deserted during the day, it is hard to deliver parcels, either at the addressed consumer or their neighbours. Sourcing new retail locations also can be troublesome as most of the time there is only one big supermarket serving the area.

Based on the obtained insights and after consultation with PostNL, it was decided to further explore the Vinex districts and the districts with high-rise buildings. Can we design a solution for the inhabitants of those areas which helps them in receiving parcels? The city-centre could also have been an interesting area but is the new PostNL branch "stadslogistiek" is already serving this area. However, before the actual design phase started, it is critical to make sure that this is an actual problem and if it is financially worth solving. Are consumers, for example, willing to pay for a solution?

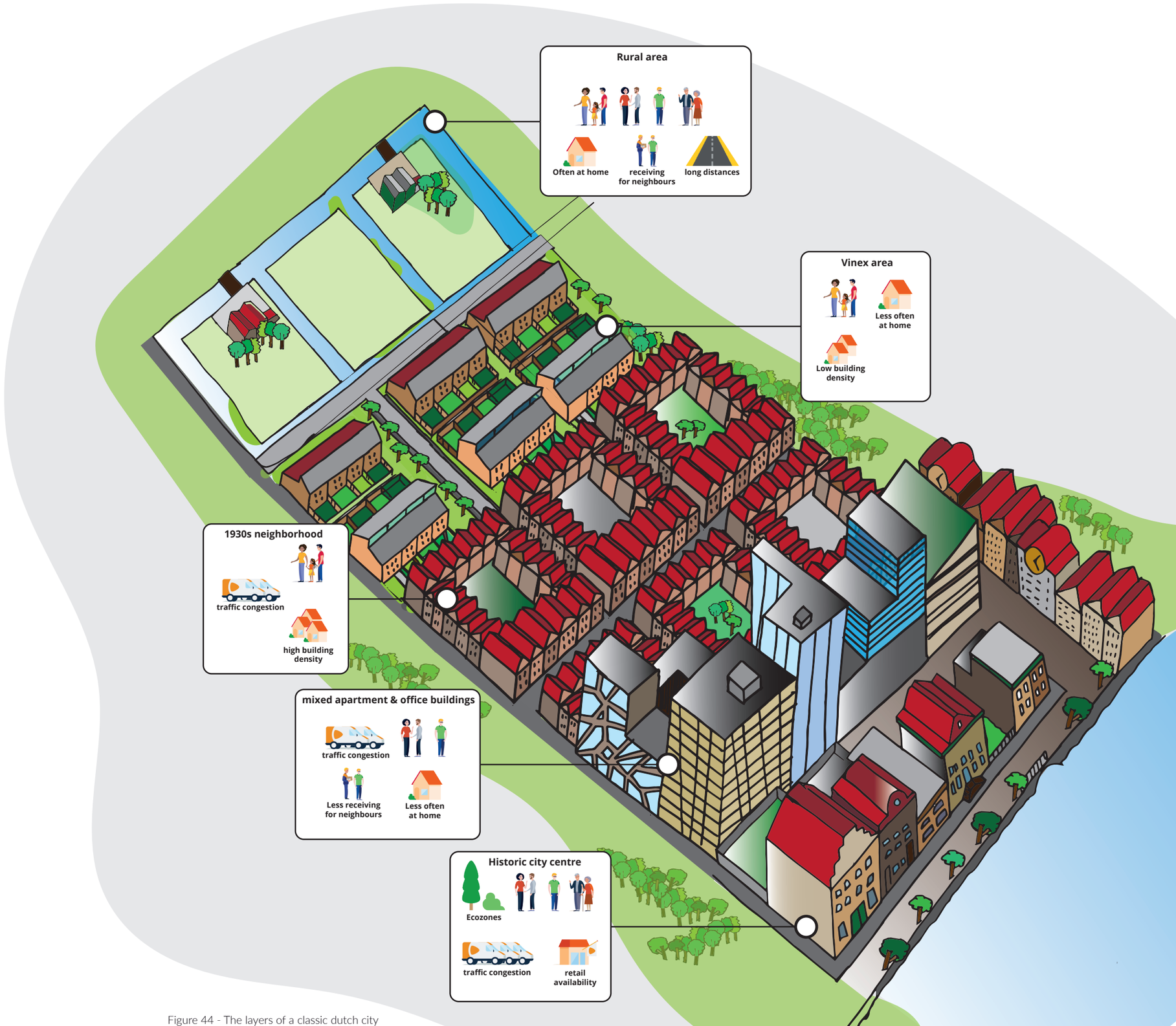


Figure 44 - The layers of a classic dutch city

6.5 How to approach consumers in high-rise buildings

Consumers living in high-rise buildings are often not responsible for maintenance and service provision. They are often united in an association that has the right to act on their behalf. Since these organisations often represent a large group, it is more manageable for PostNL to talk to them, than to all individual consumers. For this reason, studying the way residents associate themselves is useful for the further course of the project. The insights of this research are summarised in figure 45.

Homeowner associations

Homeowner associations manage the majority of the apartment buildings in the Netherlands (Dutch: "vereniging van eigenaars"). The homeowner association is responsible for maintenance and cleaning, and the owners of the apartments are obligated to pay a monthly fee to the association ("VvE structuur", 2019).

Association management organisations

The residents governed homeowner associations in the past, but nowadays, professional organisations are managing the homeowner association on behalf of the residents (figure 46). Those association management organisations are far more experienced in scheduling maintenance and have more substantial bargaining power compared to the homeowner association solely and thus help to save on costs. Examples of organisations are MVGM Wonen (MVGM, 2019) or Syntrus Achmea (Syntrus investment, 2019), part of the investment fund of Achmea.

The association management organisations are also responsible for providing additional services for the residents, sometimes on their initiative and sometimes because the residents request an additional service. The organisations can be of great use for implementing and promoting new solutions for receiving parcels. The organisations manage the vast majority of the larger apartment buildings.

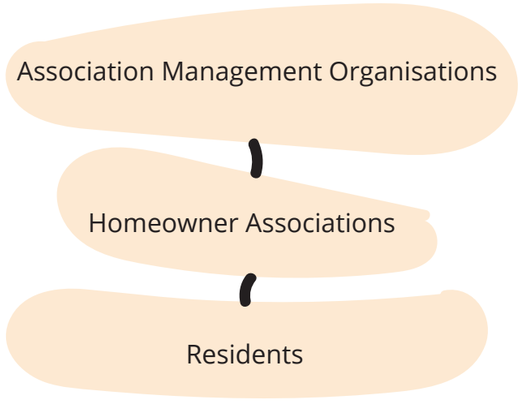


Figure 46 - structure homeowner association

Willingness for new solution

Verifying the willingness of the association management organisations to implement a new solution for receiving parcels is essential. Two large organisations were willing to think along and share some thoughts in a small interview. One of the organisations was already using a locker solution from MyPUP at a few locations in Utrecht. The used interviewguide can be found in appendix 14.5.

Both the organisations recognised the problem of residents who were not at home during the day and are unable to receive their parcels. However, this was mainly the case in newer apartment buildings near the city centre; the older suburb buildings have fewer problems with receiving parcels. This can be explained that older people typically live in suburb apartment buildings. One association mentioned that parcels sometimes got lost in the building or that delivery was almost impossible as there was nobody in the whole building to receive the parcels. They are now offering the MyPUP locker as a solution to the residents. However usage is limited as next-day-delivery is not possible in the locker. The association management organisations shared the opinion that it could be a benefit for the residents. However the easiness of use and speed of the service are essential.

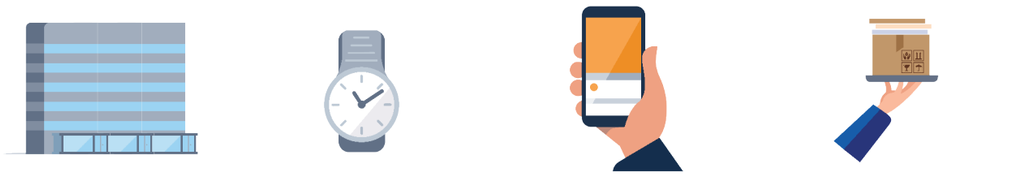


Figure 45 - Insights of research into homeowners associations.

6.6 Summary

Based on the analysis of the currently available delivery options and insights, we can conclude that consumers would like to receive their parcel as close to home as possible. Consumers really like the "pakket- en briefautomaat" as it enables them to receive their parcel close to their home.

People in all walks of life currently order their goods online. A large part of the online orders is placed by consumers between 18-34 years old. This is also the age group in which the majority of the frequent online shoppers is located. Frequent shoppers are defined as consumers receiving more than fice parcels a month. The vast majority of the parcel volume, namely 88% comes from this group of frequent online shoppers.

It is useful to know where these frequent online shoppers live and whether PostNL has a problem with delivery in these areas. The majority of the Dutch cities can be divided into several districts, each with their own characteristics. Rural areas are oke with receiving parcels for each other, and the problems in the city centre are covered by PostNL Stadslogistiek. The real pressing problem is situated at the district around the city centre with apartments and office buildings and the Vinex districts. The frequent online shoppers live in these areas, but people are often not at home during the day. To reinforce the problem there are often no retail locations in these neighbourhoods willing to hand out parcels. The most significant improvement can, therefore, be achieved in these areas.

To make the effect of the new solution as large as possible, it is easy for PostNL if they can do business with large groups in one go. For the district with high-rise apartment buildings, this can be done quickly by targeting the Homeowner associations. For the Vinex districts, a solution must be found to make communication less time-intensive, approaching all consumers one-by-one is not an option. this is again visually summarised in figure 47.

Figure 47 - Possible targetgroups and targetdistricts

CHAPTER SEVEN

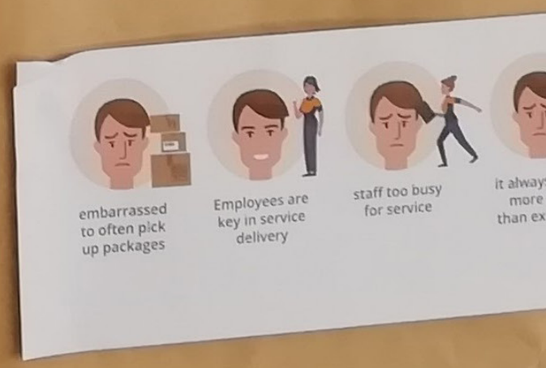
DESIGN DIRECTIONS

The design brief is based on the insights uncovered in the research phase, the additional research on the target group and the strategic outline and limitations of PostNL discovered during interviews and desk research.

The design brief is split into three main parts: the design focus which explains the focus of the project based on the three main insights from the research from a consumer perspective , the design guidelines explaining the focus more in details and providing opportunities and limitations and the design goal explaining what service or product needs to be designed.

Overview chapter

7.1 Focus
7.2 Key Insights
7.3 Design Guidelines
7.4 Conclusion



7.1 Focus

PostNL needs to give consumers the feeling of being in the lead in the parcel delivery process.

In the current situation, consumers don't feel that they are in the lead of the parcel process. this is, of course, an odd situation as consumers purchase the service and pay for it. Consumers feel as if they should listen to PostNL in particular and that they are less heard. Consumers want to decide on how, where and when their parcel is delivered as illustrated in figure 48.

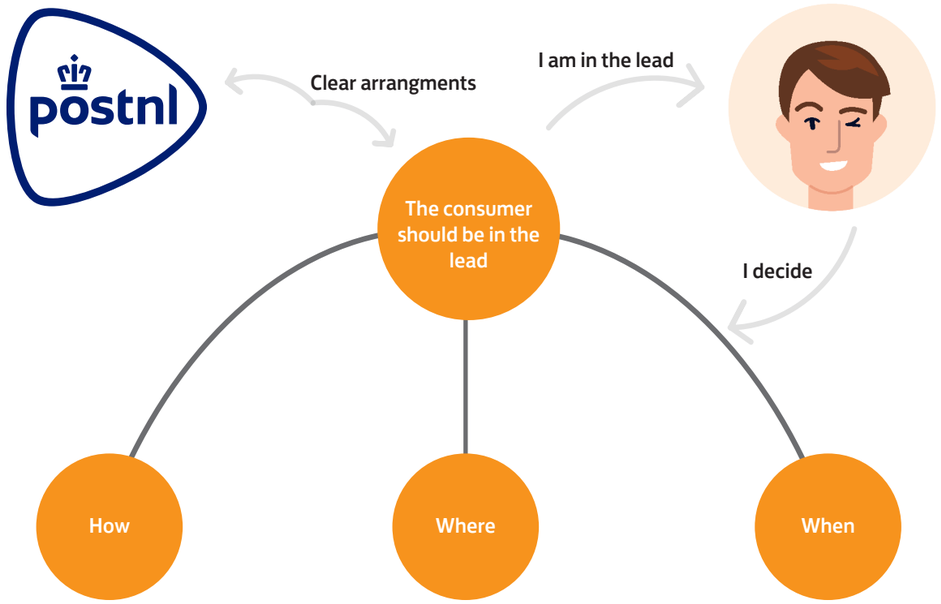


Figure 48 - Focus of design brief

7.2 key insights

Official arrangements

For consumers, it is hard to make official arrangements with PostNL. Consumers who want to change something about the delivery of their parcel might phone the helpdesk which is not able to change the delivery. However, it is possible to do in the PostNL app. Consumers might have made an arrangement with their local delivery driver about delivering parcels to certain neighbours or especially not at the neighbours or about delivery at a safe place like a shed. Some consumers have even built or purchased a solution to receive their parcels. However, officially registering these agreements with PostNL is not possible or very difficult. Consumers are therefore at the mercy of the will of the delivery driver who changes often, may not even be employed by PostNL

Delivery place

The place of delivery is very important for the consumer. The vast majority of the consumers in the Netherlands wants to receive their parcel at their own home. However due to the extended delivery time frames and because many consumers are not at home during the day, this is currently not possible. The other options are actually seen as necessary by the consumers but not desired by the consumers. They feel upset about the delivery driver who is disturbing their neighbours and that they have to disturb them again in the evening to collect their parcel. They don't like to collect their parcel at a parcel point which is sometimes closed in the evening or might have a long queue.

Time management

Currently, consumers experience that PostNL is influencing their daily schedule and that they have to adapt their schedule accordingly. The delivery time frames are large and consumers have to stay at home to receive their parcel. The delivery time frames are communicated quite late making planning difficult for the consumer. Consumers sometimes feel irritated that they do not have the power to influence this timing. Another interesting point that consumers give is that picking up a parcel at a parcel point takes way more time than just the handover of the parcel from employee to consumer. Getting to the parcel point, parking, waiting in the queue and waiting for the employee who is searching for the parcel are all factors taking extra time during this process.

7.3 Guidelines

The design focus is based on a consumer perspective and does not take into account the limitations set by PostNL. In this part, the design brief is further converged and those limitations are taken into account. The guidelines help in creating the solution area and are the building blocks for the design goal. The guidelines are divided into four main parts in figure 49. Three derived from the design focus namely how, where and when and a feasibility part which represents constraints and wishes from PostNL

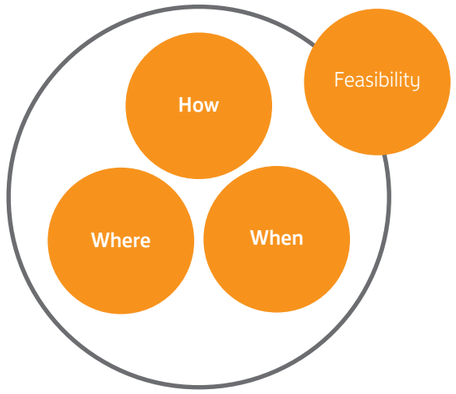


Figure 49 - Guidelines and how they relate to each other

How?

Deliver in a sustainable way

Consumers demand that their parcels are delivered in a sustainable way. This means no unnecessary rides or even reduce the number of rides needed for delivery. Consumers wonder and are concerned about delivery vans from different companies al visit the same street multiple times.

Deliver in a human-friendly way

As well as sustainable consumers demand that their parcels are delivered in a human-friendly way. Delivery drivers should be fairly paid en recognisable as PostNL delivery drivers.

Create meaningful communication

Meaningful communication between PostNL and the consumer is important. Consumers like digital-first communication but there should always be an option to escalate something to a helpdesk employee. Consumers like to know why something is not possible and want to be informed about other options.

Where?

Deliver at preferred location

Consumers want to receive their parcel at home or if there is no way around as close to their home as possible. Consumers like to choose their own location and be able to change the delivery location during the process.

When?

Don't require the consumer to be at home

Consumers would like to receive their parcel without requiring them to be physically present. They don't want to adjust their daily schedule based on a PostNL delivery timeframe.

Make delivery speed less important

The speed of delivery is not always the most important factor of a delivery. For some goods, the consumer doesn't even use the tracking code as there is no hurry. This is especially the case by repeating orders like groceries or pharmaceutical deliveries. If consumers have a parcel box, tracking the parcel is even less important as they know it can always be delivered.

Offer the consumer their preferred time

Consumers like to choose their preferred delivery time during the check-out process. They would also like to still change this time after ordering. This is of course only the case if consumers have to be at their home for the delivery

Feasibility

Try to do business with large parties

PostNL has experience with negotiating and cooperating with large parties. Preferable, the new solution targets a group of consumers without having to reach out to every single consumer in the group. A solution where PostNL has contact with a representative for a group of consumers would be ideal.

The solution should be quickly executable but long-term viable

The problem of the increasing volume is acute and is already causing problems at some locations. The solution should be feasible within the coming years and easy to scale further. However, the solution must not be a quick fix; the solution must also be able to be used sustainably in the future. Preferably the solution can be expanded to further roll out the solution and serve the customer even better

Maintain network exclusivity

Currently, the PostNL network is exclusive for usage by PostNL. This means that PostNL parcel points, delivery vans and lockers are only used by PostNL. Sharing the network is now absolutely not an option but this might slightly change in the future due to changing regulations and market circumstances.

Create an immediately viable business model

The current financial position of PostNL is weak and large investments are carefully considered. New investments must be recovered quickly. Selling the new product or service would be preferred over leasing or renting as the lateral requires more capital.

PostNL should be in control

PostNL requires to control the whole delivery process from pick-up till delivery and all ongoing communication. Third-party products can be used but PostNL must be in control and be responsible for the communication.

Branded as an PostNL product.

The new solution should be branded as a PostNL product to make it clear to the consumer that it is a PostNL solution. Certainly in the case that solutions are going to be shared with other couriers, it is crucial that PostNL remains the leading party in the cooperation.

7.4 Conclusion

The design brief is based on the insights uncovered in the market and consumer research. Those insights are recapitulated in the three key insights that form the basis of the design brief. The more extensive guidelines have been established based on these insights and will act as criteria to make choices in the creative phase of the project. The overall vision as listed in figure 50 will provide the direction and goal during this phase.

Design a service that enables consumers to always receive their parcels at their own home or very close to their own home without requiring them to be at home.

This service should:

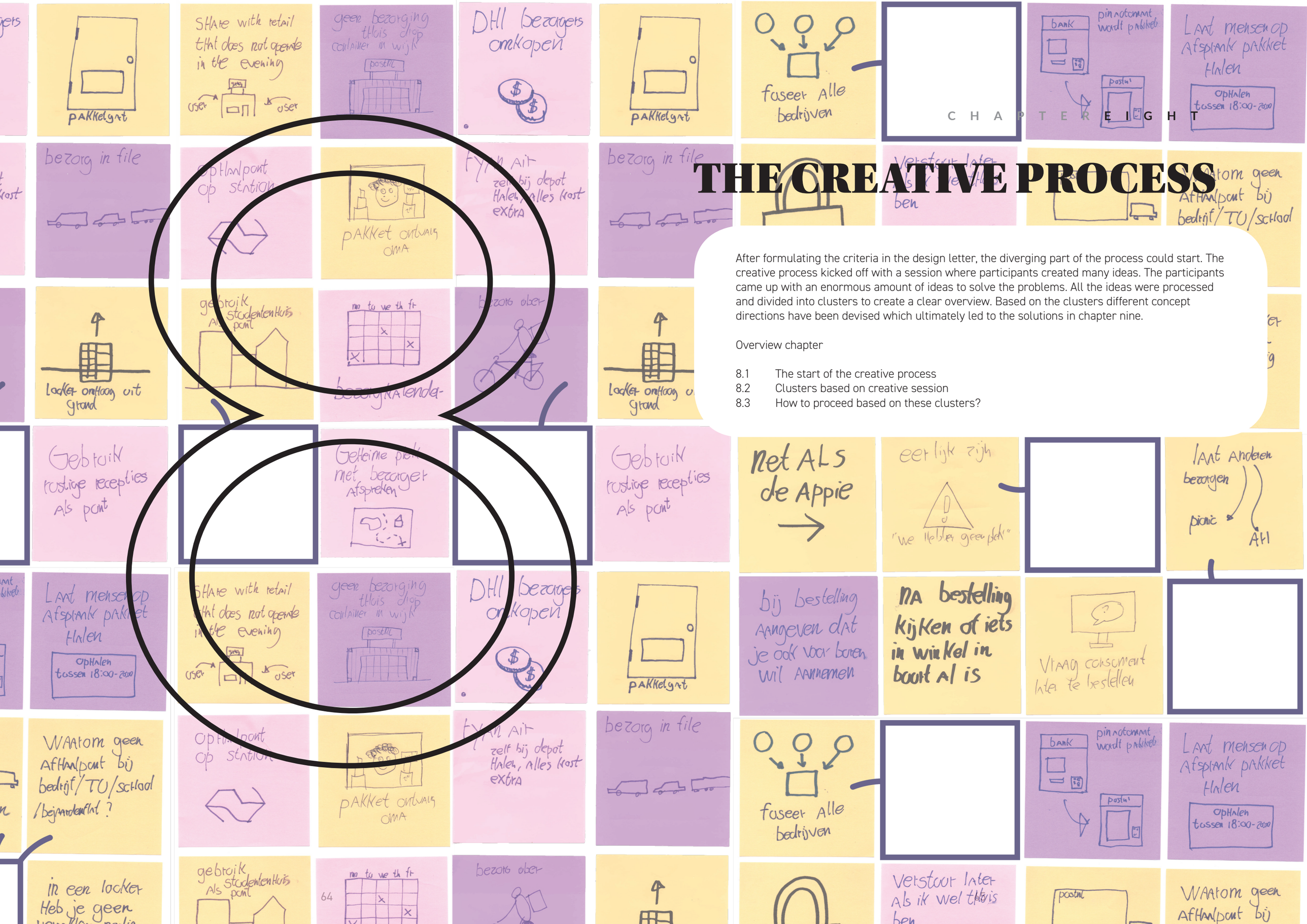
Deliver in a sustainable way
Deliver in a human-friendly way
Create meaningful communication

Deliver at preferred location

Don’t require the consumer to be at home
Make delivery speed less important
Offer the consumer their preferred time

Try to do business with large parties
be quickly executable but long-term viable
Maintain network exclusivity
Create an excellent viable business model
Enable control for PostNL
Branded as an PostNL product.

Figure 50 - Summary of design brief



CHAPTER EIGHT

THE CREATIVE PROCESS

After formulating the criteria in the design letter, the diverging part of the process could start. The creative process kicked off with a session where participants created many ideas. The participants came up with an enormous amount of ideas to solve the problems. All the ideas were processed and divided into clusters to create a clear overview. Based on the clusters different concept directions have been devised which ultimately led to the solutions in chapter nine.

Overview chapter

8.1 The start of the creative process
8.2 Clusters based on creative session
8.3 How to proceed based on these clusters?

8.1 The start of the creative process

With the criteria of the design brief in mind, the creative process started. First, all the insights from the research were collected and a visual was created to be able to share those insights during the session. This visual was used to explain the problem and the research to the participants of the session. A more detailed explanation of the structure of the session can be found in Chapter 2, this chapter will focus on the results of the creative process.

After the introduction and the explanation of the research, the participants created HowTo questions to kickstart the creative process. Examples of the questions used are: How to create more cooperation between couriers? How to support consumers with their own receiving solutions and how to deliver a parcel when there is nobody home? These questions led to a large number of ideas which are displayed on the following pages in figure 51 and 52. Some interesting ideas or ideas with valuable insights have been highlighted and provided with a short explanation.

Figure 51 - Post-its with ideas drom creatice session

Figure 52 - Post-its with ideas drom creatice session

8.2 Clusters based on creative session

The Howto session resulted in a large number of ideas of which a selection was displayed on the last two pages. A precise classification was needed to communicate the ideas clearly and act as a starting point for the concepts. All different ideas were analysed and divided into clusters to create a coherent overview. Matching clusters are bundled and provided with a title. The clusters are based on several similar ideas from the session. The clusters and the corresponding ideas are discussed below.

Ensure parcels are always delivered at the consumer's own house

Figure 53 - Clusters about delivery at own house

Three main clusters as illustrated in figure 53 were discovered in the ideas of this session. Several ideas were about the delivery on an exact time instead of a timeframe. Consumers would receive a clear, exact point of time, so they were not required to stay at home for an extended timeframe. Similar to this cluster is the cluster about delivery by appointment: an example of one of the ideas was to let consumers plan the delivery of their parcel even after they ordered. There was a large number of ideas for the combined delivery of packages; one of the participants suggested the delivery of a combined shipment about two times a week.

Deliver parcels at the consumer's own house without requiring the consumer to be present

Figure 54 - Clusters don't require the consumer to be at home

This question illustrated in figure 54 was certainly the direction in which most ideas were created and the direction the participants valued most. There were lots of ideas on small cabinets, lockers and a kind of large mailboxes to receive parcels, some with connected technology and some without. The participants also created lots of ideas to deliver parcels at safe places around the house like the garage, garden or even chain it to the doorknob. Finally, the participants also created a cluster of shared options to receive parcels, which were all kind of similar to the current PBA but had some surprising elements on usability.

Avoid confusion between couriers and make the consumer feel they are in control and feel supported by PostNL

Figure 55 - Clusters about avoiding confusion between couriers

The ideas developed in this cluster (figure 55) were more focussed on the organisation and communication of PostNL. Ideas about solutions developed by PostNL included a webshop where consumers could order

different physical products which could help them in receiving parcels. New ideas on how to communicate tracking information in a clear way were also developed. A promising direction also included the redesign of the current PostNL label attached to the parcel, it currently is a not clear card with barcodes and text but might be changed in a new user-friendly label that helps retailers and consumers.

Reduce the number of simple transactions at parcel point to free up time for the complicated shipments requiring human assistance

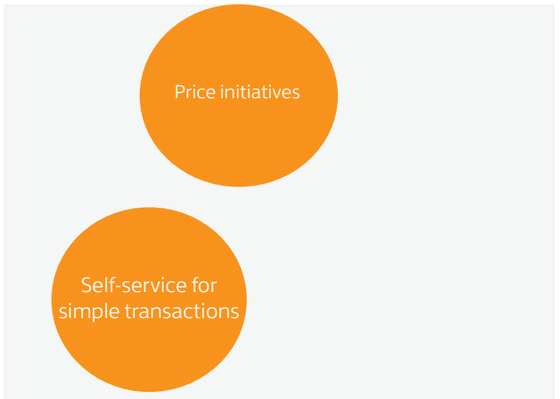


Figure 56 - Free up time for complicated shipments

A lot of simple practical ideas were devised in this part of the session. Simple ideas on price initiatives such as reducing the price at self-service terminals or ask a fee for more service like a printed ticket at the location just like the Nederlandse Spoorwegen. Also, self-service only locations were suggested.

Increase the efficiency and sustainability of all the different parcel networks

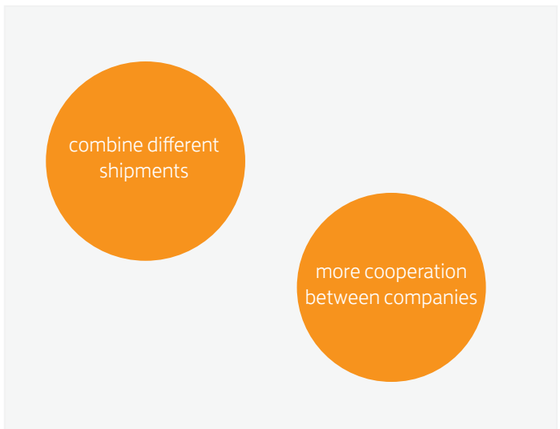


Figure 57 - Increase efficiency and sustainability

This was a cluster (figure 57) where the participants initially had some difficulty generating ideas. Analysing the concepts a subsequent build-up can be discovered. In the combined different shipments cluster ideas initially focussed on combining shipments within one parcel provider but ideas shifted to shared deliveries within a group of parcel providers. This shift resulted in lots of ideas about how to cooperate successfully with other parcel providers or couriers.

8.3 How to proceed based on these clusters?

During the idea clustering, some patterns emerged from all the different sketches and post-its. Some of the ideas were quick fixes or recommendations that were definitely interesting but slightly out of the scope. A large part of the ideas were progressive ideas meaning that they had a consecutive order of concepts, business models or interaction ideas.

During the creative session, participants voted on the ideas they liked most or the ideas that they thought would solve the problem in the right way. Subsequently, a number of ideas or combinations of ideas was further elaborated. Further elaborating ideas act as a check to check the viability of those ideas. The detailed ideas were then sorted in a c-box (for explanation c-box see chapter two) as showed in figure 58. The concepts explained in the following pages and chapters are based on the ideas of this c-box supplemented with a few other ideas that were initially not worked out in the session.

Some ideas seemed interesting at first sight but turned out to be only a short-term solution. These ideas are included in appendix 14.9 as quick fixes. The quick fixes are recommendations that might help to lower the current capacity problem but cannot be sustained in the future. The quick fixes might help to solve a part of the problems retailers face, but the solution is slightly out of the chosen scope and not a long-term solution.

Figure 58 - C-box with ideas from sesion intended as an explanation of the c-box, concepts can be seen in chapter nine

CHAPTER NINE

CONCEPTUALISATION

Bases on the ideas of the creative session and with the guidelines of the design brief in mind, four solutions are created. All of the solutions could solve the problem and allow consumers to receive parcels in their preferred way and lower the pressure on the current parcel points. The various solutions are discussed, and aspects such as the business model, the stakeholders, the location and the target group are further explored for each solution.

At the end of the chapter, it is explained how the choice between the solutions was made. The choice of the concepts was made in cooperation with PostNL. A visual explaining the strengths and weaknesses of each solution was used to to make this discussion possible.

Overview chapter

9.1 Solution one: The shared locker
9.2 Solution two: locker for highrise buildings
9.3 Solution three: Ask for cooperation
9.4 Solution four: The platform
9.5 Choosing between the solutions

Figure 59 - The shared locker

9.1 Solution one: The shared locker

The shared locker (figure 59) is a solution for receiving parcels with a small group of neighbours who know each other. The solution is based on the insight of consumers buying a parcel box who started sharing the box after some months with their neighbours because they still had to accept parcels for the neighbours or they were simply delivered in their box.

The participating consumers are grouped together in small groups of approximately 5 households. It is important that consumers know each other and trust each other because they have access to each other's parcels. One of the consumers will act as the group leader. The group leader is responsible for communication with PostNL. In the garden of the group leader PostNL places a parcel box in which parcels can be received.

PostNL facilitates the use of the parcel box. The Box is placed by PostNL in the garden of the group leader. PostNL is able to directly route the parcels to the box as they know which addresses are connected to the group. Delivery drivers are able to directly deliver the parcel in the box. PostNL is only communicating with the group leader about the parcel box making communication easier.

The group leader is responsible for the parcel box and the recruitment of participating households. As the parcel box is in the garden of the leader he or she is able to keep an eye on the status of the box. If something breaks, the leader will also contact PostNL. The group leader should be e-commerce enthusiastic and frequent orderer. The leader is also responsible for recruiting his neighbours to use the solution.

The consumer has the option to select the parcel box as a receiving address or receive the parcel at their own home. After delivery, they will receive a notification and they are able to pick-up the parcel at the parcel box. Consumers pay a small fee per month for the service.

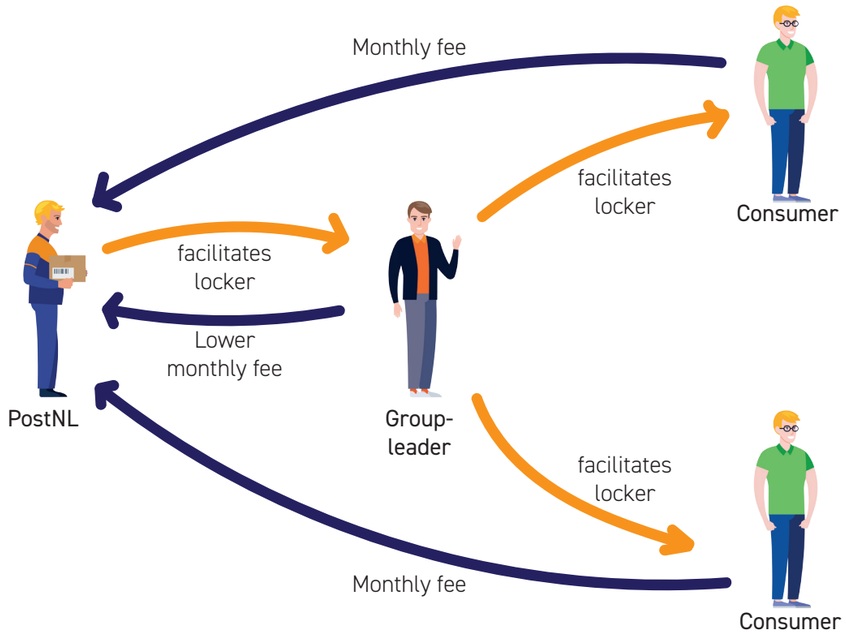


Figure 60 - Business model of shared locker

Business model

The business model is quite straightforward and made visually in figure 60. The parcel box is bought and placed by PostNL. This ensures PostNL is in control of the box and able to determine who may deliver parcels to the box. The box is leased to the group leader who makes a spot in his garden available for the box. The consumers pay a monthly fee to PostNL to make use of the service. The group leader pays the same monthly fee but this fee reduces as he or she is able to recruit more participants for the service. The more participants the bigger the advantage for PostNL. PostNL also has a secondary revenue stream as they save on their delivery operations.

Targetgroup & location

This concept is ideal for neighbourhoods where people have a garden to place the box and where people live within walking distance of each other. Ideal neighbourhoods are the Vinex district and the 1930s neighbourhood. The city centre and high-rise buildings have no space for the boxes and in the countryside, the distance between the buildings is too large.

The box is placed in the garden so it does not require a permit as it is not on municipal land like the Pakket- en Briefautomaat. A place in the garden is also more sheltered and safe compared to an openly accessible terrain. The presence of the group leader and the consumers who pick up their package also creates more social control and thus decrease the chance of vandalism or theft.

The Parcel box

The hardware consists of a simple physical locker box that is already available. It might be a bit larger than the current types to create space for a couple of households. The locker is always open, after delivery the driver pushes the lid into the lock. On the inside of the lid of the box, there is a QR-code which is scanned during delivery by the driver to confirm the parcel is in the box. More sophisticated boxes are also possible with for example an electronic lock which can be opened multiple times, boxes with different compartments or security cameras. However, as the box functions on the basis of trust between neighbours these additional measures are probably unnecessary.

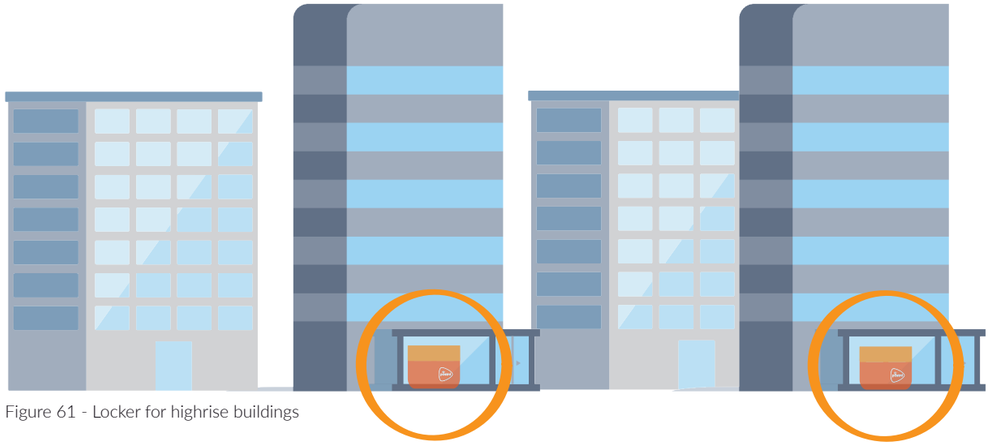


Figure 61 - Locker for highrise buildings

9.2 Solution two: locker for highrise buildings

The locker for highrise buildings (figure 61) helps consumers living in the layer around the city centre with receiving parcels. This layer or district mostly exists of highrise apartment buildings interspersed with offices. Most consumers are working during the day, tend to be younger than average and are frequent online shoppers. A locker for receiving parcels in their main hall might be a great solution for this target group.

The locker for receiving parcels is similar to the PBA. It consists of multiple boxes which can be opened with a smartphone. Delivery drivers place the parcels inside the boxes and use QR-codes on the inside of each cover to indicate which parcel is delivered in which box. Consumers can retrieve their parcel by using an app on their smartphone after they received a delivery notification. Consumers are also able to send parcels or return parcels using the locker.

PostNL facilitates the locker in the main entrance of the building. The locker has PostNL branding and is placed by PostNL. For delivery drivers, the process of delivering parcels becomes faster and easier. They are ensured that all of their parcels always can be delivered at this building. PostNl does not directly deal with the consumer living in the building but communicates with a representative of the Owners Association.

The Owners Association is responsible for all the maintenance, cleaning and services in a high-rise building. Dealing directly with the association instead of all contacting the consumers one-by-one saves time and creates clarity for PostNL and the inhabitants of the building. The Owners Association is able to discuss the new service in a members assembly and decide for all residents. Invoicing can then easily be done by the Owners Association via the monthly contribution.

When a **consumer** that lives in a highrise building orders something online that will be delivered with PostNL the PostNL API automatically recognises the address as a location with a locker. The parcel will be delivered to the locker and the consumer will receive a notification with a request to pick-up the parcel. At the start of the service only receiving PostNL parcels is supported. After a substantial expansion and a well-spread network throughout the Netherlands receiving parcels form other couriers might be an option. PostNL specifically does not want to invest in hardware that others can also use, network exclusivity remains one of the most important requirements.

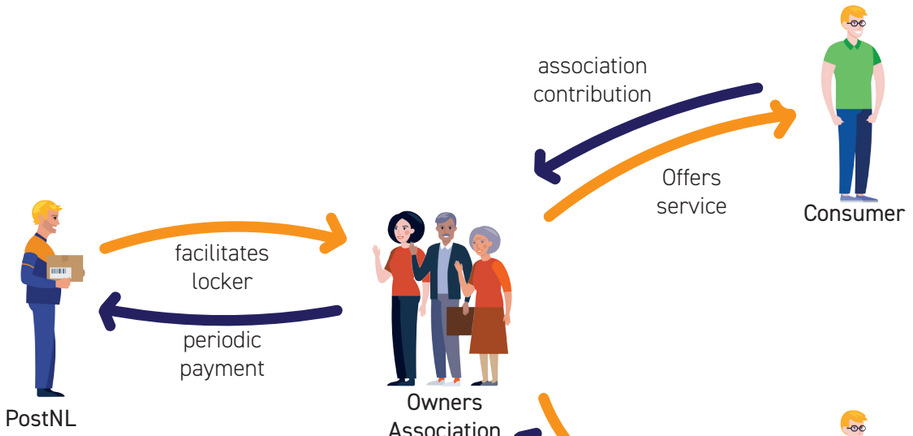


Figure 62 - Business model of locker for high-rise buildings

Business model

Again, the business model illustrated in figure 62 is quite straightforward. PostNL leases the locker to the Owners Association who pays a monthly fee for the usage of the locker. Leasing has the advantage that PostNL is able to maintain control over the locker. The Owners Association collects the monthly contribution from the consumer via their contribution. Because the locker is shared with many households, they all pay a small part of the costs. A large part of the monthly contribution is, therefore, a direct profit for PostNL. The profit, in this case, is also two-fold as there is direct profit from consumers and indirect profit from savings on operations.

Targetgroup & location

This concept is ideal for neighbourhoods with a large number of high-rise buildings. These are in particular districts that lie against and around the city-centre. The city-centre itself is also an option, but a large range of retail locations is usually already available there.

The locker is placed at the main entrance of the building near the mailboxes. This does not require a permit as it is an area owned by the inhabitants of the building. In the future, it might even replace the mailboxes. This area is publicly accesable during the day as postmen also need to deliver mail, during the night it is closed in most buildings. People are constantly entering or leaving the building, which ensures social control in the locker area.

The locker

As already mentioned, the locker is very similar to the pakket- en briefautomaat. It consists of a variety of small boxes with door with an electronic lock. To lower the costs the locker can only be operated by using a mobile phone so no screen and fewer electronics are needed. To further lower the costs compared to a PBA the locker is less theft-proof. This seems a weird and confusing plan at first but it makes sense as the locker is secured during the night, the locker is always sheltered inside and there is more social control.

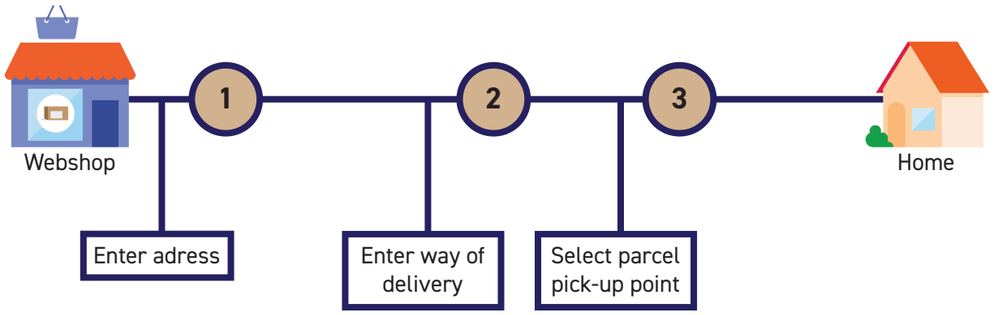


Figure 63 - Messages for cooperation at strategic points

9.3 Solution three: Ask for cooperation

This solution seeks cooperation from the consumer. Consumers are often not aware of the situation of PostNL (Chapter 4). If they are told that PostNL handles about 700.000 parcels a day they suddenly understand what kind of operation is required. Asking consumers to adjust their choice at specific points in the customer journey increases the efficiency of PostNL operations but might also increase the value for the consumers themselves. This solution consists of messages for cooperation at strategic points in the online journey as displayed in figure 63. Asking the consumer for their cooperation ensures that parcel delivery is more spread evenly over the week and that parcels are more evenly distributed over the retail locations which also increases sustainability.

The strategic interventions

For this solution, three strategic interventions are designed. The interventions exist of a message received by the online ordering consumer at strategic places in the process. In a final solution, more messages at other parts in the journey could be designed after research. The three messages will now be briefly discussed.

Intervention one

The first message is sent to the consumer after entering their address in the existing check-out software supplied by PostNL to webshops. Consumers receive the pop-up as shown in figure 64 that it is currently hectic in their neighbourhood. The pop-up also shows a less busy time to deliver the parcel so consumers might choose to receive later. Also, the suggestion to deliver to another location like their workplace is given to make the consumer think again about the delivery location and do not automatically opt for their home. Of course, the consumer should always be able to ignore the message and continue.

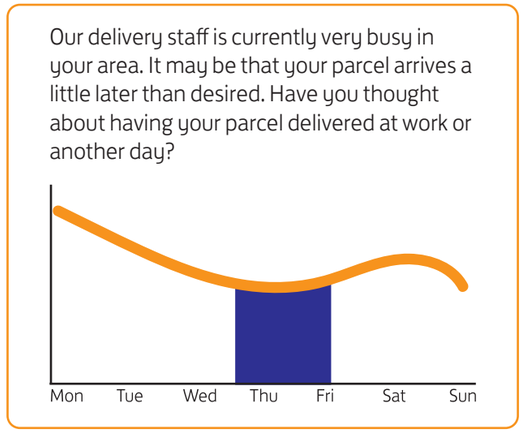


Figure 64 - Pop-up about busy staff in local area

Intervention two

The second intervention takes place when the consumer has to select which way of delivery he prefers. Currently, consumers can choose between a retail pick-up location or home delivery. However, it might be the case that one of those options is already at full capacity and PostNL wants to persuade consumers to use the other option. This can be done by again a simple pop-up as shown in figure 65 with a request to change and emphasise the benefit of the recommended choice.

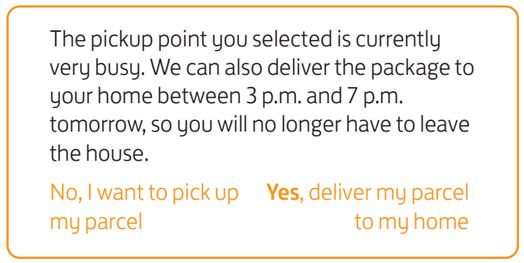


Figure 65 - request to change delivery location

Intervention three

The third intervention keeps in mind that specific people need to use the pick-up point as they are not home during the day to receive a parcel. This intervention aims to distribute the parcels evenly over all the different pick-up points. When consumers select a certain pick-up point that is already near the maximum capacity consumers receive a pop-up (figure 66) with the request. The request nudges them by stating that they only have to bike 300 meters further, but it will save them from waiting in a long queue.

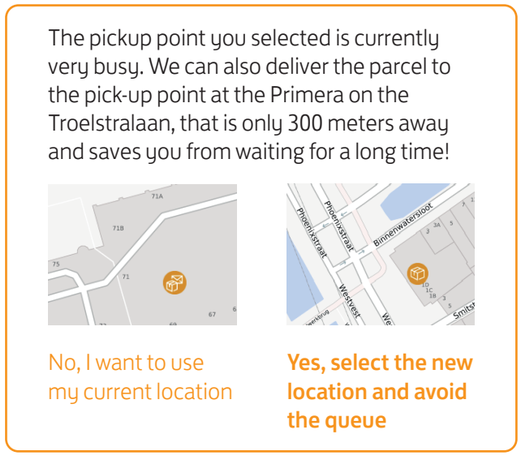


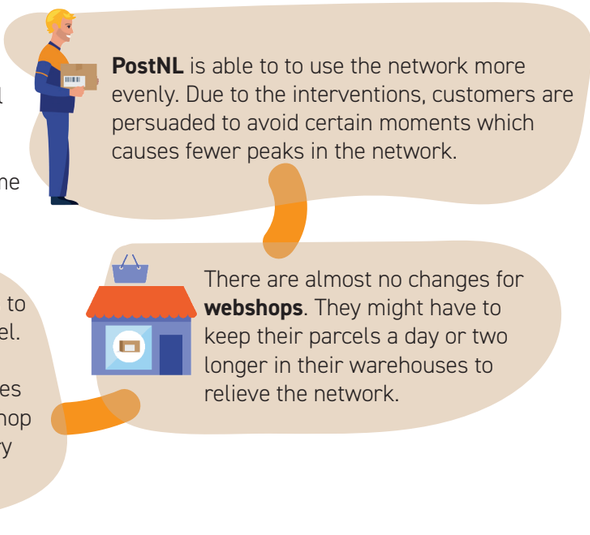
Figure 66 - Pop-up with alternative parcel point

Stakeholder roles

The stakeholder roles in this solution are almost the same than the current roles. The operational process also remains the same. The interventions aim to make more efficient use of the current network.

Business model

This concept does not influence the business model significantly. In the future, it might be an option to work with adaptive pricing to stimulate consumers even more to choose a specific option. Consumers will receive a lower price if they choose an option that is favourable for PostNL just as it is already possible to change your delivery evening delivery or a smaller time frame for a small additional payment.



Investments

The investments needed for this solution are rather small. There is no new physical hardware need or a change in the way of operating. There are some links that have to be created between the different software systems PostNL is currently using. For example, the system in which the capacity is kept up to date must be linked to the PostNL checkout.

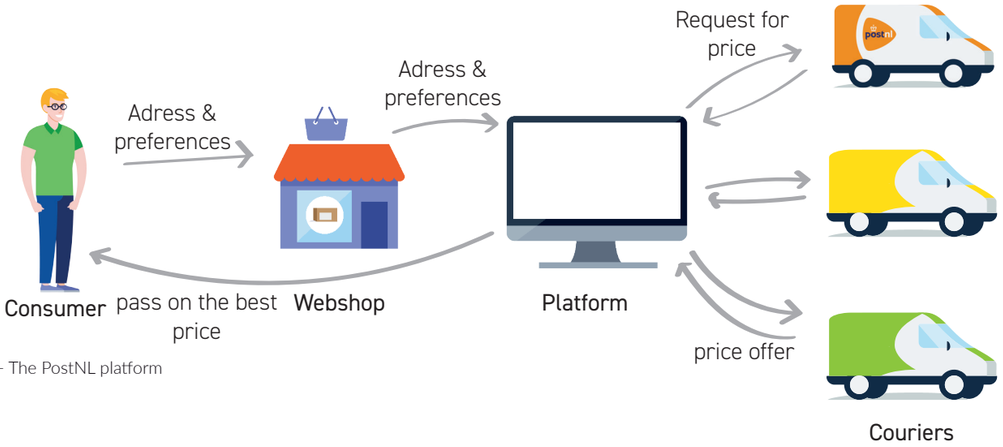


Figure 67 - The PostNL platform

9.4 Solution four: The platform

The platform concept is the most innovative and disruptive concept. Consumers indicated that they didn't understand why there so many delivery vans in their street during the day. They first receive a parcel from one courier and then the other courier, is it not possible to combine these parcels? The platform concept was created based on this thought.

The process is shown in figure 67 and starts with a consumer ordering something online en entering the delivery address. The webshop shares this address and the prefered options of the consumer with the PostNL platform and the platform then shares this address and preferences with the involved partners.

The consumer has the freedom to choose from any courier. during the check-out consumers enter their address and preferences. Preferences can either be ultra-fast delivery or a very strict time frame. After entering their preferences they are able to choose a courier For the consumer, the process remains fairly the same compared to the current process.

For **the webshops**, the process remains quite the same compared to the current process. They currently have a contract with PostNL which might change to a contract with the PostNL platform. They are able to provide better service to their customers as the delivery options are more expanded.

The platform is owned and operated by PostNL, however it is a separate entity to avoid conflicts of interest. The platform has contract with partners, those partners are either a webshop making use of the service or a courier fulfilling the service. The platform acts as a mediator between those partners.

PostNL has a dual role in this concept, they act as a company operating on the platform and as the owner of the platform. In the platform role, PostNl is responsible for acquiring new partners. Acquiring webshops is something PostNl is used to as they have been doing this for a long time. Acquiring new partners for shipping is completely new and requires a change of mind.

For **the couriers** participating on the platform, there are some interesting changes. Couriers are able to place a bid on a request based on their current capacity, routing (are they already visiting this street?) and the margin on the delivery. This ensures that they have more transport movements at the maximum capacity that are also more profitable.

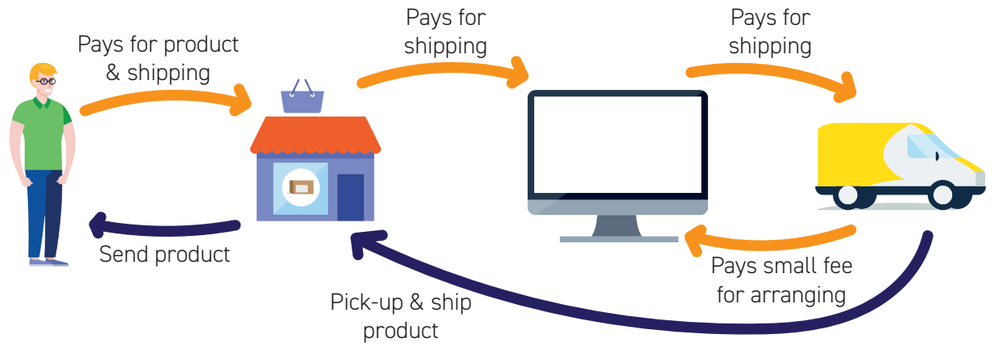


Figure 68 - Business model of platform solution

The partners analyse the address and preferences with software and are able to offer a price for the request based on their capacity and routing. The price is transferred through the platform to the webshop which may choose the best option or let the consumer chose their favourite option. The consumer pays the webshop, the webshop pays the platform for shipping and the platform pays the courier and keeps a small fee for arranging.

Business model

The business model is completely different compared to the current models in the market. Consumers still pay for their shipping costs to the webshop who then passes this amount on to the platform. The platform keeps a small percentage for the service and pays the rest to the courier acting as a partner. This courier might be PostNL but could also be a different courier who joined the platform.

Targetgroup & location

From consumers perspective there is no specific target group for this concept as it can be used by any webshop and online shopper. However, the target group might be a group with special wishes about delivery like speed or timeslots.

Possible partners that can be targeted to cooperate with on the platform can be diverse. Companies with a good local network for a part of the Netherlands might be interested. Couriers that are very good at delivering specific niche products like telephones requiring contract signing or other couriers providing additional services are also interesting as they provide an extension for the current services offered.

The software

There is no hardware needed for this concept however it requires major investments in IT development. It is best if PostNL starts a new entity that will build and launch this platform to prevent a conflict of interest. This new entity will also lower the barrier for other couriers to cooperate as a partner with the platform as they are not directly cooperating with PostNL.

This new company is much more of a tech or IT company than a courier. It will not deliver any package itself but only connect supply and demand. Major investments in developers and people acquiring partners and webshops are need to succeed.

9.5 Choosing between the solutions

Every concept has its advantages and disadvantages and they must be carefully considered in order to make a good choice. This choice is based on the criteria from the design letter but also on the input from PostNL from conversations about the solutions. Below is a brief summary of the four different solutions illustrated in figure 69 that emerged from the creative session.

The solutions

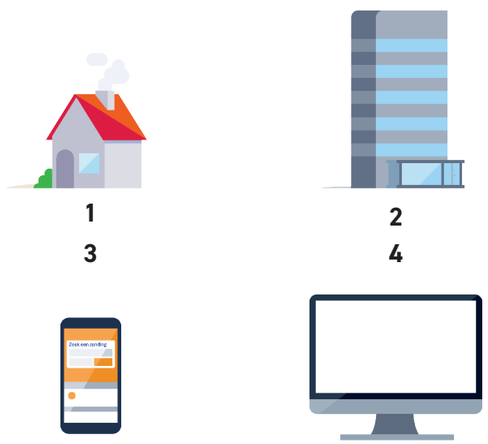


Figure 69 - The four solutions

Solution one is a shared locker managed by a group leader who is directly in contact with PostNL. The locker is owned and maintained by PostNL but the group leader is responsible for recruiting users and thus will receive a discount on his own membership. Consumers pay a fixed fee per month.

Solution two is a locker for in the central entrance for high-rise buildings. PostNL operated and maintains this locker and PostNL parcels are automatically delivered to the locker. Consumers pay a monthly fee through their homeowner's association, the homeowner's association is also responsible for the communication with PostNL.

Solution three is a simple solution that influences the consumer during the ordering process. Consumers receive messages based on certain choices they make in the check-out process. They are for instance asked if it is ok if the parcel is a day later of if they are fine with using another parcel pick-up location.

Solution four wants different couriers to cooperate more on a platform. The delivery preferences of the consumers are sent form the webshop though the platform. The couriers analyse those preferences and send in their best proposal to deliver the package. The consumer or webshop decides subsequently what courier should be used. PostNL would, in this case, operate the platform and receive a small fee for arranging each shipment.

The criteria

The criteria for evaluating the concept are taken from the design brief. However, not all criteria weigh equally heavily in the final choice. The ranking of the criteria is based on a discussion and on information obtained from conversations with PostNL employees. The ranking was done by shifting the criteria until there was a ranking that was acceptable to everyone as shown in figure 70.

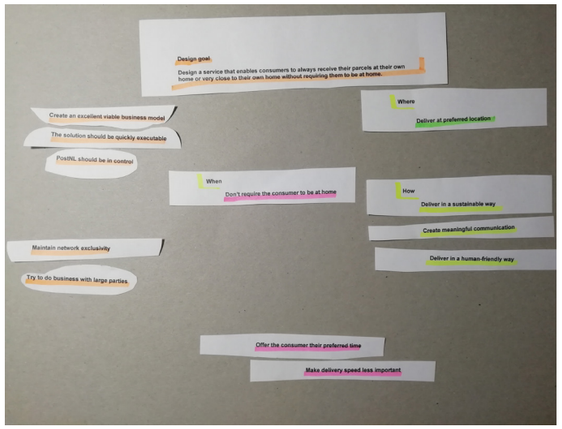


Figure 70 - Ranking the different criteria

Choosing the right solution

Choosing between four different solutions that all have their strengths and weaknesses is very difficult. It is a process that must be done explicitly and visually to be able to accurately weigh the advantages and disadvantages. To visualise the choice and create a coherent overview a Harris Profile was used. A harris profile is a "graphic representation of the strengths and weaknesses of design concepts with respect to predefined design requirements " (Delft Design Guide, 2016). The predefined design requirements were defined in the design brief in chapter seven and ranked according to their importance. The different profiles of each concept have been rated and are presented in figure 71.

The final choice

The concepts in the Harris profile are evaluated with different stakeholders within PostNL. The suspicion of people that the interventions in the check-out process would have a small impact on the problem was confirmed by the Harris profile shown in figure 71. The shared locker and the locker at the apartment building entrance score almost equal in the profile. The

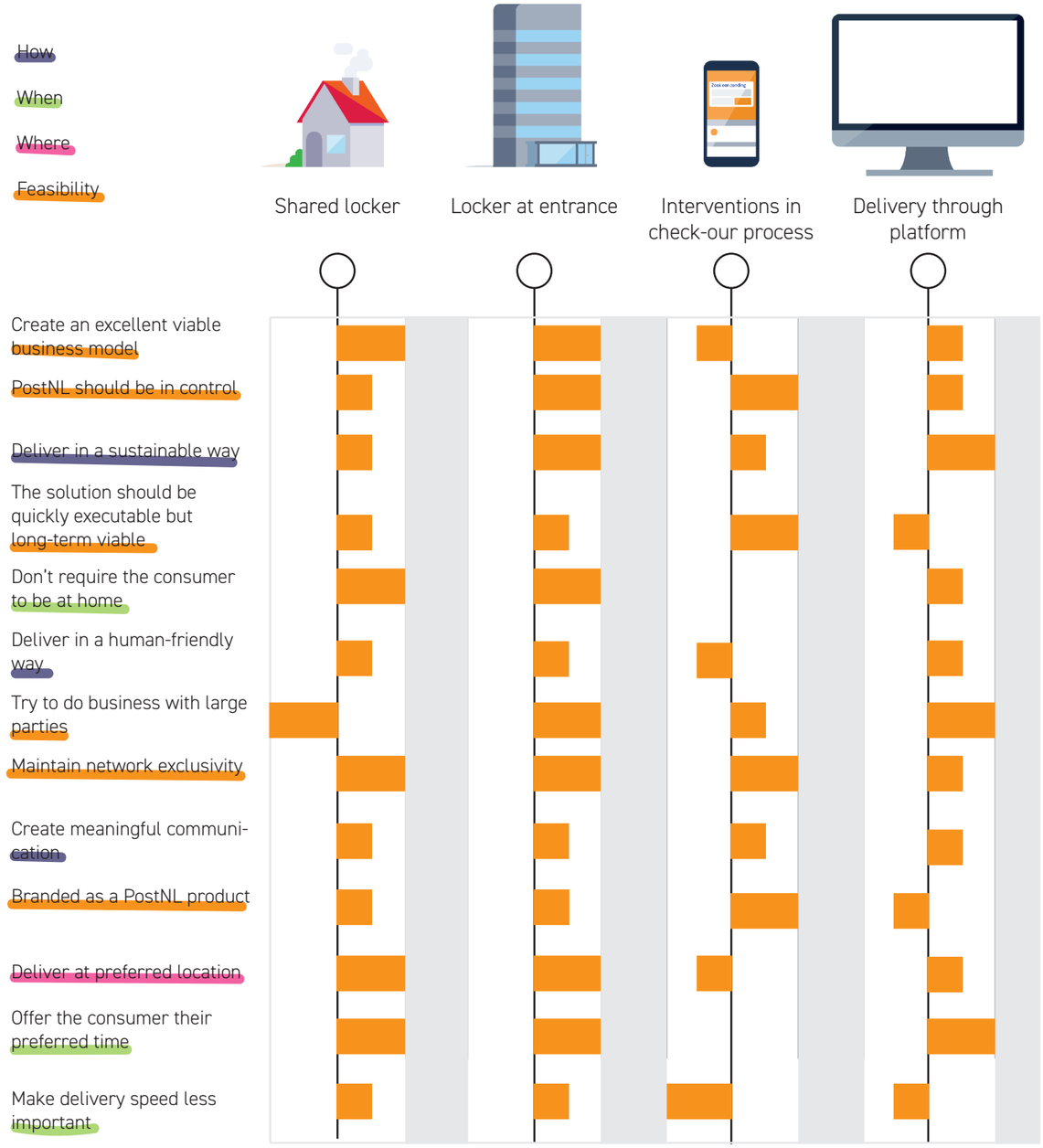
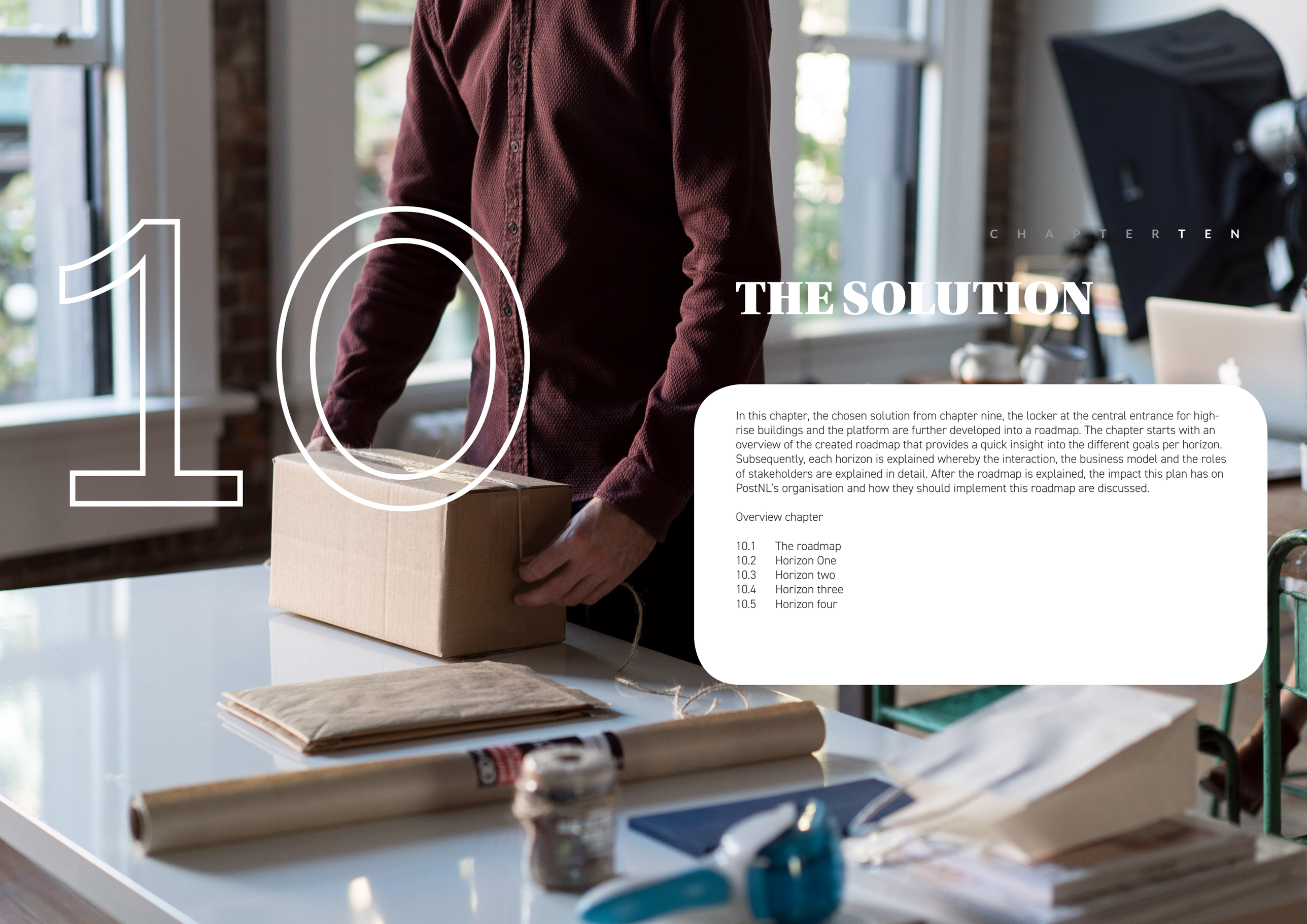


Figure 71 - Harris profile used to asses different solutions

locker for in the central entrance for high-rise buildings scores slightly higher as the number of stakeholders with whom PostNL has to work is lower due to the homeowner's associations. The shared delivery platform looks like an interesting option however based on the Harris profile it is a more logical choice to go for the locker at the central entrance for high-rise buildings. Based on this Harris profile, the locker for high-rise buildings is the choice that will be further elaborated.

However, during the discussion about the different concept, a preference for the innovativeness and freshness of the platform solution emerged. It could be something totally new and different for PostNL. Ultimately, the solution chosen was a roadmap leading to the PostNL platform of which the locker is a part.



10

CHAPTER TEN

THE SOLUTION

In this chapter, the chosen solution from chapter nine, the locker at the central entrance for high-rise buildings and the platform are further developed into a roadmap. The chapter starts with an overview of the created roadmap that provides a quick insight into the different goals per horizon. Subsequently, each horizon is explained whereby the interaction, the business model and the roles of stakeholders are explained in detail. After the roadmap is explained, the impact this plan has on PostNL's organisation and how they should implement this roadmap are discussed.

Overview chapter

10.1 The roadmap
10.2 Horizon One
10.3 Horizon two
10.4 Horizon three
10.5 Horizon four

10.1 The roadmap

The roadmap exists of four consecutive horizons. In figure 72 there is an overview of all the different horizons with the accompanying visions. In the roadmap, the locker for high-rise buildings is used in the first three horizons and in every phase there is more cooperation between parties. In horizon 4, almost full cooperation between all parties is facilitated by the platform.

The different phases with the proposed interaction, the needed hardware and a detailed description of the business model are discussed in detail on the following pages. How the different horizons will impact the current operation is discussed afterwards. Subsequently, chapter eleven explains the locker, the proposed platform and price in detail.

HORIZON 1

VISION

We want to enable consumers to receive parcels from PostNL always at their own home without actually requiring them to be at home.

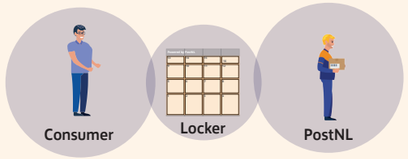
ACTION

Create a network of lockers for receiving parcels

HOW?

In horizon one, the consumer makes use of a locker facilitated by PostNL. Consumers pay a small monthly fee through the contribution of their homeowner's association. Consumers order online and receive their parcel at the locker at their central entrance of the apartment building. The locker only facilitates receiving and sending PostNL parcels.

WITH WHOM?



HORIZON 2

VISION

We want to facilitate retail companies with their own delivery network, making sure they are always able to deliver their goods.

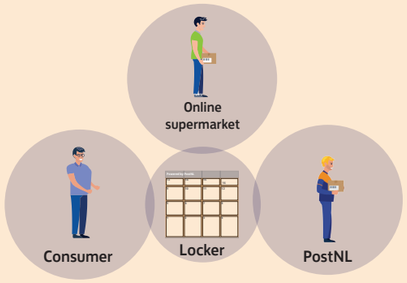
ACTION

Open up the network of lockers for retail companies

HOW?

Retail companies with their own delivery networks like PicNic or AH Thuisbezorgd also deal with full schedules and failed delivery attempts. They do not deliver packages and are therefore currently not a direct competitor of PostNL. By making it possible for them to also deliver via the lockers, they can always deliver the groceries. PostNL receives a fee for this which extends the locker's business model.

WITH WHOM?



HORIZON 3

VISION

We want to facilitate all postal and courier delivery services making sure they are always able to deliver their parcels at their customers reducing unnecessary transport movements.

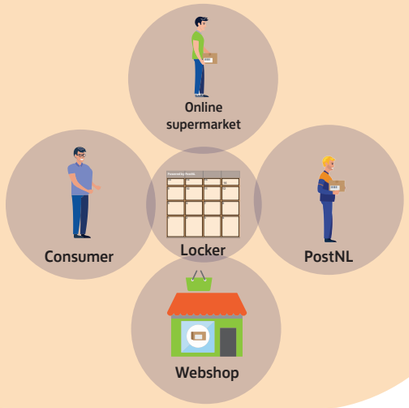
ACTION

Open up the network of lockers for other couriers

HOW?

Horizon three builds upon the network created in the first two horizons and needs a well-spread network. Besides PostNL and the online retail companies other couriers will be added to the parcel network. They pay a small fee per delivered parcel in the locker. This drastically reduces the number of failed delivery attempts and thus contributes to sustainability.

WITH WHOM?



HORIZON 4

VISION

We want to completely ban out unnecessary transport movements and inefficient networks by creating a transparent shipping platform. Consumers are able to choose their preferred way of delivery based on availability and real-time pricing.

ACTION

Create a platform to connect all webshops to all couriers

HOW?

The shipping platform is created and operated by PostNL. PostNL is also responsible for recruiting webshops and couriers. When a consumer orders online the webshop will send his delivery preferences to the platform. Couriers analyse this offer and based on the preferences and their capacity they send a proposal. The consumer selects his preferred option and pays. The selected courier will deliver the parcel.

WITH WHOM?

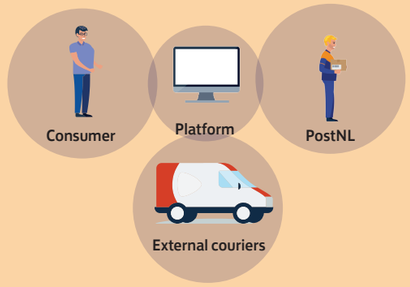


Figure 72 - overview of the different horizons with the accompanying visions.

10.2 Horizon One

We want to enable consumers to receive parcels from PostNL always at their own home without actually requiring them to be at home.

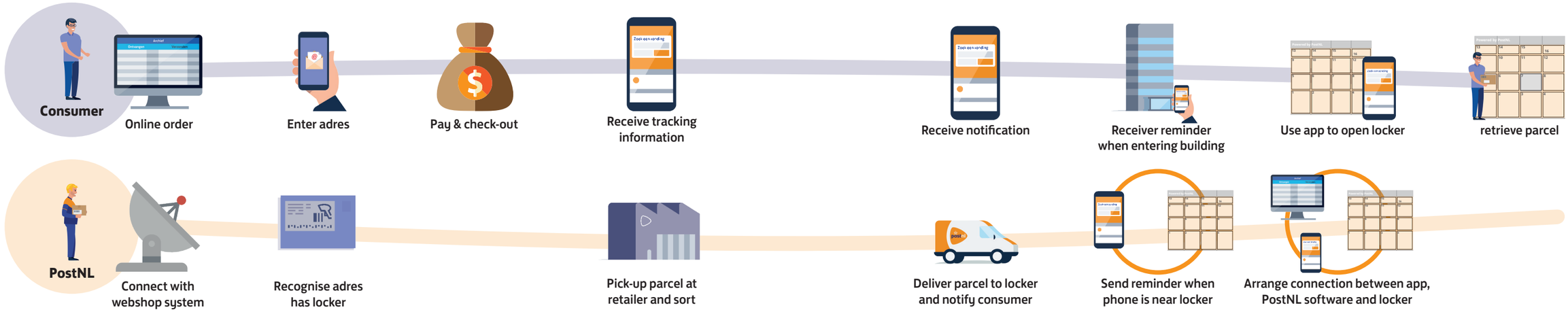


Figure 73 - Horizon one service blueprint

In the first horizon (figure 73), we focus on consumers who frequently order online but are not at home to receive their parcels. Those consumers would have opted for parcel point delivery or hope that the neighbours want to receive their packages. Based on the consumer research and the data analysis (chapter four & five), the starting point for this horizon are single or dual earners living in relatively new apartment blocks. They frequently order online, work during the day, and do not want to visit a parcel point in the evening. However, more importantly, they are willing to pay for an additional service.

The interaction

Figure 73 displays the proposed new way of receiving parcels on a comprehensive journey. The start of the process is similar to the current process. Consumers order online and enter their delivery address in the PostNL API ("Developer.PostNL", 2019). The address is recognised as an address with locker, which is also communicated to the driver. The driver delivers the parcel, and the consumer receives a notification that he can collect his parcel from the locker. To kindly remind the busy consumer of his parcel, he receives an additional notification when entering the apartment building. The consumers make use of their phone to open the locker, confirm the pickup and collect his parcel.

Hardware

The hardware used in horizon one consists of lockers which can be adapted to fit every apartment building.

The lockers consist of three different modules, each with their own size as shown in figure 74. The lockers can be stacked and linked to create one locker. Compared to the PBA the apartment locker has no screen, all the communication is done on the smartphone of the consumer This will make the locker less vulnerable for malfunctions and ensures that a lower initial investment is needed.

Optionally the locker can be equipped with beacons to facilitate communication with nearby devices. In this case, the user is able to directly communicate with the locker without the need for an internet connection. They might also be used to send reminders when consumers walk by the locker to enter their home.

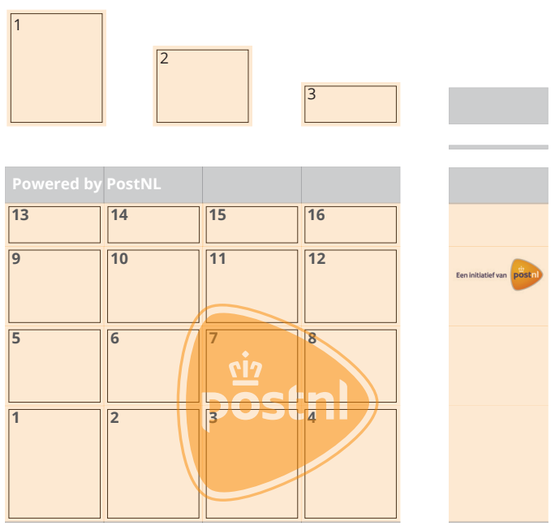


Figure 74 - Modular locker

A major drawback for the roll-out of the lockers is that a connection to the electricity network and a connection to the internet are required. Part of the apartment buildings will have to install those connections. In some cases, wireless internet connection may be an option; however, this will always be a less stable connection.

The business model

PostNL is able to get a financial gain in this situation from two streams both displayed in figure 75. As the locker will guarantee a 100% hit rate PostNL is able to save on transport movements. After all, they no longer have to opt for a second delivery attempt or drop the parcels at a parcel point. This will ensure cost savings at the PostNL retail department.

The other stream consists of the consumers who are paying a monthly fee to use the service. Based on the survey conducted within the target group, we can assume consumers are willing to pay a fee for the additional service provided. However, it is rather complicated to collect this fee at all the different consumers, and the locker system works optimally when all the consumers in a building are participating. To overcome this issue, the locker system will be leased to the homeowner's associations who, if they have a majority, may decide for all residents.

The locker system will be leased to the homeowner's associations instead of sold. A lease construction ensures PostNL keeps control over the system as a whole and more importantly, the communication with the consumer. This will ensure that the locker system can be exclusively used by PostNL in the first horizon. A disadvantage is however that the initial first investment for PostNL in a lease construction will be substantially higher as the return on investment is spread over a long period.

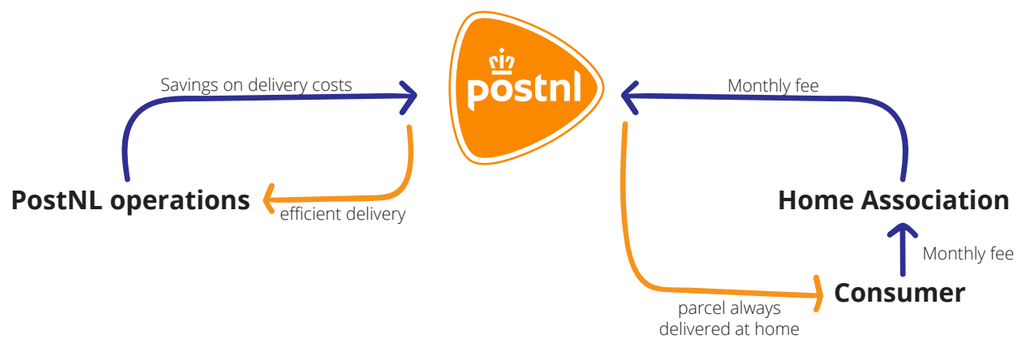


Figure 75 - Business model Horizon one

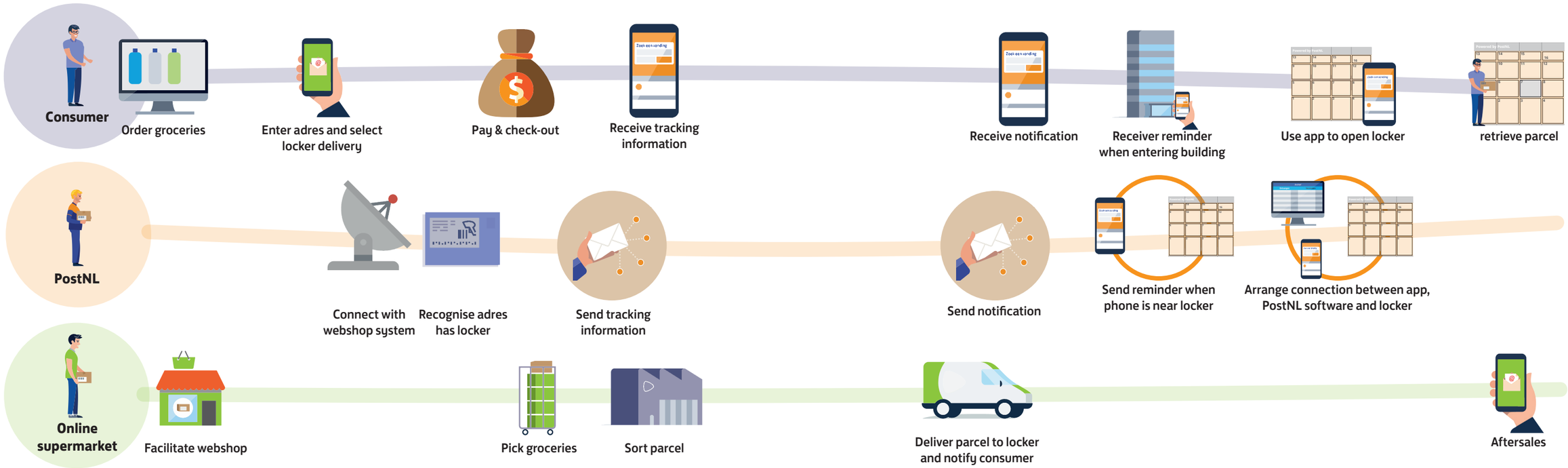


Figure 76 - Horizon two service blueprint

10.3 Horizon Two

We want to facilitate retail companies with their own delivery network, making sure they are always able to deliver their goods.

Besides traditional delivery with a courier like PostNL or DHL, some companies deliver their goods themselves as discussed in chapter 2. Those companies include grocery delivery services like PicNic or AH Thuisbezorgd, Foodboxes like Hello Fresh but also retailers with electronic devices like Coolbue or Mediamarkt. All these retailers deal with the same issues: consumers are not at home, their delivery timeframe is too big or the preferred time of the consumer is not available due to demand. Helping these companies improving their hit rate and service level will be of great value for them.

The interaction

The proposed new way of receiving, for example, groceries is almost the same as in horizon one and shown in figure 76. Consumers order online and select their locker as the delivery address. The grocery company takes care of the delivery. The delivery driver takes care of putting the groceries in the locker, and the consumer will receive a notification in the PostNL app. Communication about shipping information and status is done by the grocery company and when the parcel arrives at the locker communication is done by PostNL.

Hardware

The lockers used in horizon 2 are the same as in horizon one consisting of three different modules, each with their own size. The lockers can be stacked and linked to create one locker. However, the software behind the system will need some updates to ensure that third parties can open the locker to deliver their groceries or parcels.

Figure 77 - PostNL employee with special cooling package

Companies delivering groceries have to take extra care regarding food safety. Groceries should be at the right temperature to prevent decay. Currently, consumers receive the groceries at their own front door and the store them immediately. In the locker system groceries need to be delivered in a special package to keep them fresh. The PostNL cooling package used at PostNL food shown in figure 77 to distribute chilled orders is suitable for this job ("AGF.nl", 2019). The worst-insulated refrigerated packaging will stay under 4 ° C for six hours; the best-insulated one keeps the below 4 ° C for 12 hours. This however, does require consumers to pick up their groceries the same day from the locker. The insulated package can quickly be returned by using the locker.

The business model

The business model behind the horizon two locker service in figure 78 is similar to the business model of horizon 1. Consumers pay a monthly fee through their home association. The company using the lockers to deliver their parcels or groceries pays a small fee per use. They have the benefit of a 100% hit-rate, and their customers do not have to wait at home.

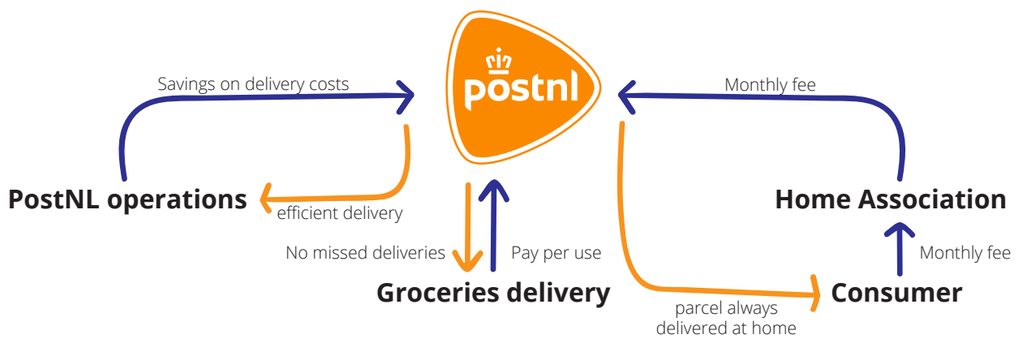


Figure 78 - business model horizon two

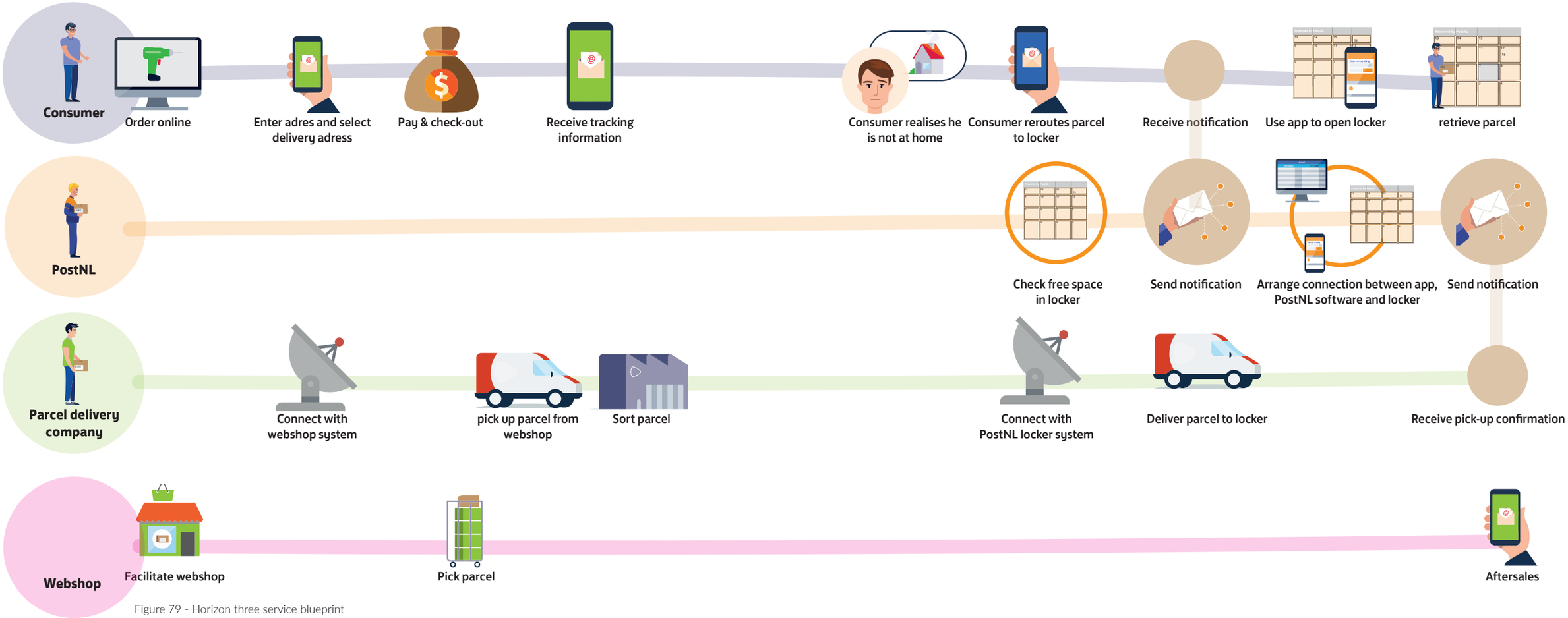


Figure 79 - Horizon three service blueprint

10.4 Horizon Three

We want to facilitate all postal and courier delivery services making sure they are always able to deliver their parcels at their customers reducing unnecessary transport movements.

In horizon 1 and horizon 2 we made sure that PostNL and 3rd parties with their own delivery network were able to always deliver their parcel. In horizon 3 shown in figure 79 PostNL is going to help their main competitors which seems a bit weird at first glance. However, if we do it in the right way it will be beneficial for both companies, the consumer and the environment. We assume that PostNL has a well-spread network of lockers by this phase. For example, an ideal situation would be a network that covers the top 500 apartment complexes.

The interaction

Just like in horizon 1 and horizon 2 the start is the point where the consumer decides to order something online After order confirmation, the consumer receives a update with the shipping confirmation from a competitor of PostNL. In this scenario, the consumer realises he will not be at home when the delivery driver will try to hand over the parcel. Luckily, the courier has set up a partnership agreement with PostNL and they are able to use the locker. The consumer reroutes the parcel so it will be sent to the locker. After the delivery change done by the consumer, the delivery driver will receive a popup during delivery of the parcel. Starting from this moment the communication is done by PostNL. The consumer receives a notification when the parcel has been delivered to the locker explaining the parcel is ready for pick-up

Hardware

Investing in new hardware is not necessary for this horizon unless more lockers are needed due to the popularity of the concept. However, the hardware used in horizon 1 and horizon 2 needs some updates and changes in the software. First of all, it must be possible to create third-party access to the system. However, this third party only should get permission to open empty lockers and deliver the parcel.

The business model

The business model of Horizon 3 (figure 80) builds on the models used in horizon 1 and horizon 2. The consumers still pay for a monthly subscription for the service. The 3rd party couriers have the opportunity to become a partner of the PostNL service. They have to pay a fee per parcel they deliver in the locker. In this way, the barrier to start as a partner is lowered and an incentive for both PostNL and the 3rd party is created. PostNL has to keep the service up and running and the 3rd party will gain more satisfied consumers the more they use the service.

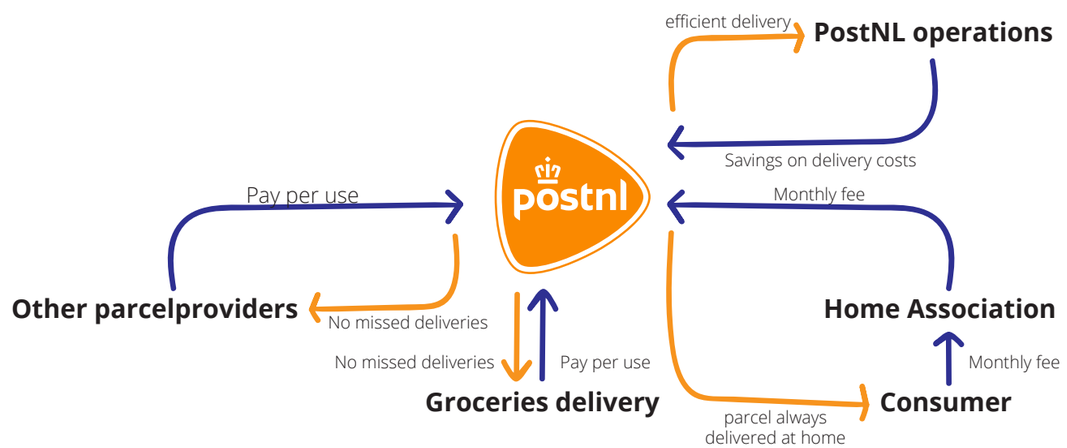


Figure 80 - Business model horizon three

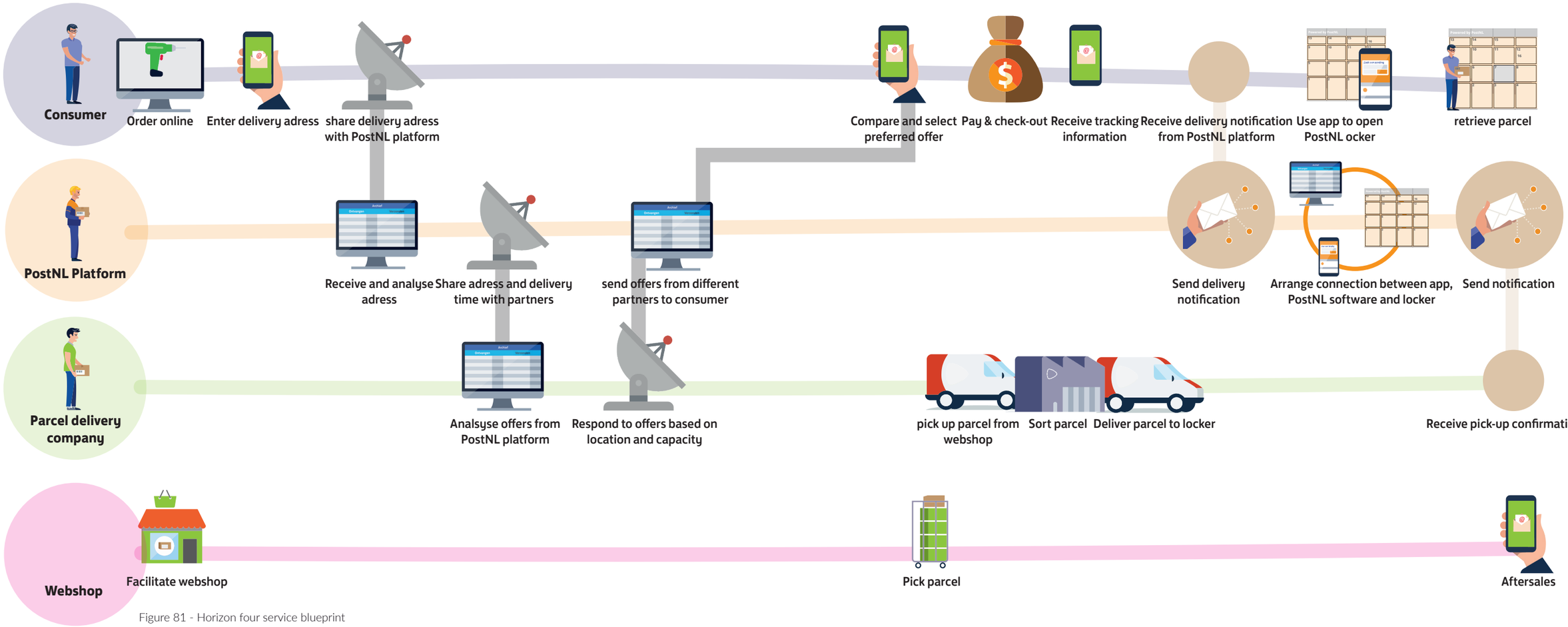


Figure 81 - Horizon four service blueprint

10.5 Horizon Four

We want to completely ban out unnecessary transport movements and inefficient networks by creating a transparent shipping platform. Consumers are able to choose their preferred way of delivery based on availability and real-time pricing.

In horizon 4 (figure 81) we take the working principle of horizon three one step further. In this phase, PostNL will create an external platform to connect the supply and demand for parcel delivery. There are many distributions and delivery networks aiming to deliver as efficiently as possible. This means they want to drive the most economical route, get the van as full as possible and be fast and do the job quickly to save on personnel costs. Detours to deliver one parcel or leaving behind 10 parcels that will not fit the van anymore are undesirable and cost a lot of money. However, it might be that one of your partners using the platform has to deliver a parcel near the address in the case where PostNL has to take a big detour. On the platform, the partner is able to display his price to deliver this specific parcel which might be the cheapest option for PostNL. This will of course also work the other way: where PostNL is able to deliver the parcel from one of their partners. Leading to a more efficient, sustainable and user-friendly delivery!

The interaction

The process starts with an online order from the consumer. During check-out, the consumer will enter the PostNL platform software environment. In this environment, there are different options for delivery presented to the consumer. The consumer is able to select them on the preferred delivery company, price and the delivery timeframe. The different options are different every time as they are based on realtime price offers and availability of delivery companies. For instance: a company that already has to deliver a parcel to your neighbours might offer a lower price. Consumers select their preferred option and pay. They receive a confirmation e-mail and receive updates through the platform. The consumer is able to receive the parcel at a preferred time frame, in their locker or at a preferred retail location!

Hardware

In this phase, the lockers are of course still in use! however, the main developments that need to be completed are software-based. The PostNL platform needs to be developed and thoroughly tested. The check-out environment should be created and linked to the platform. To attach the partners to the platform connections with their internal software should be made. This are of course costly developments that will need a substantial investment. However, it might ben an option to use existing software for platforms and use the current PostNL checkout API for the check-out environment.

The businessmodel

The business model in this phase is simple and shown in figure 82. PostNL earns a small percentual fee on each completed transaction on the platform. Consumers are able to select their preferred delivery option, delivery time and price. Couriers are able to deliver their parcels even more efficient and save costs. The increased efficiency leads to fewer transport movements making the industry as a whole more environmentally friendly.

However, there are some important remarks which should be taken into account. The platform should treat every partner equal! Postnl owns the platforms but at the same time will act as a partner on the platform. Misusing the information to gain an advantage destroys the entire model. An completely open database or platform which is controlled and designed by PostNL is acceptable. However, there should be a way for the other partners to verify and check if there are abnormalities or deflections to maintain credibility.

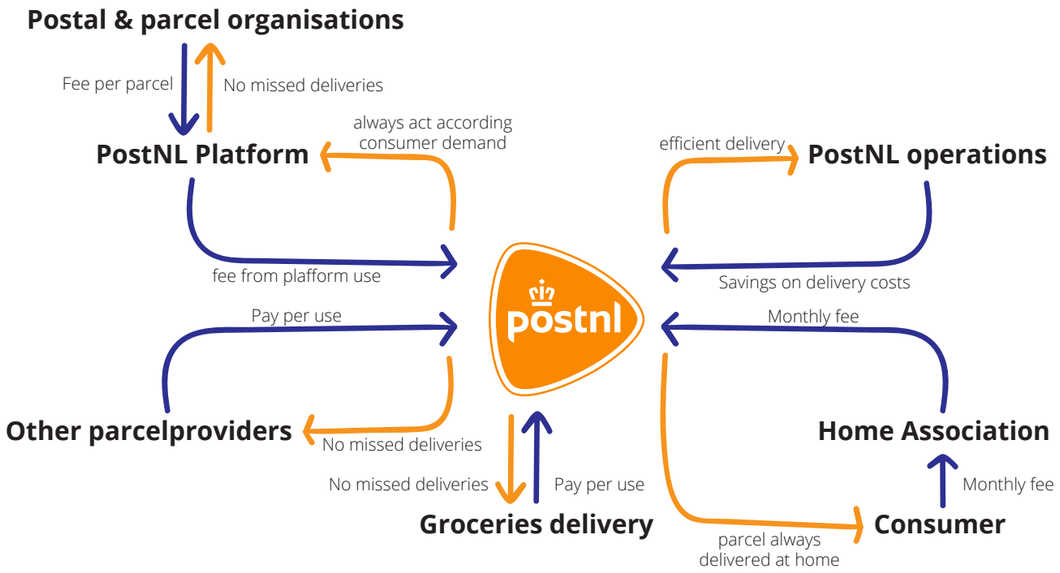


Figure 82 - Business model horizon four

CHAPTER ELEVEN

OPERATIONAL CHANGES & IMPLEMENTATION

Postnl must of course also be able to implement the solution. This chapter explains how and in which steps PostNL can implement the solution. The chapter starts with an explanation about the implementation per horizon. Afterwards, three important aspects are highlighted: the locker, the platform and the price and investments

The locker that will be used in all the horizons has been designed to show how it should look and work. The platform has been more elaborated to explain why PostNL should start this platform and uncover the essential requirements of a platform. Research has been done into what consumers want to pay for this service and the needed investments

Overview chapter

11.1 Operational changes & implementation
11.2 How to create a succesfull Postnl platform
11.2.2 Why start a platform?
11.2.3 How to create a succesfull platform?
11.3 The PostNL locker
11.4 What are consumers willing to pay for this new service?
11.5 The Business case
11.6 implementation summary

11.1 Operational changes & implementation

New propositions for businesses have an impact on the current way the company is operating. They require employees to work differently: new ways of interacting with consumers are needed, or companies have to invest in new assets. Implementing this roadmap also comes with changes; the changes needed to succeed are briefly discussed in the following paragraphs.

Horizon one

Start

Horizon one does require small changes in the way PostNL is operating, the changes are summarised in figure 83. At the start of the project, the best solution would be to cooperate with an Association management organisation (see chapter five) managing different buildings. An Association Management organisation ensures PostNL has one single point of contact, reducing miscommunication and improving implementation speed. The association also has the advantage that they manage multiple locations so the pilot can be scaled up easily.

The locker used at the start of the project can be similar to the Pakket- en Briefautomaat currently in use at PostNL. Using this ready-made solution ensures that the locker works seamlessly with the current PostNL software and at the same time, it reduces the costs for a pilot.

The delivery staff must receive proper training on the new concept. Not only do they need to know how to deliver the packages in a new way, but they also have to act as an ambassador for the new service. They should be able to answer the questions from the consumers living in the building, and PostNL must also give them that time.

Scaling-up

After the first pilot and its evaluation, it is time to scale up the concept. First, you can expand within the portfolio of the association management organisation from the pilot phase and then approach new associations. After the associations, individual associations of owners can then be approached.

In the scaling-up phase the Pakket- en Briefautomaat locker should be replaced by a dedicated locker for this service. This reduces costs because this locker can be less burglar-resistant as it stands inside and no longer needs a screen. However, it is useful to still use the technology and software of the Pakket- en Briefautomaat locker to guarantee the connection with the PostNL systems.

Getting rid of the screen means consumers have to use their mobile phone to open the locker. This has the consequence that an investment is needed in the development of the app and the underlying software. However, this investment in new software is also beneficial for the future horizons.

Figure 83 - Visual summary of horizon one implementation

Horizon two

Start

Horizon two requires some changes in the current way of operating of PostNL as shown in figure 84.. Based on the outcome of horizon one, we can assume that PostNL has now created a network of lockers. Before we let all retailers use the locker, another pilot is executed. The retail partner for the cooperation in the pilot must make many deliveries in the area where PostNL has lockers. Another consideration could be not to deliver refrigerated products in the pilot because they will be expired if the locker unexpectedly does not open or the consumer misses a notification.

To ensure a easy start it is best to start with one building first. This building can be selected on the current amount of grocery deliveries or by checking the interest of the residents. A short marketing campaign to make all consumers aware of the new service should be done by PostNL and the retailer.

A development that is needed from the start is a software portal for access to the locker. In this horizon, besides the PostNL delivery staff, the delivery staff of the retail partner also needs access to the locker. This access must be facilitated and controlled by PostNL.

Scaling-up

Scaling-up, in this phase is relatively easy, and there are two essential tasks that need to be fulfilled. The first task is to roll out the service to other buildings with the retail partner from the pilot. The second task is to acquire more retail partners. These do not necessarily have to be retail partners in the food sector; in fact, all retailers who deliver are eligible, a pharmacy would also be a good option.

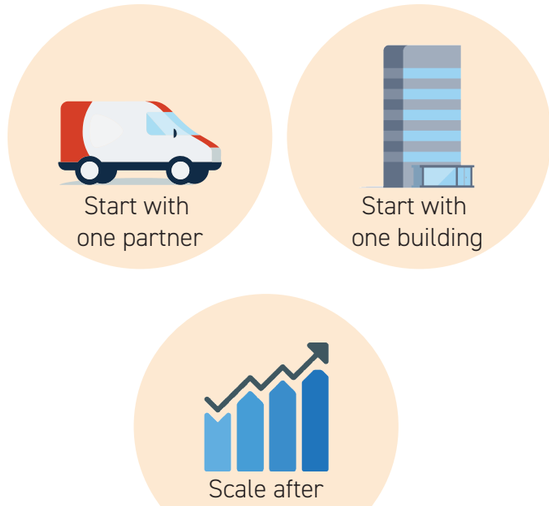


Figure 84 - Visual summary of horizon two implementation

Horizon three

Start

Horizon three has no significant influence on how PostNL currently operates but does influence its business principles and the way they make a profit. Postnl will still deliver their parcels and make use of the network of lockers. However, this network of lockers can now also be used by other couriers. Before horizon three can be implemented, there are two critical conditions. The first condition is that the locker network is well-spread and covers a large enough part to have a right dominance over the market. The second condition is that the legal position is well arranged with the Netherlands Authority for Consumers and Markets. Currently, there is still uncertainty about the legal position of the lockers and if couriers should be able to use lockers of their competitors.

In this horizon, just like in horizon one and horizon two, one courier partner is connected at the start. To connect the partner, the software developed in horizon two can be used. After connecting partners are able to directly deliver parcels to the locker. The software keeps tracks of the number of delivered parcels and bills the partner courier accordingly.

Scaling-up

This phase is relatively easy to scale up because we use the software from horizon two. PostNL should acquire couriers who currently deliver in the buildings with a locker operated by PostNL. The more partner postnl manages to acquire, the more valuable the locker becomes for the consumer. The implemenatation is summarised visually in figure 85.

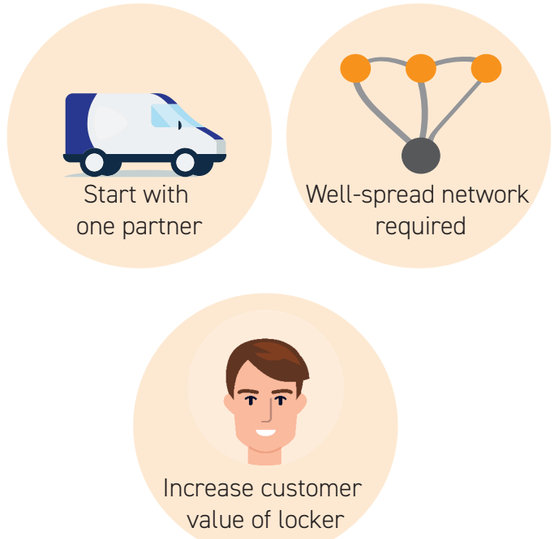


Figure 85 - Visual summary of horizon three implementation

Horizon four

Start

After PostNL has increasingly started working with partners from their market in the previous horizons, it is time for the next step in co-operation in this horizon. This horizon requires a significant investment in the development of the platform. It is best to first create a minimal working platform and verify it, then more and more functions can be developed and linked. To avoid the appearance of a conflict of interest, it could be an excellent option to release the platform under a different name or a name with the addition of "powered by PostNL". The link with the PostNL brand creates trust, which is useful for a completely new product.

Start

In the pilot phase of the platform, smaller specialised couriers are acquired first. These couriers can, for example, deliver ultra-fast delivery, environmentally-friendly delivery or delivery for products that require extra handling such as a telephone contract. These specific couriers immediately provide a wide range of different services. This extensive range makes it easier to acquire several webshops that want to participate in

the pilot phase, as they instantaneously have an advantage. For the smaller couriers, the advantage is that they get direct access to a broad range of customers.

Scaling-up

After successfully piloting the platform with a select range of webshops and the smaller couriers, the postnl network is used to grow the platform further. PostNL currently has a large customer base of major dutch webshops who might be interested in this concept. Acquiring them as a customer of the platform saves these webshops the hassle of negotiating and signing various contracts for different types of deliveries. The implemenatation is summarised visually in figure 86.

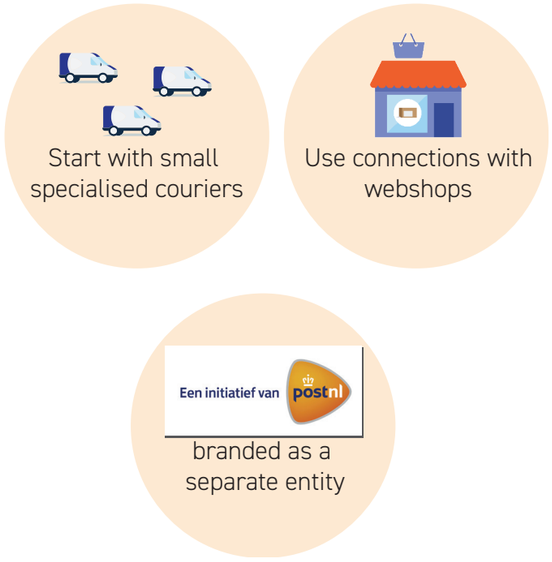


Figure 86 - Visual summary of implementation of horizon four

11.2 How to create a succesfull Postnl platform.

The platform economy rapidly emerged in the past decades. Companies like Uber, Airbnb and Facebook are creating platforms where consumers are able to interact directly with each other — creating new ways of working, socialising and creating value. These previous examples are the so-called 'social platforms'; the new PostNL platform would be more like a marketplace platform. Great examples of those marketplace platforms are Dutch retailer Bol.com or Amazon, who are not only selling their own goods on their website but host a platform where every company can participate and sell their products. Alternatively, take Etsy, which is just a platform based marketplace only selling product from other parties.

New platform initiatives are founded every day. However, only a small minority becomes successful. Choudary et al (Parker, Van Alstyne & Choudary, 2017) define three core principles to create a successful platform. The first one is to enable interaction between participants; participants can be a supplier or a buyer. It is the exchange of a particular value between them that attracts members to a platform.

The second principle is about attracting users and encouraging interactions on the platform. Three factors should be excellent to ensure a high volume of valuable interactions: Pull, facilitate and match. The pull principle is about attracting members to the platform and comes with a chicken-or-egg problem. Users will not partner up with a platform when there is less value and users are needed to create this value. Recruiting new members is the most critical aspect of the first phase. Facilitating is all about making the barrier to enter the platform and interact as low as possible.
A great example is the car lease service Uber is offering to potential new drivers to lower the barrier to entry. Successful matching is the third factor. Platforms should make use of all the data and algorithms they have access to create the best possible matches.
The more data there is to analyse, the better the interactions will be.

The third factor is the continuous addition of new features to the platform. Helping the platform scale and stay relevant. A great example is the addition of Airbnb adventures adding a way to choose from different local experiences to the core business.

Different other researchers confirm the three factors. Mark Bonchek (Boncheck, 2019) uses connection: how easily others can plug into the platform to share and transact; gravity; how well the platform attracts participants, both producers and consumer's and flow: how well the platform fosters the exchange and co-creation of value. However, there is a crucial difference between the regular platform companies who try to create an exchange of value compared to the proposed PostNL platform. PostNL is both a member of the platform as well as the owner of the platform. This can lead to conflicting interests in several situations and might hold back partners to join the platform. You can even ask yourself why they would create such a platform in the first place? To avoid conflicting interests and lower the barrier for partners to enter it is valuable to study the few current platforms that work in this way.

Bol.com

Bol.com founded in 1999 and currently, the largest online retailer in the Netherlands enables 3rd parties to sell through Bol.com. They have created a platform to host all the different products, take care of the online advertising and provide warehousing and shipping. Bol.com earns a fee per product sold and does not have the risk of stock not being sold but is still able to sell products in a large number of niche markets. The turnover of the partner platform of bol.com is currently showing a larger growth compared to their oldfashioned e-commerce activities. Amazon works in much the same way as bol.com however, 3rd parties ("Services.Amazon", 2019) still have to take care of shipping and warehousing.

Snappcar

Snappcar started as a car-sharing service where consumers are able to borrow or rent their car to people in the neighbourhood. Due to the increased popularity of the service, there was a scarcity of available cars in some areas. Snappcar started placing their own vehicles on the streets competing with the consumers on their platform to create a sufficient supply of cars. The Snappcar cars were however removed quickly from the street as they were quickly polluted and broken compared to the consumer-owned vehicles, people felt less responsible for a car owned by Snappcar ("SnappCar Lease", 2019). Their next step was to lease vehicles at a discounted price to consumers with the obligation to rent or borrow it to consumers several times per month.

Airline Alliances

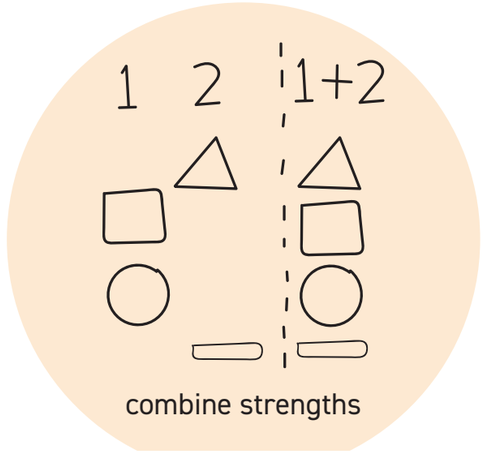
Airlines have been working together in alliances like SkyTeam ("Luchtvaartalliantie SkyTeam", 2019) and Star Alliance ("Staralliance", 2019) for a couple of decades. Although they don't offer their flights on a platform owned by one of the airlines. They operate codeshared flights on each other booking platforms.

You might book your ticket at KLM but fly with Delta Airlines for example, in this way KLM earns a small fee on the booking and does not have to enter a severe competition battle with Delta for a certain destination.

11.2.2 Why did those companies start a platform?

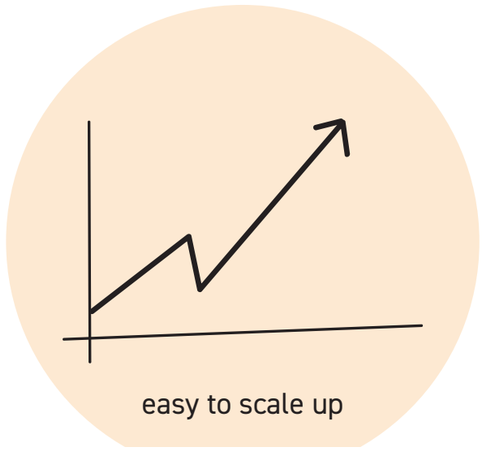
Three key drivers for starting a platform can be distinguished based on analysing current platform companies.

Offering al the different products and services consumer wish is almost impossible as a company. Platforms have the opportunity to broaden the assortment of a company without heavy investments in development or inventory. One company might offer the product they know and are experienced with and another company might offer another product which is out of the scope for the first company. Offering different products and services on one platform saves consumers time searching and comparing alternatives.



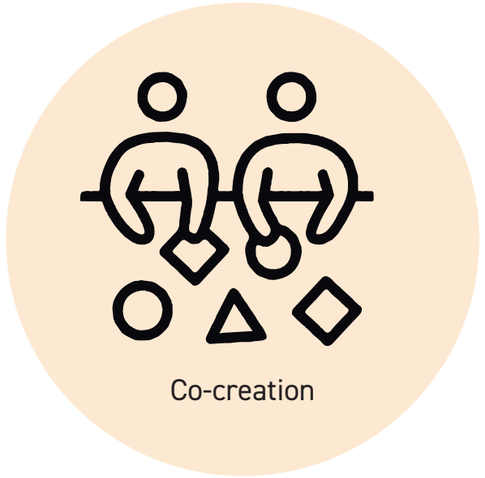
Most companies have a number of core capabilities, things that they have been doing for a while and in which they excel. A certain large online retailer might know what the demands of the general public are but doesn't know all the demand of every exact niche target group. A smaller brick-and-mortar or online store might know those needs but is struggling for attention. Combining these aspect leads to the ability to serve the customer even better.

To give an example in the parcel industry: PostNL is very good at delivering a great number of normal parcels at consumers for an excellent price. But there might be another company which is very good at delivering phones with additional difficulties like signing contracts. Instead of starting your own new service you might add the second company as a partner to the platform offering your clients this service and increasing the sales of the second company.



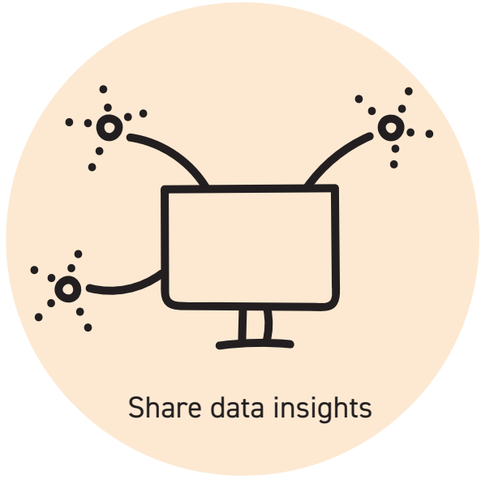
Most platforms earn their money by collecting a percentage on the selling price. The more products or services are sold through the platform the more money they earn. Currently expanding business takes investments in factories to produce physical products or developments for new online services. Companies using a platform simple connect more partners to increase their offering and thus increase their sales. Scaling a platform is much easier compared to scaling a product portfolio or service portfolio.

11.2.3 How to create a successful platform



To create a successful platform the partners must feel heard and valued by the platform. The partners run the day-to-day business and have direct contact with the consumers. They are aware of all the flaws and complains of the consumer and it is essential to collect those insights to further develop the platform. An easy way to share feedback for all employees should be created and all teams developing new applications should actively look for feedback at for example the delivery drivers.

Partners rely on the service and responses of the platform to deliver parcels and satisfy consumers. As platforms are most of the time responsible for the communication with the consumer the platforms should share questions and remarks of consumers as fast as possible. If there is a flaw in the system, employees of partners have questions or there is any kind of problem the partners' employees should know who to contact to solve the issue.



An online platform generates lots and lots of valuable data. To maintain the confidence of the partners using the platform this data should be shared and not used to optimise the products of the platform owners. The number of visitors, where visitors quit in the buying process and the keywords consumers are searching for are valuable for the development of new services by the partners of the platform. If the partners offer new services the platform will benefit in the end as it attracts more users.

11.3 The PostNL locker

The locker used in the final solution looks similar to the Pakket- en briefautomaat and is visualised in figure 87. It consists of different sized boxes with an electronic lock. The locker is modular meaning that it can be adapted to the building where the locker is placed. There are 3 sizes of boxes available that can be stacked on top of each other to form a locker.

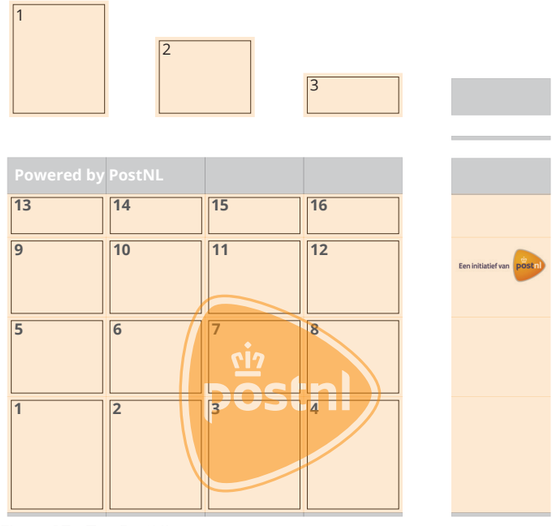


Figure 87 - The PostNL locker

On the side of the locker (figure 88), there is a big sign with explanation about the service and the usage of the locker. In the first phase, this will mainly serve as an explanation, explaining to inhabitants and passers-by what this giant orange structure actually is. It will also act as a marketing tool to make more people enthusiastic about the service. If something goes wrong, the various options for contacting PostNL are also listed here. Different options to contact PostNL are important as the preferred way to contact PostNL differ in each case. Collier et al 2017 state that consumers who are alone at the locker prefer telephone as a service option as it is the quickest way to solve issues. When there is a queue consumers often prefer a chat or e-mail option as they might feel embarrassed to discuss the problem on the phone.

Figure 88 - Sideview of the locker

On the doors of the locker, the process of shipping and receiving parcels is listed again as shown in figure 89. Consumers already received this information on their phone but repeating the information again is useful. Consumers might have opened to PostNL app to open the locker on their phone or need both hands to retrieve the parcel. This extra reminder prevents consumers from looking up the instructions again.

Figure 89 - Close-up of locker door

On the inside of the locker, the information on shipping and receiving parcels are listed. During a problem, consumers might want to keep the locker open instead of closing it so this ensures they still have the instructions. It could, of course, be that a problem occurs after opening the locker, in this case, consumers are able to scan a QR-code which will redirect them to a webpage with solutions and options to contact PostNL. On the inside, there is also the option to show a short sentence or message for instance about how much CO2 was saved by using the locker. The inside of the locker is shown in figure 90.

Figure 90 - Inside of locker

11.4 What are consumers willing to pay for this new service?

To verify the qualitative results from the interviews, a survey was conducted. The goal of the survey was to collect data about how consumers in apartment buildings currently received their parcels, how many parcels per month they received and the price they were willing to pay for a new service allowing consumers to receive their parcels always at home. The used survey is included in appendix 14.8.

The design of the survey

The survey was distributed to a select target group based on the conclusions from previous research. The survey was placed in the online communities of three relatively new apartment buildings in the Netherlands (de Syp in Utrecht, Weenatoren in Rotterdam & La Fenêtre in Den Haag). Residents living in those three apartment buildings are mostly dual earners and under 40 years old.

The survey started with a small explanation about the research itself and the main goal of the project. Subsequently, the participants had to answer some questions about their living situation and age to verify if they fit into the target group. If they fitted the target group, consumers could proceed to the questions about the number of received parcels and their current preferences. The answers were collected using a google form.

The price consumers were willing to pay was determined by the Van Westendorp price sensitivity model (Van Westendorp, 1976). Participants in a Van Westendorp survey are asked to identify price levels at which they can infer a particular value to the new service. This is done by asking standard question four standard questions:

At what price would you consider the product to be so expensive that you would not consider buying it?

At what price would you consider the product to be priced so low that you would feel the quality could not be very good?

At what price would you consider the product starting to get expensive, so that it is not out of the question, but you would have to give some thought to buying it?

At what price would you consider the product to be a bargain—a great buy for the money?

Results

The data of the 127 participants was checked, and outliers were removed (for example returns with a higher value at the too cheap variable compared to the too expensive variable). Afterwards, the cumulative frequencies were calculated and plotted to create the Westendorp figure. In the figure, the diamond-shaped figure contains the preferred price level. The suitable future price for the product lies within this figure. The distance between the left and the right intersection can be seen as the acceptable price range. The left intersection represents the lower bound and the right intersection the upper bound. The lower intersection represents the optimal price point. Figure 91 shows a

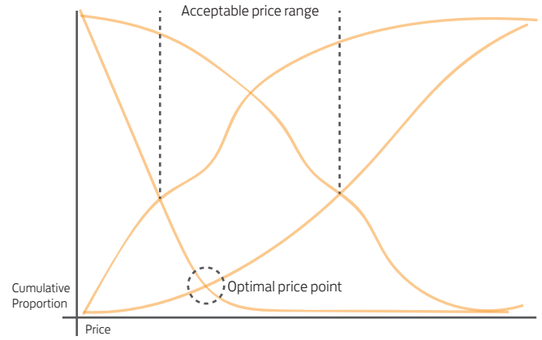


Figure 91 - Van Westendorp model

Conclusions

Figure 92 shows the graph created with al the data excluding the outliers. The intersection of the two lines "too cheap" and "acceptable expensive" lines represents the lower bound optimal price point which in this case is around 2,20 euro. The intersection of the lines acceptable cheap and too expensive represent the upper bound of the acceptable price range, in this case around 7,50 euro. The actual price should be between the boundaries and varies, for example, based on the premiumness of the service. The optimal monthly price is approximately around 4 euro per consumer.

It is, of course, interesting to know whether all people want to pay this amount or that variables are influencing the pricing consumers are willing to pay. One of the collected variables was the number of parcels consumers received each month. If all the respondents receiving less than five parcels a month are excluded, and only the frequent orderers are taken into account. This change of data changes the Van

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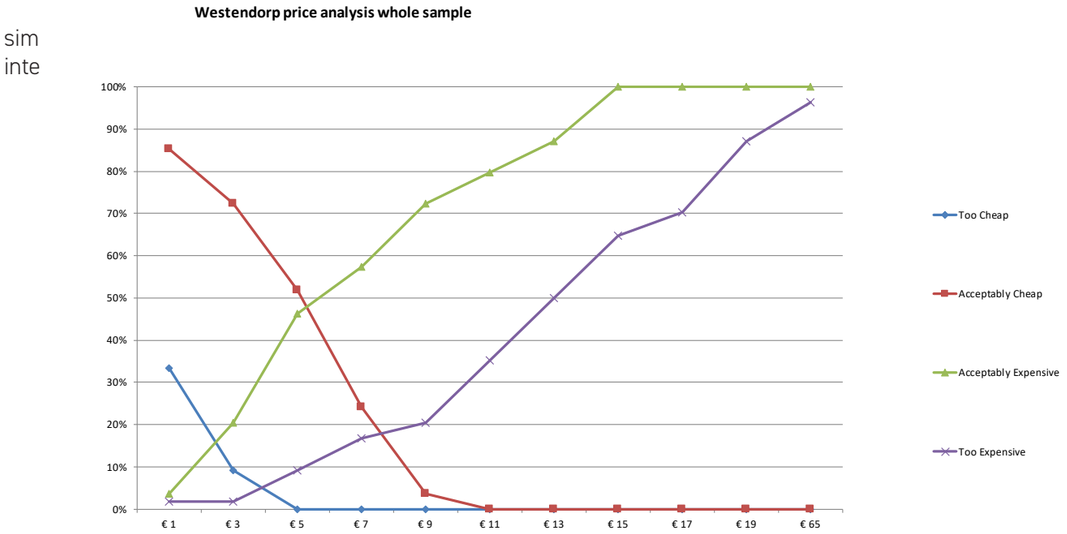


Figure 92 - Van westendorp model plot all data

Westendorp model as can be seen in figure 93.. The price range in the new figure lies between 4,05 Euro and 9,75 euro with a preferred price of 5,10. Overall consumers are willing to pay for a monthly fee for the provided service. The frequent online shoppers who probably experience more problems are also willing to pay an above-average price.

Summary & implications

Because the savings for PostNL with the new service are not large enough to cover the costs, a contribution from the consumer is also needed. This survey and results help PostNL in setting the price for the new service. Frequent online shoppers are willing to pay a higher contribution between 4,05 and 9,75 with an optimal price point of 5,10 euro per consumer. However, the service is purchased by the owners association and all consumers in the building, therefore, pay for it. It is, therefore, wiser to use the data of all consumers with a range between 2,20 and 7,50 with an optimum around 4 euro per consumer per month.

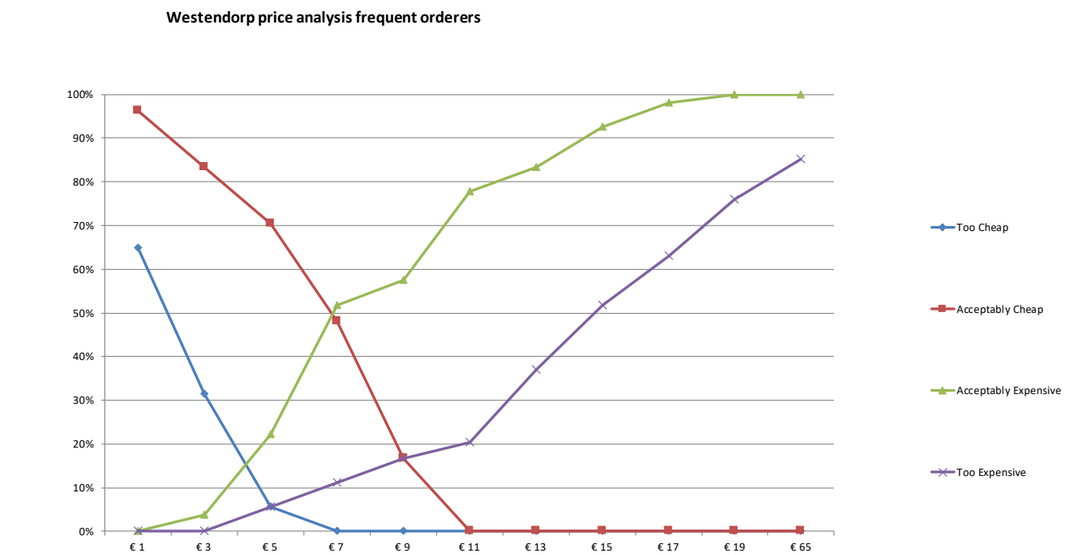


Figure 93 - Van Westendorp model plot frequent online shoppers

11.5 The business case

It is difficult to make a detailed calculation of the costs and revenues as it requires much business-sensitive information. Figure 94 provides insight into the essential incoming and outgoing cash flows.

A part of the costs like IT development and the adaption of the training is a one-time investment. the costs of purchasing the lockers and the personnel costs are of course recurring costs

The first significant incoming cash flow is the **fee paid by the owners' association for using the locker.** The price which is set at around 4 euros per month per household is collected by the association and forwarded to postnl. If we take the apartment buildings from the survey as an example, then it concerns approximately 120 households, which would yield an annual compensation of 5760 euros excluding vat.

The second crucial incoming cash flow comes from the **money that is saved because parcels can always be delivered.** Second delivery attempts are no longer required, and it is no longer necessary to pay a fee to the retailer. Unfortunately, it is complicated to calculate the exact amount of these savings.

One of the biggest expenses is, of course, the **purchase of the lockers.** The lockers will be a lot cheaper compared to the "pakket- en briefautomaat" currently costing around 13000 euros. Equivalent lockers as used by a few start-ups currently cost around 3500 euros each.

Another significant expenditure is the **development of IT** to connect the lockers to the current post-NL systems. Estimating this expenditure is difficult because it is not clear to what extent the software of the "pakket-en briefautomaat" can be used again. It might be a possibility to purchase parts of the software to reduce development costs.

To **sell the locker service** to owners' associations, people must be hired to do this. Other options may be that it will be added to the duties of current staff or that an external agency will be hired for sales tasks.

There are also various minor expenditures that must be made to successfully launch the service. This is, for example, the adaptation of the **training of the delivery drivers** so that they know how to deliver in the locker and they are able to answer questions from consumers. Creating **marketing material** for consumers is also important, as we also want them to fully understand the service.

Figure 94 - Incoming and outgoing cash flows

11.6 implementation summary

Implementing this new solution is a long and complicated process. To facilitate this process as much as possible, it is divided into several horizons, which are then subdivided into a number of steps. These small steps make it possible to test and evaluate each time and to adjust the concept if necessary.

The locker that will be used in all horizons has been further developed. It is essential that users receive continuous support on how to use the locker. The locker is modular and therefore, adaptable to any entrance. The locker is also an important object for marketing since many people pass by every day.

The platform comes with several significant benefits for PostNL and the consumer. It combines the strengths of all the different couriers in the Netherlands to guarantee the best possible service for consumers. Combining all the different couriers leads to an increased range of different services. Another advantage of the platform is that it is easy to scale after the platform is developed; connecting new parties is relatively simple and effortless.

PostNL is both a member of the platform as well as the owner of the platform which might lead to conflicts of interest. It is therefore vital to take this into account from the start and to use the following guidelines. Partners have much information about the daily operation, co-creating the platform together provides rapid improvements. Sharing the insights obtained from the data is important as everyone must have an equal competitive position. The service to the partners is also critical, you want to help them as quickly as possible and not first solve your own problems.

The solutions require investments, especially in the lockers and IT systems. Postnl earns money from the subscription that consumers pay and the savings on delivery. The money is spent on staff for service sales, IT development, the lockers, delivery training and marketing. Based on the van Westendorp analysis, the price per household per month should be between 2.20 euros and 7.50 euros with an optimum of around 4 euros per consumer per month.

CHAPTER TWELVE

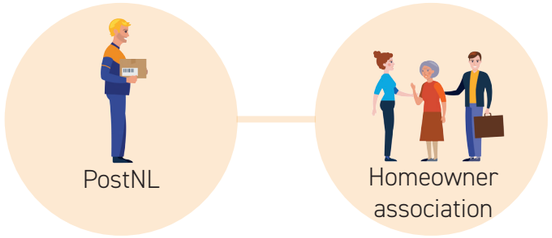
RECOMMENDATIONS & REFLECTION

This chapter looks back on the process and the final solution. We look at what still needs to be done to make the solution successful. What can still be investigated in the future to expand the solution? It is also discussed how the new solution can best be implemented and what should be taken into account. The chapter concludes with a personal reflection on the project.

Overview chapter

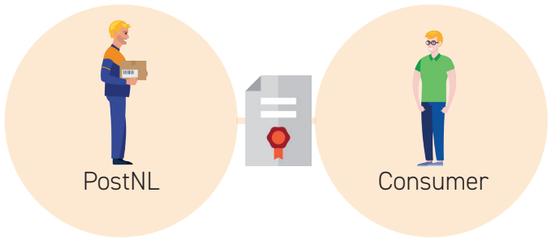
12.1 Recommendations
12.2 Downsides of the proposed solution
12.3 Personal reflection on project

12.1 Recommendations



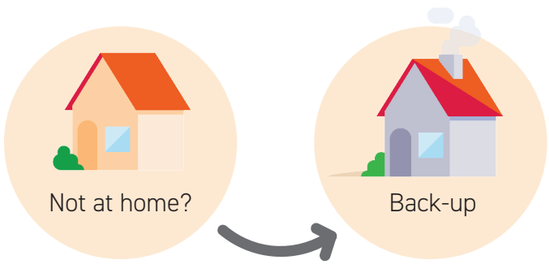
Approach the association management organisations as soon as possible

The two association management organisations who were interviewed during the research (chapter six) were both really interested in the solution. They acknowledged the problem and one of them was already renting a locker solution for their inhabitants. However, this solution was complicated to use and slowed down the delivery as an extra day was required by the company operating the current locker.



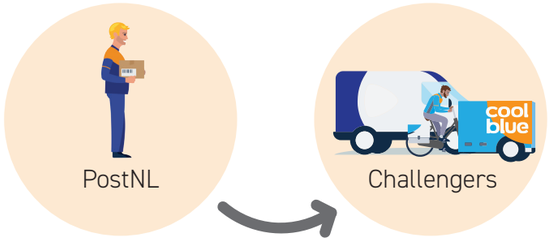
Create a way for official arrangements between consumer and postnl

During the research, some of the consumers interviewed noted that it is difficult to formally arrange something with postnl. For example, these were consumers who had a parcel box or would like to have their parcel delivered to the shed when they were not at home. These agreements are now often made between the driver and the consumer, but the driver is not comfortable with this because they do not know whether it is officially permitted by postnl.



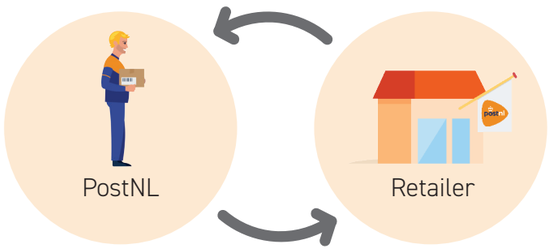
Give consumers the opportunity to provide a backup delivery address

Consumers mentioned that delivery to neighbours is sometimes complicated because they do not know the neighbours or have a bad relationship with them. Consumers, however, see the value of delivery to the neighbours. Some consumers have notes hanging on their front doors to refer delivery people to their favourite neighbours. Making these agreements official makes the delivery for PostNL easier and ensures higher customer value.



The challengers of postnl

Currently, there is a large number of start-ups in the last-mile delivery market. Certainly, in the parcel sector, they have to find a way to work with postnl as PostNL currently does support delivery through these start-ups. However, these start-ups have found a unique selling point that the consumer was apparently looking for. Collaborating with or taking over these startups can speed up their delivery process because they have a direct connection with PostNL. This enables postnl to further develop a proven concept for its customers.



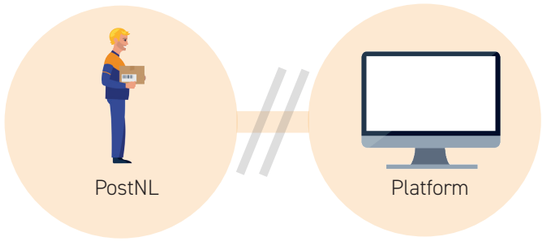
Encourage co-creation between postnl and retailer

During my visits to the retailer, I found out that they actually all use their own system to hand out parcels as quickly as possible. The retailers also had plenty of tips that they wanted to share with postnl. Bringing together a group of retailers at postnl to think together about how you can handout parcels efficiently could also be a significant benefit for PostNL. Maybe together you can come up with a way in which capacity can be increased or the workload for the retailer can be reduced.

12.1.2 Research recommendations

Research the willingness of webshops and couriers to join the platform

It is advisable to investigate whether the webshops and couriers are willing to participate in the platform. For webshops, arranging different types of shipments should become more carefree because they now only have contact with one stakeholder. Webshops are also relatively easy to reach because these are currently already customers of PostNL. Investigating the motive and drivers of couriers is probably more difficult but must also take place.



The platform as a separate entity of postnl or as a postnl division?

Consideration must be given to how the platform will be put on the market, this can be done as part of PostNL, but it can also be done as a new stand-alone company. As a PostNL division, the platform can benefit from the trust of the PostNL brand. As a separate entity, other couriers are maybe experiencing fewer barriers to participate in the platform. Further research into this issue is needed to create a successful platform

Investigate how this solution can also be used at other locations

As mentioned before, it is certainly worth investigating how the locker can also be used in other locations. The developed locker is less burglar-proof and has no screen, but is therefore considerably cheaper than de pakket- en brief automaat. Other sheltered locations that are easily accessible during the day and in the evening are undoubtedly eligible. This way the solution can also be used in other areas.

12.2 Downsides of the proposed solution

Of course, every solution also has its downsides, often due to choices or criteria in the process. Discussing the downsides helps to create a realistic picture of the final solution. The disadvantages of the proposed roadmap are discussed in the following paragraphs.

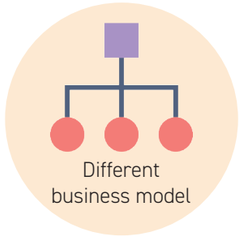
Significant investments are needed for the locker and platform

It is effortless to start small and scale up the locker solution. However, to make an impact and really relieve the current retail network a significant amount of lockers is necessary. As the lockers are bought by PostNL and leased to the apartment buildings this will also have a major impact on the cash flow. Selling the lockers to the buildings would not impact the cash flow but will have the consequence that postnl has much less control over the locker. The development of the platform will also require a major investment in software development. Long-term contracts with the homeowners association can ensure stable cash flow, but the large initial expenditure is necessary. Optionally, a partner can be searched to make the investment together.

The solution only relieves the pressure on the retail network in one district of a city

The proposed solution applies to the district with high-rise buildings and less to other districts of a city. This choice was made because the pressure on retail in this district is heavy; consumers are frequent receivers of parcels and are willing to pay for additional service. However, it is wise to investigate if the developed locker could possibly be used inside other locations like a fitness centre or community centre. Perhaps it is even possible to reduce the locker and decrease the price so it can be used by a group of neighbours like the proposed shared locker concept on page 70.

The platform business model is entirely different compared to the current business model



The way PostNL makes money has been the same for years and is completely clear to all employees. Changing this model can cause much resistance within the current organisation. Employees whose role has been perfectly clear for years may need to work in a different way. It is crucial to explain clearly what the new model is and how it will work for PostNL. of course it is important that the platform is expanded in small steps to make a transition as easy as possible.

There is no responsible department (yet)

PostNL has executed some pilots with lockers in the past years. However, it is difficult to classify these types of solutions and incorporate them into a department. The solutions do not belong entirely to the retail department, but also not really to the parcel department. before proceeding with the project, there must be clarity about which department it belongs to and which department, for example, will actively sell the locker to the owners' association

12.3 Reflection

In this chapter, some points of reflection are discussed which I faced during my graduation project. Some points are more process or project focussed while others are more about my way of working and what I might have done differently looking back at the project.

Translating the research into insight and communicating those insights

During the project, I did a lot of qualitative research. I interviewed lots and lots of consumers, parcel point employees and employees of other organisations to gain insights. It is challenging to summarize this research and to transfer it to the stakeholders. The analysis is largely done on paper, and when summarising so that it can be included in the report you often lose the richness of the information. I tried to make the analysis more personal and to increase the richness of the data by adding quotes to the report, but I am not entirely satisfied with it because it still seems distant. In the future, I would like to take more photos or videos, no matter how difficult it is to combine photography and ask questions. Also, a paragraph in which the interviewed consumers introduce themselves can help to better transfer the information.

Create a viable business case

In my original project brief, I had the personal goal that I wanted to make a viable business case that was really well calculated. however, this proved to be very difficult because you are dealing with company-sensitive figures that are often not even available. In the end, I was able to research the price that consumers are willing to pay but did not manage to create a business case which is a pity as it can strengthen your ideas.

Create more structure in the project

The structure of the project was sometimes difficult. It would have helped me a lot if I had set out several clear goals and questions at the start and updated them throughout the project. Now I have researched or did some things that might not have been completely necessary, although of course, this will always be the case with a design project. Formulating goals more clearly and integrating them into the planning is something I will pay attention to in the future.

Do not hesitate to set your own course and trust your way of working

In previous projects I have done I have always had a lot of trust in the process and that a good result would come out at the end. As a result, I was often able to create freedom for myself to try out crazy ideas or things that actually cannot or should not. During my graduation project, I, unfortunately, did not really work this way. I should have seen the project more like an ordinary course rather than a masterpiece which must be absolutely amazing. I have now often been guided by things that were not possible instead of really looking at why things are actually in a certain way and how they should change.

Hasn't the consumer just become a bit lazy?

This is not really a point of reflection but more of astonishment and wonder. Sometimes during the project, I thought that the consumer has become very lazy. Consumers would prefer to have their package delivered at home within a few hours. They expect that of course it will be sent for free but also that they can return it their parcel for free. Consumers do not want to pick up their own ordered parcel in the evening at a retail location. An excellent project might be to look at how we can adjust the behaviour and expectations of consumers, because actually they may have been a bit spoiled in recent years.

CHAPTER THIRTEEN

13

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CHAPTER FOURTEEN

APPENDICES

Chapter overview

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14.2 Customer journey
14.3 Interview guide parcel point
14.4 Analysis parcel point
14.5 Interview guide Homeowner association
14.6 Interview guide lead users
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14.8 Van Westendorp analysis
14.9 Quick fixes

14.2 Customer journey

	Order offline or online?	Compare webshop	Shipping options	Buy product	Track parcel	Change delivery	Miss delivery	Receive parcel	Return product
How much influence can PostNL exert	High level of influence … Low level of influence								
Brief Summary	Consumers order products online, which are easy to compare based on pictures or descriptions like electronic devices, books and tickets. Products used by people to express themselves or with a particular style like clothing or home furnishing are more bought offline unless consumers already know the brand. If consumers need something fast and do not have time to buy it themselves or it is not available in the neighbourhood, they will order it online.	When web shops are compared price is the first leading differentiator. However consumers are willing to pay a premium for additional delivery options or services. Web shops are selected based on their notoriety and online reviews in case of smaller web shops.	Consumers have become used to free shipping options; paying for shipping is seen as annoying. If consumers have to pay for shipping, they are less willing to pay for additional options. For consumers, it does not matter which company is delivering their parcel however they prefer shipping companies with a parcel point	Flaws in the purchase process occur mostly during check-out. Consumers refuse to fill in extensive forms with their details or to create an account they will only use once. Consumers would also like to know the shipping costs without proceeding to the check-out option. It is hard for consumers to recall positive experiences in this phase.	Tracking options are perceived as rather positive. Consumers plan their day according to the expected timeframe but are also frustrated when this timeframe is not met. While returning items consumers care less about the tracking function, they trust PostNL that their parcel will be delivered.	Consumers really value the option to change the delivery location of the parcel. Parcel from web shops that don't offer pickup points are rerouted to a parcel point and consumers check the evening before if they are able to make the timeframe. Non-digital options like a note on the door are mostly ignored by the deliverer despite the good intentions of the consumer.	A missed delivery is one of the most disappointing events for a consumer. Neighbour delivery comes with many emotions; some consumers are okay while the more frequent shoppers are ashamed they bother their neighbours. Consumers are clueless when they have an incomplete missed delivery note and do not want to check the entire street.	Receiving the parcel is an enjoyable experience, some consumers compare it with unwrapping a gift. The employee, either at a parcel point or the deliverer, is critical in delivering the service. Employees providing more service than necessary lead to higher satisfaction. However consumers notice that they are always rushed. Visiting parcel stores is seen as necessary not as enjoyable. People complain about their queue and they have to leave their house in the evening.	Returning parcels at a parcel point have similarities with receiving. Consumers are frustrated; they have to visit the point and wait in the queue because other consumers are slowing down the process. They feel ashamed if they drop off a large number of or heavy parcels. However, pickup services are not gaining ground as consumers hesitate to wait at home during the timeframe.
What consumers do	I always buy electronic devices online, than you are able to compare different ones easily I always like it if I already know a brand, then I can easily order it online; I already know the size.	If a webshop is small or I'm unfamiliar with the webshop, I always google for reviews	During my online shopping, I always check what kind of shipping options are available, and if I'm able to choose between different ones.	my decision to buy the product is usually based on the total price and the estimated shipping time.	If I expect a parcel, I always check the tracking information on the night before. I will plan my day accordingly to the expected timeframe	If my plans change during the day, I will reschedule the delivery time for my parcel.	I always take the failed delivery note with me if I have to retrieve a parcel at the neighbours; it acts as some kind of proof.	I often combine the pickup of my parcels with doing groceries or walking the kids to school. I just left the office and always pickup my parcels here as the parcel location near my home already closes at 6	If I have to return a parcel, I always save them until i have two or three or I combine returning the package with picking up another package.
What consumers like	I need this by tomorrow, and I don't have time to buy it myself so I will order it online	Price is essential, but additional services like different shipping options are equally important I like to order at big web shops like Coolblue and Bol.com as I trust them, They have such a good reputation, so they will always help me in case of issues.	I'd rather choose a parcel point; then I can decide the time for myself. I can arrange all delivery days and times in advance at the webshop. I think PostNL is the best delivery person; it's just a well-known company, so you trust them	It is very nice that the web shop can wrap the package as a gift	I like the timeframe; sometimes I adjust my day planning to receive my package I like to receive the tracking information as a text, WhatsApp is to personal and it will get lost in my clogged mailbox. Actually I don't really care about the tracking code, i never use it when i ship a parcel. I trust you (PostNL) that my parcel gets delivered.	Changing the delivery location in the app is the best invention ever! When I'm not at home, I pick up the parcel in the evening. Some webshops do not offer pickup at a parcel location but with the tracking code I can simply change the delivery from my home to a pickup location which is way more convenient for me!	Delivery at the neighbours in no problem for me! We have a good relation	I see the delivery person more often than my own family I really like the staff working at the counter of the parcel point. Sometimes I come to pick-up a parcel from a dutch webshop and also receive some packages from aliexpress who had been lying here for a week, a bit embarrassing as i sometimes forget what i ordered.	The returns where I only have to stick a label to the box are the best If the product is big or expensive, I'm okay with paying a small fee for the return costs. I don't care about the receipt that I send the parcel, in the end it will be alright.
what consumers don't like	Offline i'm able to look at different things i wouldn't search for online, offline is more surprising I would never order groceries online if the scheduled delivery frame is 2 hours I could also go to the supermarket Simple, the things I like are not available in the neighbourhood, so I have to buy them online. But I sometimes feel guilty of returning half of my order	I don't like webshops where you are not able to select pickup as an option	I hate that i have to pay for shipping, it should be free I don't care which company is delivering my parcel, as long as it gets here. if I already have to pay for shipping, I will not pay more for options	Sometimes you can only find out the shipping costs if you go into the purchasing process, really annoying I don't like that I have to enter my details to find out how much days shipping takes. I always order more than I need just to get the free shipping. I don't want to create an account to order something at a shop which I probably won't visit anymore.	It is frustrating when the expected time frame is not met, I sometimes stay home for receiving the parcel	I sometimes put a note on the door they can deliver the parcel at my mom in the next street, but they never do, most of the times they deliver somewhere else in the neighbourhood For me, it is no problem to pay something extra for evening delivery, but it takes so much time in the app, I should be just like pressing one button.	PostNL sometimes thinks that people living twenty houses further down the road are my "neighbours." The delivery guys are so busy that the note they left me was utterly unreadable, and it was not clear where I had to collect my parcel. I order so much that I feel ashamed if my parcels get delivered to the neighbours Sometimes I am disappointed if I miss the delivery, I just really want to have my new things.	The deliverer is always in a hurry, and they don't even have time for a question about the parcel In some shops I have the feeling that the employee just goes to the backend of the shop but is not really searching my parcel. I dont like that I sometimes have to wait quite long because people have trouble with their packages. They have to pay additional fees at the counter which takes ages If I don't have to visit those bloody parcel stores in the evening, it would be so good. I don't like to go out of the house just for a parcel.	I sometimes feel sorry for the lady behind the counter when I bring some heavy or really big parcels. Last time i just dropped my parcel on the counter as I had to leave, I don't care about the receipt that I send the parcel, in the end it will be alright. I dont like that I sometimes have to wait quite long because people have trouble with their packages. They have to pay additional fees at the counter which takes ages

14.3 Interview guide parcel point

Interviewguide - Eigenaar pakketpunt

korte introductie onderzoek - TU Delft, afstuderen, PostNL, nieuwe ontvangstoplossing. Bedankt dat ik vandaag in de winkel mag meehelpen. Het contact en de vragen die ik kan stellen aan de klanten helpen mij heel erg met mijn onderzoek.

hoelang bent u al pakketpunt?
waarom bent u pakketpunt geworden?
Druk pakketpunt?
veel vaste klanten?
wat voor soort klanten?

waarom komen klanten naar u en niet naar een ander punt?
- wat doet u anders dan andere pakketpunten?
- wat vinden klanten fijn?
- wat vinden klanten lastig?
- waarom zou u geen pakketpunt meer willen zijn?
  - en buiten geld en tijd om?

hoe gaat het nu met het runnen van het pakketpunt?
- wat is nou echt heel vervelend aan de huidige processen?

Waar loopt u tegen aan?
- wat is er nu echt heel erg handig?

wat is er veranderd ten opzichte van vroeger?
- wat was er vijf jaar geleden heel erg vervelend?
- wat was er vijf jaar geleden juist heel erg fijn?
- verkocht u vijf jaar geleden meer van een bepaald product? of juist minder?

en als we naar de toekomst gaan kijken?
- wat zou u willen veranderen?
- wat denkt u dat klanten willen veranderen?
- wat zouden klanten erg fijn vinden?
- wat gaan klanten vervelend vinden?

wat als u de baas zou zijn van PostNL?
wat als u alles kon veranderen?

Is er nog iets dat u graag kwijt wil?

Follow-up questions or 'cues' mocht het gesprek stilvallen
Zou je dat iets gedetailleerder kunnen uitleggen?
Zou je daarvan een voorbeeld kunnen geven?
en waarom denkt u dat?

Interviewguide - Bezoekers Pakketpunt

korte introductie onderzoek - TU Delft, afstuderen, PostNL, nieuwe ontvangstoplossing. Ik werk vandaag namens PostNL en doe onderzoek in deze winkel. Heeft u voor mij 5 minuutjes de tijd om even een kop koffie te drinke en wat vragen te beantwoorden?

hoe bent u hier naar toe gekomen?
- lang moeten reizen?
- hoe hebt u het pakket meegenomen (vooral bij lopen/fiets)
- wat vond u vervelend aan het reizen hier naar toe?

wat is er echt vervelend/lastig aan de huidige service?
en buiten pakketpunt om?
als u kijkt naar alles?
dus ook het pakket voorbereiden of laten afleveren?
wat voor probleem heeft u dan wel eens gehad?

en wat vind u fijn aan dit specifieke pakketpunt?
- waarom?
- maar dat hebben andere pakketpunten toch ook?

Is er nog iets dat u graag kwijt wil?

Follow-up questions or 'cues'
Zou je dat iets gedetailleerder kunnen uitleggen?
Zou je daarvan een voorbeeld kunnen geven?

I sometimes struggle with bringing my parcels home on my bicycle as I can not secure them to the bike

I can by car but it is impossible to park here. But I going to pickup my children so I need my car

I just come here by foot as sometimes parcels are so big can't handle them on my bike

Normally I come by bike but now i'm walking my children to school so I just came by foot.

struggle to get parcels Home

It is always busy here so I never know if i can proceed to the PostNL counter or if i have to wait in the normal queue. Sometimes i Use the normal Queue and other people walk straight the PostNL desk and than i have to wait longer. It also differs per shop.

OBSERVATION: consumers wait in between the two counters, causing a messy queue as they don't know where to queue

I think the location is really clear, I always recognise the counter where I have to go

welke rij? welke balie?

I don't like i have to park my bike, enter the store, wait in the line just to drop of my package, there should and can be a faster solution. The transaction is just 10 seconds but the action takes 10 minutes.

In the morning i'm always rushing towards the station, to get to my work. So I don't have the spare 10 minutes to pick up my parcel.

I always think I do it quickly but it always takes more time.

Het Kost meer tijd dan Alleen de transactie

I dont like that I sometimes have to wait quite long because people have trouble with their packages. They have to pay additional fees at the counter which takes ages

Two weeks ago a guy was getting mad because his package was not yet at the parcelpoint. He already received a notification but the package still had to be delivered by the mailman. I had to wait for 10 minutes longer because of this annoying guy.

meer service vragen = not done

Last time i just dropped my parcel on the counter as I had to leave, i don't care about the receipt that I send the parcel, in the end it will be alright.

I always enter a store with my parcel in plain sight, most of the times

OBSERVATION: consumers already unpack there parcel outside of the parcellocation so they walk in with the parcel in plain side. They do this to show that they "just came to dropoff a parcel"

pakket als excuus/beschermiring

Sometimes I feel a bit embarrassed. I use this parcelpoint multiple times a month but never bought something here.

I sometimes feel sorry for the lady behind the counter when i bring some heavy or really big parcels.

beschaamd om misbruik pont

beschaamd om bestellen

gewoon verzenden geen extra sewice =gedoe

I sometimes wonder why everybody is ordering online, I see people ordering bottles of wine or other things that you just can buy in your own neighbourhood.

WAAROM bestellen mensen deze Artikelen?

I work nearby so I use my break to take a nice walk and pick up my parcels.

I think ik would not use this parcelpoint if I only had to visit it for my packages. But I also shop for groceries next door and buy my cigarettes here so it is convenient.

I just left the office and always pickup my parcels here as the parcellocation near my home already closes at 6

bezoek = gecombineerd

This location is really nice as they supply tape to pack my parcel

I use this parcelpoint while i have two other options which are more nearby, but I really like the people who work here, they are so friendly

Vriendelijkheid mank verschil

tijd & personeel = key

I have some sort of a deal with my neighbour, he sometimes collect my parcels when he is at the parcel point and another time i will collect his parcels when i need to collect parcels.

It would be better if they just left my parcel at my front door or something like that. I order heavy things like cat litter and i don't want to do it myself.

We have parcel lockers in Finland for a number of years and I can indicate by post that parcels must be delivered to the nearest safe. So even when it is addressed home.

I really like the people in the store but sometimes I hate that i have to rush after work to pickup my parcel. Maybe I like it more when my parcel is delivered in the evening

If there was just some kind of mailbox where I could drop my parcel it is also fine, if it saves me a lot of waiting time why not?

Hoe Kunnen we Het nog meer oplossen

Sometimes I come to pick-up a parcel from a dutch webshop and also receive some packages from aliexpress who had been lying here for a week, a bit embarrassing as i sometimes forget what i ordered..

I just came to shop for groceries but remembered I had to pick up a parcel.

Sometimes you receive this notice in your mailbox and I forgot what I ordered, haha.

Vergeten dat ze pakketten Hebben

Last time I had to ship a parcel to family in Indonesia. Franking the parcel at home was quite complicated so in went to the store. The person behind the desk was quite fast and rushing through all the options so I got the feeling that I may be payed to much as I could not compare all the options within the small amount of time.

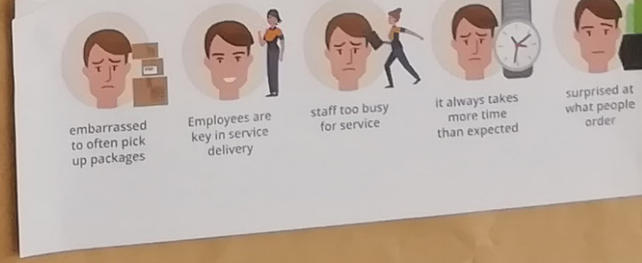
I once asked something about parcel insurance but the staff at the counter didn't know anything, so I just had to look for myself online.

et is geen tijd voor extra service

In the other shop i have the feeling that the employee just goes to the backend of the shop but is not really searching my parcel. Several times they just told me that it was not there yet.

I really like the person behind the counter, it makes it a bit more fun as they always have time for a small talk of a joke.

personeel bepaalt tevredenheid service



14.5 Interview guide VVE Beheerders

The majority of the apartment buildings in the netherlands is managed by an homeowner association (Dutch: “vereniging van eigenaars”). The homeowner association is responsible for maintenance and cleaning and the owners of the apartments are obligated to pay a monthly fee to the association. Homeowner associations in the past were governed by the residents but nowadays professional organisations are managing the homeowner association on behalf of the residents. Two organisations were willing to participate in an interview by phone for which the following script was used.

korte introductie onderzoek - TU Delft, afstuderen, PostNL, nieuwe ontvangstoplossing. De doelgroep zal voornamelijk in uw complexen wonen. Ik ben benieuwd of deze oplossing uw dienstverlening kan verbetren. Dit is puur een onderzoek, het product is nog niet beschikbaar en ik probeer het ook zeker niet te verkopen.

ontvangt u als beheerder wel eens klachten over de bezorging van pakketten in het complex dat u in beheer heeft?
- over burenbezorging bijvoorbeeld?
- of het vele aantal bezorgers dat door het complex loopt?
- pakketten die misschien verkeerd worden bezorgd?

Heeft u zelf al maatregelen genomen om dit soort klachten te beperken?
- bewoners waarschuwen voor frauduleuze bezorgers?
- een andere ontvangstoptie gebruiken?

Denkt u dat de bewoners van de complexen die uw beheerd een oplossing voor het ontvangen van pakketten kunnen waarderen?
- en welke complexen dan?
- specifieke soort bewoners?
- zouden ze er ook voor willen betalen?

Wie zou er verandwoordelijk moeten zijn voor de ontvangsoptie?
Voor de plaatsing?
Voor het onderhoud?
Voor de facturatie?

14.6 Interview guide lead users

iinterviewguide lead users

introductievragen om een veilig gevoel te creeren zodat de interviewee gemakkelijk anwoorden wil delen.

Wat vet dat je een eigen pakketbrievenbus hebt gemaakt!
- korte introductie onderzoek - TU Delft, afstuderen, PostNL, nieuwe ontvangstoplossing

Wat voor soort bus heb je gemaakt?
- waarom op deze manier?

Wat voor elektronica heb je gebruikt?
- waarom deze elektronica?

de situatie - waarom een pakketbus

waarom heb je een pakketbus gemaakt?
- wat waren je frustraties?
- wat vond je echt heel vervelend?

Hoe ontving je vroeger dan je pakketten?
- buren/servicepunt?
- en waarom was dat niet acceptabel?

hoe voel je je nu bij je huidige oplossing?

Een pakketbus wordt soms als minder veilig dan thuisbezorging ervaren, hoe ervaar jij dit verschil?
is het risico op verlies van het pakket in jouw ogen groter?
zijn er andere risicos dan bij gewone levering?

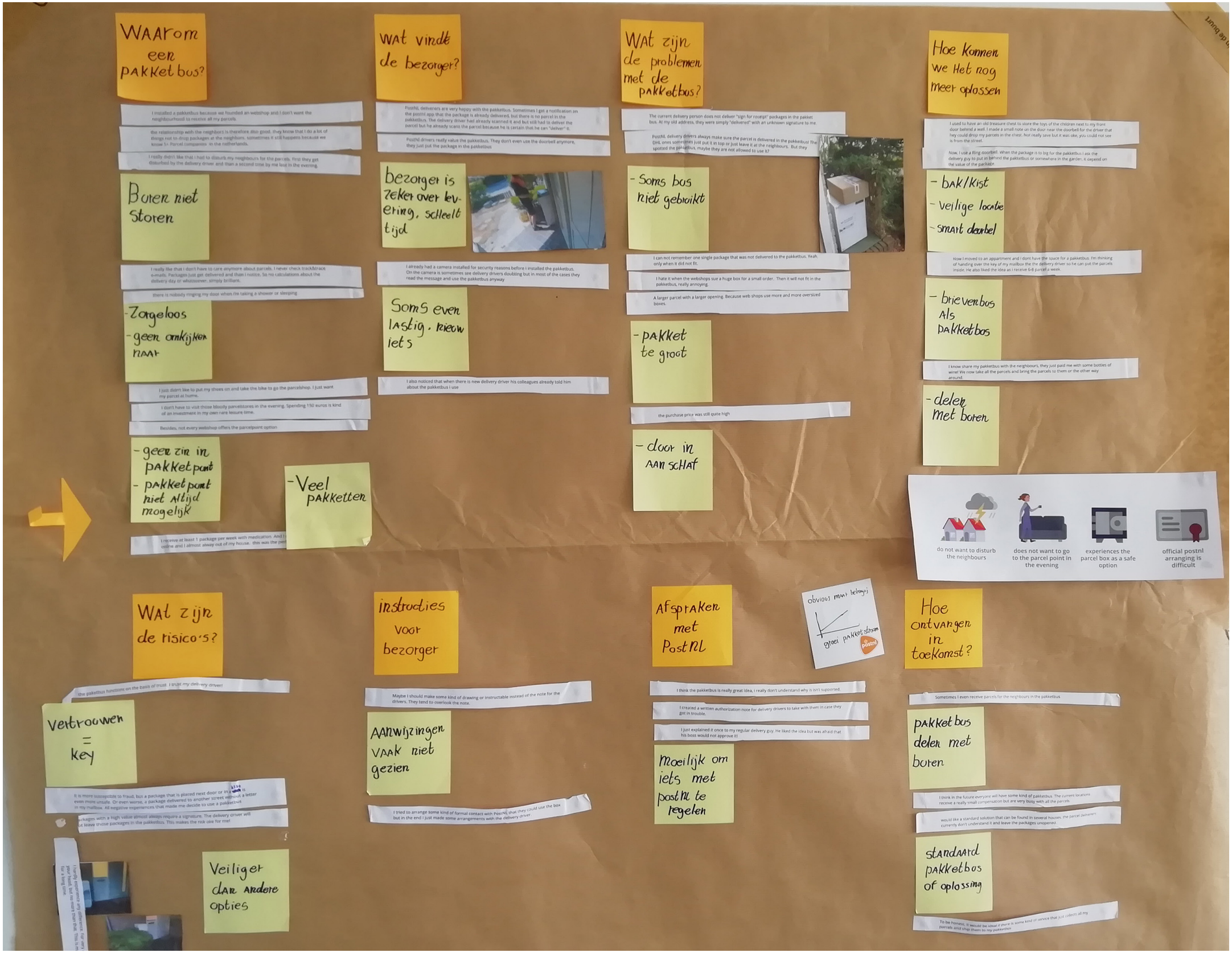
wat zou je nog willen veranderen?

Wat zou je nog willen veranderen aan je huidige oplossing?
en waarom zou je dit dan veranderen?

hoe ga jij je pakketten over 5 jaar ontvangen?
- heb je dan een nieuwe pakketkluis?
- verwijs terug naar vorige vraag?

afsluiting
Is er iets wat ik ben vergeten te vragen wat je kwijt zou willen over je pakketbus?

heel hartelijk bedankt! je hebt me erg geholpen met je antwoorden. Ik zal deze vertrouwelijk behandelen.


WAArom een pakketbus?
I installed a pakketbus because we founded an webshop and I don't want the neighbourhood to receive all my parcels.
the relationship with the neighbors is therefore also good. they know that I do a lot of things not to drop packages at the neighbors. sometimes it still happens because we know 5+ Parcel companies in the netherlands.
I really didn't like that I had to disturb my neighbours for the parcels. First they get disturbed by the delivery driver and than a second time by me last in the evening.
Buren niet Storen
I really like that I don't have to care anymore about parcels. I never check track&trace e-mails. Packages just get delivered and than I notice. So no calculations about the delivery day or whatsoever. simply brilliant.
there is nobody ringing my door when i'm taking a shower or sleeping
-Zorgeloos
-geen omkijken naar
I just didnt like to put my shoes on and take the bike to go the parcelshop. I just want my parcel at home.
I don't have to visit those bloody parcelstores in the evening. Spending 150 euros is kind of an investment in my own rare leisure time.
Besides, not every webshop offers the parcelpoint option
-geen zin in pakketpunt
-pakketpunt niet altijd mogelijk
-Veel pakketten
I receive at least 1 package per week with medication. And I
online and I almost alway out of my house. this was the per
WAt zijn de risico's?
the pakketbus functions on the basis of trust. I trust my delivery driver!
Vertrouwen = key
It is more susceptible to fraud, bus a package that is placed next door or in a is even more unsafe. Or even worse, a package delivered to another street without a letter in my mailbox. All negative experiences that made me decide to use a pakketbus
packages with a high value almost always require a signature. The delivery driver will ot leave those packages in the pakkenbus. This makes the risk oke for me!
Veiliger dan andere opties
wAt vindt de bezorger?
PostNL deliverers are very happy with the pakketbus. Sometimes I get a notification on the postnl app that the package is already delivered, but there is no parcel in the pakketbus. The delivery driver had already scanned it and but still had to deliver the parcel but he already scans the parcel because he is certain that he can "deliver" it.
PostNl drivers really value the pakketbus. They don't even use the doorbell anymore, they just put the package in the pakketbus
bezorger is zeker over levering, scheelt tijd
I already had a camera installed for security reasons before I installed the pakketbus. On the camera is sometimes see delivery drivers doubting but in most of the cases they read the message and use the pakketbus anyway
Soms even lastig, nieuw iets
I also noticed that when there is new delivery driver his colleagues already told him about the pakketbus I use
instructies voor bezorger
Maybe I should make some kind of drawing or instructable instead of the note for the drivers. They tend to overlook the note.
AAnwijzingen vAAk niet gezien
I tried to arrange some kind of formal contact with PostNl, that they could use the box but in the end I just made some arrangements with the delivery driver
WAt zijn de problemen met de pakketbus?
The current delivery person does not deliver "sign for receipt" packages in the pakket bus. At my old address, they were simply "delivered" with an unknown signature to me.
PostNl, delivery drivers always make sure the parcel is delivered in the pakketbus! The DHL ones sometimes just put it in top or just leave it at the neighbours. But they spotted the pakketbus, maybe they are not allowed to use it?
- Soms bus niet gebruikt
I can not remember one single package that was not delivered to the pakketbus. Yeah only when it did not fit.
I hate it when the webshops sue a huge box for a small order. Then it will not fit in the pakketbus, really annoyng.
A larger parcel with a larger opening. Because web shops use more and more oversized boxes.
- pakket te groot
the purchase price was still quite high
- door in aanschaf
Afspraken met PostNl
I think the pakketbus is really great idea, I really don't understand why is isn't supported.
I created a written authorization note for delivery drivers to take with them in case they got in trouble.
I just explained it once to my regular delivery guy. He liked the idea but was afraid that his boss would not approve it!
Moeilijk om iets met postnl te regelen
obvious maar belangrijk
groei pakketstroom
Hoe Kunnen we Het nog meer oplossen
I used to have an old treasure chest to store the toys of the children next to my front door behind a wall. I made a small note on the door near the doorbell for the driver that hey could drop my parcels in the chest. Not really save but it was oke, you could not see is from the street.
Now, I use a Ring doorbell. When the package is to big for the pakketbus I ask the delivery guy to put in behind the pakketbus or somewhere in the garden. It depend on the value of the package.
- bak/kist
- veilige locatie
- smart doorbel
Now I moved to an appartment and I dont have the space for a pakketbus. I'm thinking of handing over the key of my mailbox the the delivery driver so he can put the parcels inside. He also liked the idea as I receive 6-8 parcel a week.
- brievenbus als pakketbus
I know share my pakketbus with the neighbours, they just paid me with some bottles of wine! We now take all the parcels and bring the parcels to them or the other way around.
- delen met buren
do not want to disturb the neighbours
does not want to go to the parcel point in the evening
experiences the parcel box as a safe option
official postnl arranging is difficult
Hoe ontvangen in toekomst?
Sometimes I even receive parcels for the neighbours in the pakketbus
pakketbus delen met buren
I think in the future everyone will have some kind of pakketbus. The current locations receive a really small compensation but are very busy with all the parcels.
would like a standard solution that can be found in several houses. the parcel deliverers currently don't understand it and leave the packages unopened.
standaard pakketbus of oplossing
To be honest, it would be ideal if there is some kind of service that just collects all my parcels and ship them to my pakkenbus.

14.8 Van Westendorp analysis

Survey used during van Westendorp analysis - Survey conducted with with google forms

Hi,

Wat fijn dat je mij wil helpen met mijn onderzoek! Ik ben Koen Luijkx en momenteel ben ik mijn master Strategic Product Design aan de TU Delft aan het afronden. Ik doe dit bij PostNL en kijk naar nieuwe manieren om pakketten te ontvangen. Ik heb voor PostNL een neiuwe service uitgedacht en ben beniewd wat jouw mening hierover is! Ik schat dat je ongeveer 2 minuutjes nodig hebt om deze vragen te beantwoorden. Mocht je vragen hebben of deze service gelijk nu al willen hebben (dat wordt wel lastig) kun je me benaderen op koen.luijkx@postnl.nl

Heel erg bedankt alvast

Koen

Laten we beginnen met een paar korte vragen

1 Zou je willen aangeven in welke leeftijdscatogerie je valt

ook optie, nee liever niet

2 Woon je in een appartementencomplex?

ja/nee, maybe minimum appartementen

3 Zou je in kunnen schatten hoeveel pakketjes je maandelijks ontvangt of verzendt? Dit zijn dus alle pakketten van alle bedrijven en foodboxen en boodschappenleveringen.

geen - 0-2 - 2-4 5-6 - 7-8 - 9+

4 Waar laat je pakketten meestal bezorgen?
home
work
location
neighbours

Wij hebben gemerkt dat mensen het fijn vinden om hun pakket gewoon thuis te ontvangen. Dus niet bij de buren, in een winkel of pakketten die je moet aannememen voor de buren.

Momenteel zijn we een product aan het uitwerken om dit mogelijk te maken. Dit zal een soort locker/kast oplossing worden die beneden bij de ingang geplaatst gaat worden. In eerste instantie kun je hier je PostNL pakketten in ontvangen en versturen. later willen we ook gaan kijken naar het ontvangen van je boodschappen of foodbox. Omdat dit natuurlijk een behoorlijke investering vergt vragen we hier een kleine bijdrage voor.

5 per pakket betalen of maandelijkse fee? of fee via VVE?

3 opties per pakket/maandelijkse/maandelijks via vve

6 westend pricing template vragen! uitsplitsen of het per pakket of maandelijks is, het is sowieso per persoon.

6,1 At what price would you consider the product to be so expensive that you would not consider buying it?

6,2 At what price would you consider the product to be priced so low that you would feel the quality couldn't be very good?

6,3 At what price would you consider the product starting to get expensive, so that it is not out of the question, but you would have to give some thought to buying it?

6,4 At what price would you consider the product to be a bargain—a great buy for the money?

14.9 Quick fixes

During the creative process, ideas continuously pop-up and fade away, but some linger around because they can still be useful. This chapter is dedicated to the ideas that some might call creative collateral damage (Bluemink, 2019). This selection ideas is not part of the roadmap solution but might temporarily resolve some of the issues of the retail capacity. However, they cannot be sustainably implemented in the future as they do not solve the actual growing flow of parcels, but help retailers cope with this flow. The majority of the solutions focuses on speeding up the process or requiring less time from the employee as this is the barrier for retailers to increase their volume of parcels.

1 The parcel label

Every parcel shipped by PostNL has a label with a unique barcode and the addresses to identify the parcel as can be seen in figure 1. This label is scanned automatically during the sorting process and used to identify the parcel at the retail location. The current label has been used for a while and is optimised for use in machines. However, the present label has a small font and is hard to understand. When the parcels are dropped at a retail location, the employees use a felt-tip pen to write the name clearly and house number on the box to make it easy to identify.

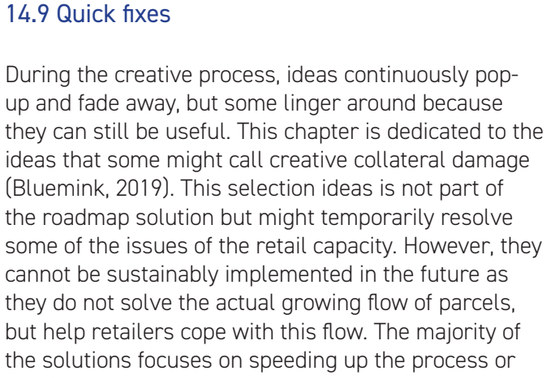


Figure 1 - Curernt PostNL label

To support the employees, it would be easy to enlarge the name and house number on the label as shown in figure 2. Printed text is more easy to identify than handwritten text, which makes the handing out process faster. In some case, they might still have to write the number on the parcel as the labels might be attached on a poorly visible place, but it is an easy fix to speed up the process.

Figure 2 - Label with enlarged name and number

Another option is to print a separate label with the terminal that is already in store. When the delivery driver hands over the parcel to the retail location, every parcel has to be scanned to ensure consumers van track the parcel. Printing a small label with the name and house number as shown in figure 3 can speed up the search process later. Nonetheless, the process of handing over the parcels from drive to the retail location will take more time.

Figure 3 - Add-on to add on parcel at retail location

A complete redesign as shown in figure 4 of the label would be an ideal solution. In the proposed redesign, the sender, receiver and retail location are marked. The house number and name of the recipient are enlarged to make it easy to retrieve the parcel. The tracking number of the barcode also has a short line of explanation.

Figure 4 - New proposed label

2 Ask consumers about their commuting routines

Currently, the retail location where the consumer can collect his parcel is determined by the location of the consumer's home. Automatically the software will assign the parcel to the nearest location. However, there might be a location that is easier for the consumer as it is on the route of their daily commuting or near their job location. By asking questions like:, can we deliver your parcel near your workplace? Or shall we see if we can find a useful parcel point on your daily route? Consumers are nudged to use parcel points with lower pressure, and PostNL can distribute the pressure evenly.

3 Remind consumers of their parcel

In the current situation, consumers receive an e-mail or notification when their parcel is delivered. If the parcel is still at the location after four days, they will receive a reminder. Based on the research from chapter four, it is known that most consumers combine picking up their parcel with groceries or their drive home after work. If PostNL can remind people during this moment, for example, by using the app, we can ensure that consumers forget about their parcel less quickly and arrange that parcels are picked-up earlier.

4 Communicate capacity problem with consumers

Consumers are, most of the time, not aware of the capacity problem of PostNL. However, they do not like to wait in the queue. An option would be to warn consumers that their selected parcel point could be quite crowded and that they have to wait some minutes at the selected point. By informing them about a less crowded alternative, some of the consumers might be willing to switch.