MASTER THESIS

DESIGNING A
NEW DELIVERY SERVICE

for PostNL

Strategic Product Design
Master thesis Maxime Jacobs
September 2020

ACKNOWLEDGEMENTS

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MASTER THESIS

Msc Strategic Product Design
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September 2020

EXECUTIVE SUMMARY

This graduation assignment was formulated with the idea in mind that PostNL would like to add a delivery service to their portfolio that enables them to build a direct payment relationship with the consumer. This delivery service should focus on the 'reception' part of a parcel delivery in which the consumer experience plays a major role. The assignment was formulated as: "Design a delivery service from the perspective of a specified target group that PostNL can ask money for. The willingness to pay (WTP) for this service needs to be researched." This assignment was split into three components:
1. Design a 'reception-style' delivery service;
2. Determine a target group, and
3. Make sure people are willing to pay for the service.

It was agreed that the final deliverable of this graduation assignment is a service blueprint. However, the service blueprint on its own does not provide enough insight into the strategic opportunities and impact of the new service. Nor does the service blueprint alone provide enough material to realize the service. Therefore, also a user interface design and a strategic roadmap were developed and delivered.

The project started with extensive research into literature, the history of PostNL, competitors and trends. From these studies, a search area was chosen that determined the further direction of the project: collaborative consumption. To deeply understand the principles behind collaborative consumption and the opportunities it provides for service design, a second literature study and semi-structured interviews were conducted. From these last two studies, a problem statement was formulated: "How can we enable people to share resources effortlessly by means of a reception-style delivery service?"

The project continued by finding a solution for the problem statement by means of several creative sessions. Many service ideas were developed, clustered, refined, adapted and merged until four ideas made it into elaborated concepts. After well-considered and guided debate, the PostNalles concept was chosen as the final concept. PostNalles allows crowdsourced deliverers to take over (a part of) a delivery according to the exact needs and wishes of a consumer. Consumers can order everything, at any time, anywhere.

PostNalles was then put to the test: are people willing to pay for the new delivery service? Three studies were performed to answer several research questions:
1) Do people want to use the new delivery service?
2) Are people willing to pay for the new delivery service?
3) What are the most common usage scenarios of the new delivery service?

As it turns out, PostNalles is a (very) desirable service. The service was positively received by the participants of a qualitative narrative study (n = 47) and was assigned with an interest score of 4,03 (out of 5) by the participants of a quantitative survey study (n = 176). People are also willing to pay for the delivery service: it was found that people are willing to pay an average amount of €6,02 (study 1), €2,66 (study 2) and €2,31 (study 3), dependent upon the value and size of the desired delivery item.

Frequent orderers and average orderers have to be included in the target group. It is expected that the early adopters of the service are digital-savvy, younger consumers who have experience with ordering through an app. Additional research has to be performed to further specify the target group.

Because many different items can be delivered in many different ways through an all-encompassing delivery service, focus had to be created in the different delivery possibilities. Three so called usage scenarios were formulated as focal points for further service development. These three usage scenarios were derived from the validation studies: 1. Clothing and shoes * Limited product range or stock of shop, 2. Electronics and accessories * Distance and 3. Food and drinks * Ease.

On the basis of the three usage scenarios the service blueprint was developed. The service serves two purposes: 1) providing a holistic yet high-level view on all the actions and processes that underlie the service based upon a customer journey and 2) providing PostNL with a communication tool that guides and evokes discussion with other teams and expert groups. The service blueprint can be found on *pages 115 - 118*.

Next to the service blueprint, a user interface design and a strategic roadmap were created provide enough insight into the strategic opportunities and impact of the new service. Together, the deliverables provide a holistic view on the essence, the purpose and the possibilities of the service. The user interface is presented on *pages 124 - 129*. The strategic roadmap is displayed on *pages 133 - 134*.

To be able to offer users an excellent customer experience, people's first association with the service has to be spot-on. The service stands for convenience, flexibility and control which is communicated through the final service's name: Shift. Shift allows consumers to have limitless access to whatever item they desire. This enables PostNL to become the undisputed favorite deliverer of the Netherlands.

PREFACE

I experienced graduation as a wonderful adventure, a journey through the jungles of one of the oldest corporations in the Netherlands, a journey through the dark caves of COVID-19, a journey along the beautiful waterfalls of inspiring ideas, a journey that ends with planting a service flag on the top of a towering mountain.

Graduation offered an opportunity to experiment, to step out of my comfort zone and to make mistakes. Graduation was an opportunity to discover what I enjoy in the light of a future career. I wanted to create something that I could be proud of, something that shows how much I have learned during my years as a student. I wanted to finish my studies with a blast as a true strategic product designer.

I didn't take the easy way and from time to time a lot of perseverance was required. Finding the balance between what you are taught at the TU and what the office wants to see from you is a delicate matter. Despite that, I am very satisfied with the end result. I pushed myself and PostNL - with a desirable delivery service as a result. And I didn't do that alone.

Han van der Meer, chair, innovation consultant before it was cool to be an innovation consultant, always involved and never afraid to give me advice, even when enjoying the warm French sun. Rebecca Price, mentor, skillful design researcher who regularly held up a mirror to me with her no-nonsense feedback and always knew how to see the beauty in difficult situations. Jeroen van der Heijden, company mentor, enthusiastic sparring partner who has always supported me by providing the necessary resources and asking every week if he could help with something. And finally, Jikkelien van Marle, company client, sharp yet warmhearted business lady who has always been there for me regardless of the time. Thank you for your advice, support and feedback. I have learned a lot from you

Lecturi salutem, enjoy reading this thesis.

Maxime Jacobs

September 3rd 2020
Rotterdam

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1.

project introduction
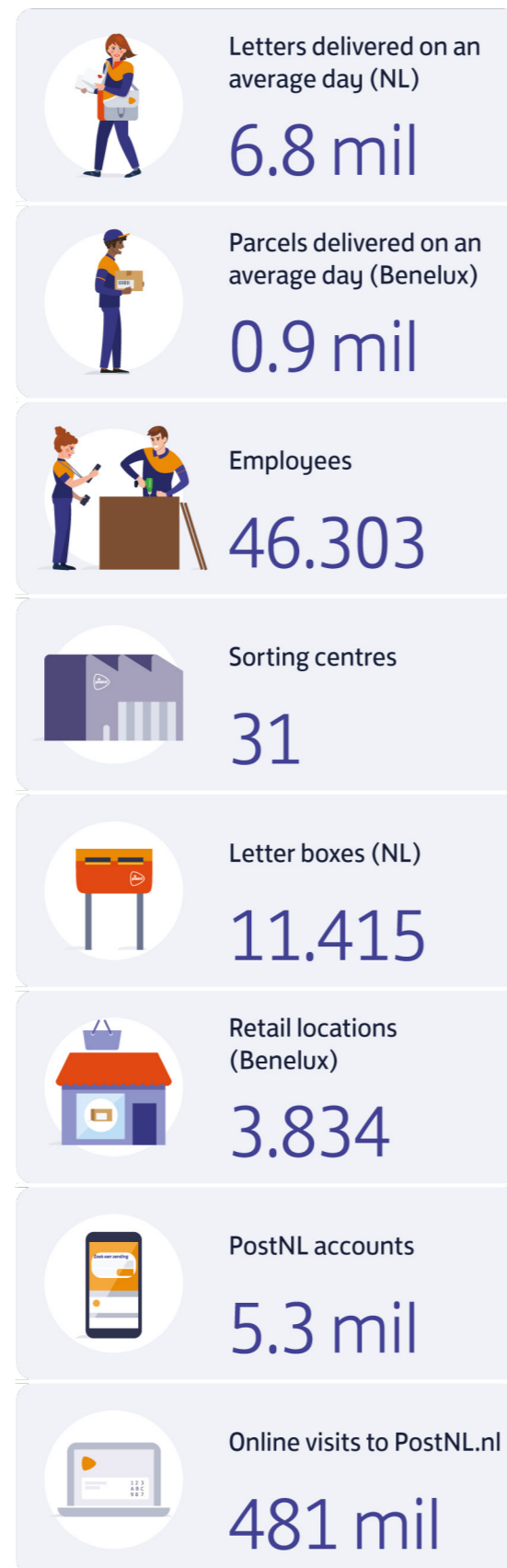
1. PROJECT INTRODUCTION

1.1. PROJECT BRIEF

It is very uncommon that every Dutch citizen is a client of one and the same company. Even more uncommon is that almost every Dutch citizen regularly opens his or her door for that same company. For over 220 years, PostNL has ensured that mail is reliable and accessible in the Netherlands. Led by the Dutch Postal Act 2009, PostNL is the designated provider of the Universal Service Obligation in the Netherlands. On a weekday, the postal company delivers on average 900.000 parcels and 6.8 million letters thr oughout the Benelux (see *figure 1*). PostNL is the indispensable link between senders and recipients, and the connector between the physical and the digital world (PostNL, n.d.-a).

PostNL survived major historical events, such as the First and Second World War, and the Flood Disaster of 1953. Modern day threats are posed by fierce competition, the incremental demands of the consumer and the transition towards a digital era. PostNL has benefited from the exclusive right to deliver Dutch mail in the past, but due to enduring decline of mail volumes, the future role of PostNL is unclear. PostNL's response is to focus on the growth of parcel volumes by updating pricing strategies and by focusing more on consumer value through better insights (PostNL, 2020).*

Recently, PostNL launched an internal strategy campaign called 'oranje kompas' (transl. 'orange compass'). The oranje kompas offers PostNL employees a joint course to follow to become people's favorite deliverer. The oranje kompas provides answers to the questions why, who, what and how, and insight into what behavior, working climate and leadership are required to achieve the desired customer experience (PostNL, n.d.-b). It is the aim of this project to assist PostNL in becoming the favorite deliverer.

More historical information on PostNL can be found in Chapter 3.2. Historical Heritage.

▶ *Figure 1: PostNL numbers (PostNL, 2020)*

Letters delivered on an average day (NL)
6.8 mil

Parcels delivered on an average day (Benelux)
0.9 mil

Employees
46.303

Sorting centres
31

Letter boxes (NL)
11.415

Retail locations (Benelux)
3.834

PostNL accounts
5.3 mil

Online visits to PostNL.nl
481 mil

Consumer experience and payment

To create a stronger consumer focus, PostNL founded its Customer Excellence department. Three years ago, the department wrote a consumer strategy which aims to: (1) become frontrunner in consumer services and (2) develop new businesses and convert them into new cores. In line with the consumer strategy, Jikkelien van Marle, program manager at Customer Excellence, is a driving force behind initiatives such as the 'delivery passport': a consumer delivery service focused on consumer experience. Next to the delivery passport, Jikkelien seeks novel value propositions that enhance consumer experience which also put money in the bank.

Currently, it is PostNL's default mode that consumers do not directly pay for deliveries to PostNL. For some time, Jikkelien has been wondering if a change in this status quo could eventually lead to new streams of revenue. She would like to add a consumer focused delivery service to PostNL's portfolio which enables PostNL to build a direct payment relationship with the consumer. Such a service would be successful if (1) the service has a positive influence on consumer experience and (2) consumers are proven to be willing to pay for the service. With regard to PostNL's core business and a potential future integration with the delivery passport in mind, Jikkelien would

like this service to focus on the 'reception' part of a delivery from the consumer's perspective (see *figure 2*).
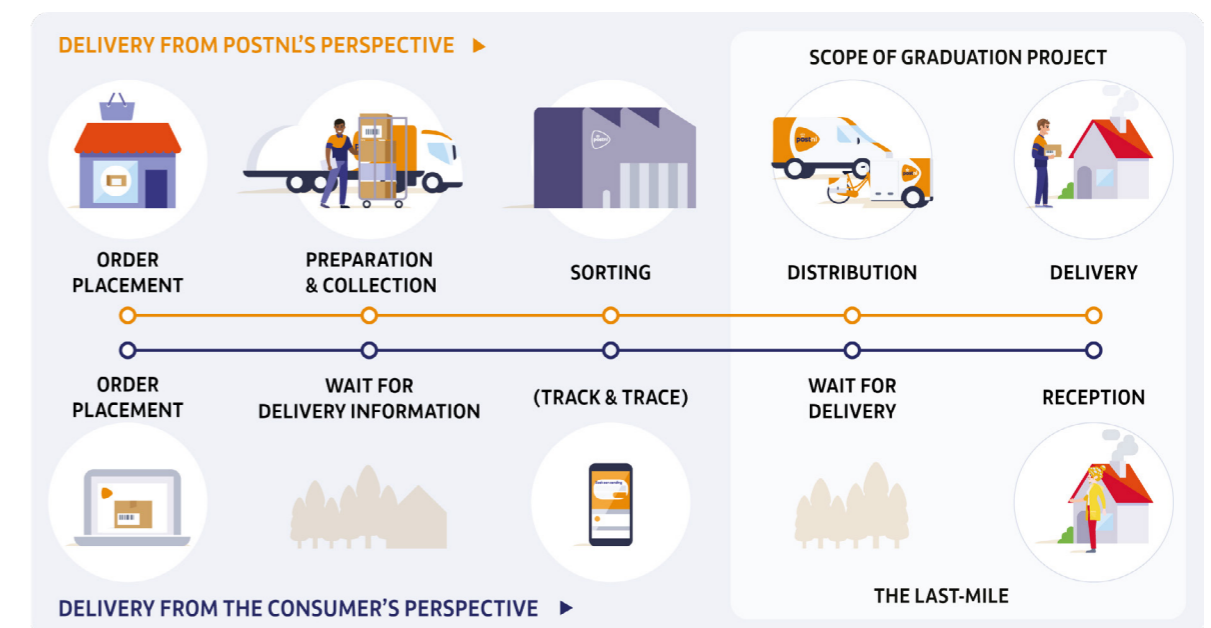
The client's assignment

PostNL would like me to design a delivery service that enables them to build a direct payment relationship with the consumer. The delivery service should focus on the 'reception' part of a parcel delivery in which the consumer experience plays a major role. This assignment is formulated as:

"Design a delivery service from the perspective of a specified target group that PostNL can ask money for. The willingness to pay (WTP) for this service needs to be researched."

This assignment immediately raises several questions. Why does PostNL not ask for money for its services at this moment? Why would somebody pay for a delivery service while currently he or she does not have to pay for that service directly? And what target group would be willing to pay for a delivery service? It will be my job to answer these questions and design a service that fits the assignment.

▼ *Figure 2: scope of graduation project*

DELIVERY FROM POSTNL'S PERSPECTIVE ▶

SCOPE OF GRADUATION PROJECT

ORDER PLACEMENT — PREPARATION & COLLECTION — SORTING — DISTRIBUTION — DELIVERY

ORDER PLACEMENT — WAIT FOR DELIVERY INFORMATION — (TRACK & TRACE) — WAIT FOR DELIVERY — RECEPTION

DELIVERY FROM THE CONSUMER'S PERSPECTIVE ▶

THE LAST-MILE

It was agreed that the final deliverable of this graduation assignment is a service blueprint. However, I believe that a service blueprint on its own does not provide enough insight into the strategic opportunities and impact of the new service. Nor does the service blueprint alone provide enough material to realize the service. Therefore, also a user interface design and a strategic roadmap will be developed and delivered.

To support the head office in The Hague with design solutions, PostNL's Innovation Studio was founded. The Innovation Studio has its office in B. Amsterdam, Europe's largest startup ecosystem. When a colleague from the head office encounters a problem, he or she can contact the Innovation Studio to help develop a solution for the problem. The colleague from the head office becomes the project owner, the colleague from the Innovation Studio becomes the innovation supporter. In the case of this graduation project, Jeroen van der Heijden from the Innovation Studio is my first company mentor, and Jikkelien van Marle from the head office is the project owner and second mentor.

The masterpiece of a Master's degree

We should not forget the reason why I am going to design a service for PostNL in the first place. To obtain a Master of Science degree from the Master's degree program Strategic Product Design (SPD) at the faculty of Industrial Design Engineering of the TU Delft, its final course has to be completed: the MSc Graduation project. Therefore, I have the obligation to achieve results that meet academic standards.

An SPD graduate should be specialised in designing innovative and strategy-relevant outcomes for organisations, by balancing market desirability, technological feasibility and business viability. The dominant focus of an SPD professional is both on the early stages of the innovation process and on the subsequent implementation phase. In the early stages of innovation, SPD graduates should combine their creativity and the systematic application of state-of-the-art design, business, and research methodologies to identify business opportunities, and translate them into innovative, sustainable and strategically sound concepts (TU Delft, 2020).

1.2. PROJECT APPROACH

Let us take a look at the assignment first: "Design a delivery service from the perspective of a specified target group that PostNL can ask money for. The willingness to pay (WTP) for this service needs to be researched." You could say that this assignment can be split into three components:
1. Design a 'reception-style' delivery service;
2. Determine a target group, and
3. Make sure people are willing to pay for the service.

These three components almost automatically raise three research questions:
1. Which 'reception-style' delivery service should PostNL deploy?
2. For what target group should the delivery service be designed?
3. Are people willing to pay for this delivery service?

This graduation project would be rather straightforward if these three research questions could be answered linearly. However, they are inextricably connected and their answers cannot be developed linearly (see *figure 3*). In fact, given the correlated relationship between these questions, it is expected that answering them requires iterating. The project approach should accommodate this. Therefore, I suggest adopting the Double Diamond model as a structure for this graduation project (see *figure 4*).

▼ *Figure 3: research question interdependence*
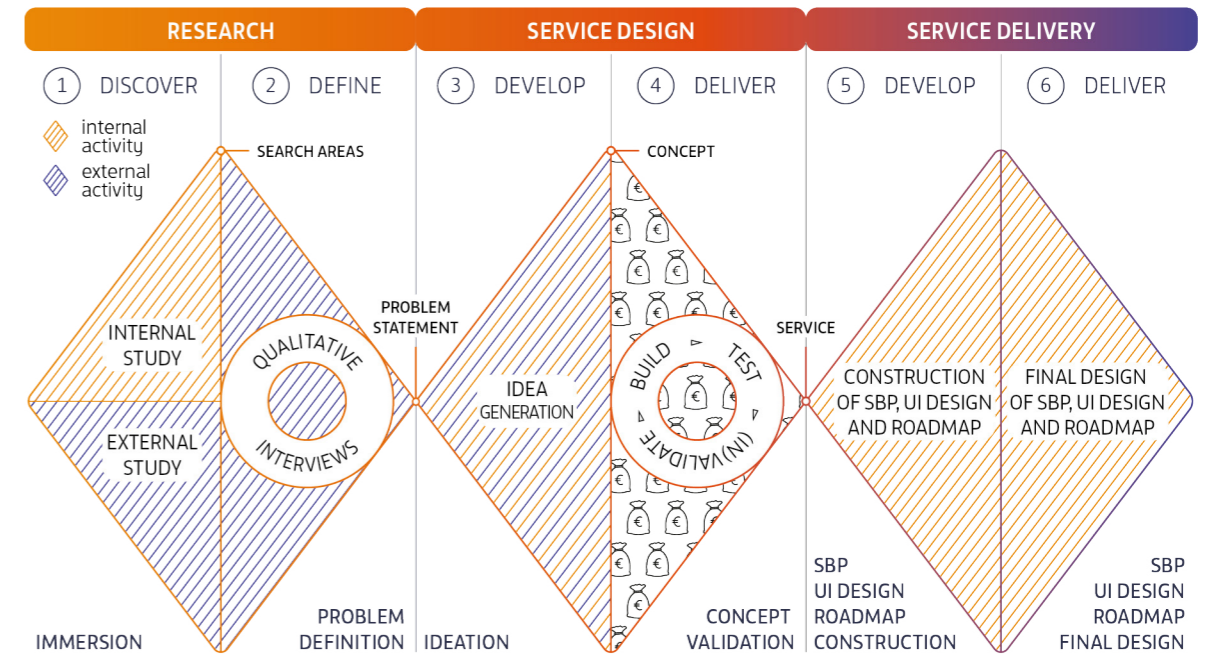
▲ *Figure 4: Triple Diamond model*

The Triple Diamond Model

The Double Diamond framework by Design Council is a world-famous visual description of a design process. The two diamonds represent a process of exploring an issue more widely or deeply (divergent thinking), followed by focused action (convergent thinking). The first diamond of the Double Diamond model consists of the diverging stage 'discover' and the converging stage 'define'. The second diamond exists of the diverging stage 'develop' and the converging stage 'deliver'. The model is based on two principles that make it suitable to this design project: non-linearity and iteration (Design Council, n.d.).

This graduation project comprises at least the two diamonds from the Double Diamond model. The first diamond lends itself to initial research (discover) and the formulation of a problem statement (define). The second diamond lends itself to ideation and conceptualization (develop), and the elaboration of a concept (deliver). To deliver a service blueprint, user interface design and strategic roadmap, an extra diamond is required in which these three deliverables are developed (develop) and designed (deliver). To formulate a project approach and to get

a hold on the required activities, the Triple Diamond was developed. As demonstrated by the Triple Diamond model, this graduation project is divided into six stages. The Triple Diamond displays the scientific requirements set by the TU Delft (e.g. academic studies such as literature studies and qualitative interviews) and practical requirements set by PostNL (e.g. the validation of the WTP and the service blueprint).

Now that the project goals and approach are presented, it is time to dive into the actual content of this graduation assignment. First stop: the immersion stage.

> **KEY TAKEAWAYS**
> • The project brief for this graduation assignment is: "Design a delivery service from the perspective of a specified target group that PostNL can ask money for. The willingness to pay (WTP) for this service needs to be researched."
> • The main deliverable of this project is a service blueprint. A user interface design and strategic roadmap are also delivered.
> • The target group and willingness to pay for the service need to be researched.

2.

the domain of delivery

2. THE DOMAIN OF DELIVERY

2.1. RESEARCH APPROACH

It is important to gain understanding of the theory behind the design of delivery services where people would be willing to pay for. This theoretical background provides insight in the research that has already been done concerning delivery services, it provides preliminary design requirements and it prevents reinventing the wheel.

The theoretical background will be formed by means of a literature study. The literature study will mainly focus on two subjects: (1) reception-style delivery services and (2) people's willingness to pay for services. The aim is to answer the following research questions in this literature study:
1. What are last-mile delivery services?
2. What are important properties of a delivery service provide according to consumers?
3. When are people willing to pay for a service?

To base this literate study on relevant scientific articles, I focused on service design journals (e.g. Journal of Service Research), and logistics and transport journals (e.g. International Journal of Physical Distribution and Logistics Management). In all journals, the terms 'delivery service design', 'parcel OR package delivery design', 'delivery customer OR consumer experience', 'parcel OR package customer OR consumer experience', 'last-mile delivery design' and 'last-mile delivery service' were searched. This search was extensive, nonetheless it was not all-encompassing.

2.2. LITERATURE STUDY

2.2.1. Last-mile delivery service

Logistics

The word 'logistics' is derived from the Greek adjective 'logistikos', which means 'skilled in calculating'. The ancient Greeks used the word logistikos to refer to military officers who were expert in calculating the military needs for expeditions in war (Farahani, Rezapour, & Kardar, 2011). Only from the 1960s on, the term logistics has been used in the business field to refer to the means and methods related to the physical organization of a company, specially the flow of materials before, during, and after production. Logistics also includes service activities that are a unique subset of services that span the boundaries between goods suppliers, service providers, and consumers and have become increasingly important for successful supply chain operations (Langevin & Gerad, 2005; Stank, Goldsby, Vickery, & Savitskie, 2003).

This thesis adopts the definition of logistics of the Council of Supply Chain Management Professionals (2013): "The process of planning, implementing, and controlling procedures for the efficient and effective transportation and storage of goods including services, and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements. This definition includes inbound, outbound, internal, and external movements."

▼ Figure 5: Last-mile logistics
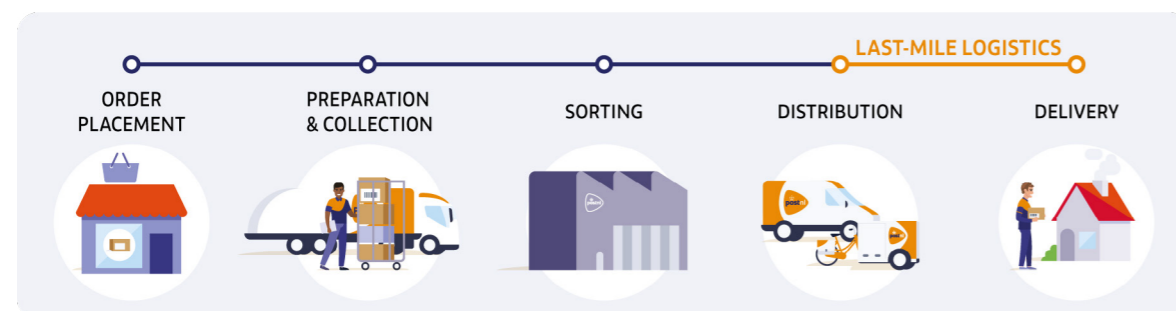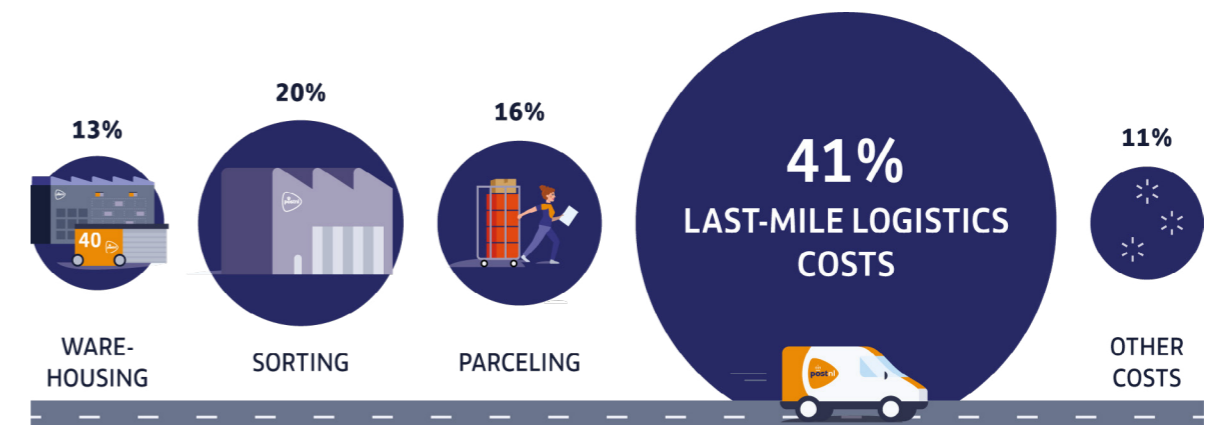

Last-mile delivery

PostNL is a Dutch mail and parcel carrier that offers such logistics services. Since this graduation project focuses on the 'reception' of a parcel, i.e. the what, where and when of the consumer receiving a parcel, this literature study will focus on this part of the parcel delivery service. The actual transfer of the parcel from PostNL to a consumer takes place in the final stage of the delivery process. This final delivery stage in which the parcel travels its last few miles is better known as the 'last-mile'. Many definitions of last-mile logistics (LML) exist, yet a common understanding is that LML concerns the last stretch of the logistics chain from the last distribution center to the recipient's preferred destination point (Olsson, Hellström, & Pålsson, 2019). *Figure 5* displays a visual representation of LML.

PostNL currently realizes last-mile deliveries in two manners: (1) direct home delivery and (2) delivery to a retail location or parcel locker. In both cases the parcel is delivered to the preferred location through (electric) vans and electric delivery tricycles. Many new last-mile solutions are being developed or are already adopted, such as drones, autonomous vehicles, self-service parcel lockers, delivery to car and delivery in homes when the consumer is away (Jacobs et al., 2019).

Challenges of the last-mile

The last-mile is regarded as one of the most expensive, least efficient and most polluting sections of the entire logistics chain (Gevaers, Van de Voorde, & Vanelslander, 2011). A Capgemini research from 2019 reports that the cost of providing last-mile services accounts for 41% of the overall supply chain costs (based upon 2,874 respondents from the US, UK, Germany, France and the Netherlands). This is more than double than the other categories that the research mentions, such as warehousing or parceling, as *figure 6* displays (Jacobs et al., 2019). LML providers are facing numerous challenges, including strong competitive pressures towards free delivery and a considerable amount of failed delivery attempts and product returns. Consumer expectations are increasing with regard to short delivery times, individually scheduled delivery time windows, shipment traceability and customization and options to choose alternative delivery locations (Allen et al., 2018). To cope with the aforementioned challenges and increasing complexity of LML, PostNL has to improve its operations continuously.

▼ Figure 6: Logistics cost distribution (adopted from Jacobs et al., 2019)

2.2.2. Last-mile developments

Multitudinous changes

The parcel delivery sector, particularly the last-mile within cities, has undergone significant changes for the last ten years (Ducret & Delaître, 2013). Because of the development of new technologies, rapid growth of omni-channel retailing, growing urbanization, changing consumer behavior and an increasing focus on sustainability, new shopping patterns have emerged (Olsson, Hellström, & Pålsson, 2019; Ducret & Delaître, 2013). In particular, the e-commerce market is evolving quickly and is increasingly demanding both in terms of innovative business solutions and consumers expectations (European Commission, 2012). PostNL needs to deal with this to remain a relevant postal player in the future.

Changes in buying behavior have led to growth in parcels volume and in home deliveries in particular (Ducret & Delaître, 2013). Because of the growing number of product segments that are available through e-commerce (such as books, clothing, small and large electronic items, furniture, household appliances, etc.), carriers also need to be able to provide delivery services that increasingly handle parcels with different value, different weights and size of packages. Moreover, stores and postal carriers have modified their supply chains leading to more and more frequent, just-on-time and small, divided delivery (Menge & Hebes, 2011). A change in preferred delivery service type is also evident: a growing ratio of consumers choose to utilize new last-mile delivery service solutions over traditional delivery options (Vakulenko, Shams, Hellström, & Hjort, 2019a).

LML innovation as differentiator

Last-mile delivery has become a critical source for market differentiation, motivating to invest in a multitude of consumer delivery innovations (Lim, Jin, & Srai, 2018). In pursuit of improved performance and responsiveness to growing customer demands, LML providers are seeking new delivery service solutions (Vakulenko et al., 2019a). Industrial journals report evidence of organizations worldwide testing new solutions such as parcel lockers, drones, crowdsourced delivery services, and autonomous vehicle deliveries, along with fulfillment models (Joerss, Neuhaus, & Schröder, 2016). Delivering superior logistics services has become a continuous and critical focus for many firms, given that the relationship of service quality to business performance outcomes (e.g. lower costs, customer satisfaction, loyalty and profitability) has been well established (Yazdanparast, Manuj, & Swartz, 2010).

Potential delivery solutions carry the promise of coping with the emerging challenges. Vakulenko et al. (2019a) claim that incumbents that have specific know-how and experience in last-mile delivery are among the companies which are best positioned to develop new delivery solutions (Bailly & Meidinger, 2017). I think that this is true to a certain extent: an incumbent, such as PostNL, should also have enough ability to innovate. The short market histories of new last-mile solutions cause uncertainty concerning the success and risks of implementations. To prove their value, new last-mile delivery services have no alternative but to be tested by consumers over time (Vakulenko et al., 2019a).

2.2.3. The consumer's perspective on last-mile delivery services

Knowledge gap

According to Vakulenko et al. (2019a), while the scientific focus has been on digital innovation in logistics services and common e-commerce practices, the consumer's response to these novelties and innovative service areas has yet to receive the scientific attention it deserves. Moreover, the knowledge gap concerning the consumer's perspective on last-mile innovations has become apparent because touchpoints in service encounters are studied from the providers' perspective and not always from that of customers (Wagner, Schramm-Klein, & Steinmann, 2020). If we focus on the relationship between delivery process and e-commerce experience, Vakulenko, Shams, Hellström and Hjort (2019b) report that three decades of research have only produced fragmented and rather limited understanding.

Consumer's perspective

Consumers are concerned with last-mile delivery services because they offer flexibility and convenience (Lim et al., 2018). Convenience, the amount of time and effort a consumer perceives to save in accomplishing certain activities, is regarded as a continuous and increasingly important trend in consumer behavior. Convenience is a major reason for consumers to intensify a relationship with a service provider while inconvenience is a reason for consumers to terminate the relationship (Goebel, Moeller, & Pibernik, 2012). It is one of the reasons that same-day and on-demand delivery services are gaining traction for groceries, prepared meals, and retail purchases (Lim et al., 2018).

Lim et al. (2018) also suggest that consumers want more convenient deliveries: more delivery options, better progress information on the delivery process, easier return procedures and user friendly services using technologies to anticipate delivery (smart phones, tablets, SMS alert, etc.). Consumers expect more transparency with respect to the conditions under which their orders are shipped and most notably when packages are delayed, damaged or lost. At the same time, transparency is expected with regard to the clarity and comparability of prices as well as the level of competition (European Commission, 2012).

Harrington, Srai, Kumar and Wohlrab (2015) propose five key constructs to effectively capture the interests and potential objectives of the consumer: cost, quality, time, flexibility and reliability. Harrington et al. (2015) also stress the importance of a requirement for high convenience, which includes reliability and flexibility, customer choice in changing the delivery time and destination, longer operating and opening times, the option of parcel aggregation, and home deliveries in narrow time windows. Within any urban delivery system, the consumer is generally only concerned with destination point, scheduled delivery time and pick-up distance.

Consumer demands for service quality is increasing, whereby consumers are looking for more personalized services with flexible options for the place and time of delivery, flexible conditions for purchase, and more convenient methods of collecting and returning their parcels (Vakulenko et al., 2019a). Consumers' needs for the future of postal services are primarily centred around ease and convenience, affordability and reliability and safety. These needs are broadly consistent across locations and age groups (Breaking Blue, 2016).

2.2.4. Willingness to Pay for delivery services

The most unpriced service

Today, many carriers apply the 'sender pays principle', where receivers do not have to pay anything to receive a parcel (Felisberto, Finger, & Krähenbühl, 2006). This has always puzzled economists because the highest cost component of the service (i.e. the delivery) is payed by the sender and is supplied free of charge to the recipient, and such has been the case since the Sir Rowland Hill reform of 1837*. This paradox of postal delivery was termed 'the most unpriced service' by Panzar (1991). With delivery service solutions actively being developed by LML providers (Vakulenko et al., 2019a), one can expect a greater variety of pricing schemes and product differentiation. However, surprisingly, pricing innovations with regard to the last-mile remain rare (Felisberto et al., 2006).

A major reason why the sender pays principle still exists, comes from the notion that consumers react heavily against having to pay for a service that was previously provided at no charge (Friedli, Jaag, Krähenbühl, Nielsen, Pihl, & Trinkner, 2006). Generally, consumers are sensitive to price changes. The current price level appears to be the basis for consumers' considerations (European Commission, 2017).

(Un)willingness to pay

The literature reporting on the willingness to pay for (last-mile) delivery services is split into two conceptions. On the one hand, literature suggests that people are not willing to pay for delivery services and that consumers rather have free delivery than high-quality delivery. In fact, one study claims that in some cases consumers would prefer even lower price rates in return for a service of lower quality (Hausmann, Krause, Herrmann, & Netzer, 2014; European Commission, 2017; Pitney Bowes, 2018; Jacobs et al., 2019). On the other hand, literature implies that there are indications that consumers would prefer to pay a higher price for a higher delivery service quality. This translates into quicker delivery, and more

flexibility in time and destination (Friedli et al., 2006; Ghajargar, Zenezini, & Montanaro, 2016; Joerss et al., 2016; European Commission, 2017).

No consensus concerning the WTP for (new) delivery services is reached in scientific literature. However, reports agree that younger consumers (consumers younger than 30) are most willing to pay for faster delivery such as instant and same-day delivery (Joerss et al., 2016; Pitney Bowes, 2018; Jacobs et al., 2019). Some experts predict that, in time, free shipping can be considered inappropriate due to environmental considerations or altered standards (Jacobs et al., 2019).

Design and test

Questions about WTP will always include ambiguity since such questions place consumers in a hypothetical buying situation. Since new last-mile delivery services are new to consumers, consumers cannot compare the service and therefore have difficulty in estimating their WTP and assumed level of future usage (Goebel et al., 2012). Since we cannot ask consumers directly about their WTP and since there is no academic consensus about consumers' WTP for a new delivery service, the best thing PostNL could do is to design new services and (in)validate consumers' willingness to pay in early stages of the development. Recalling the paragraph Consumer's perspective, the main focus of new delivery services should be on convenience, reliability and flexibility.

*Sir Rowland Hill radically reformed the postal system when he proposed to pre-pay for a letter based on its weight. The pre-payment was shown using an adhesive stamp on letter sheets: the Penny Black. Due to the system, letters could be sent cheaper. Sir Rowland Hill made the postal system more efficient and profitable (Rowland Hill Fund, n.d.).

2.2.4. Literature study conclusion

The aim of this literature study was to answer the following research questions:
1. What are last-mile delivery services?
2. What are important properties of a delivery service according to consumers?
3. When are people willing to pay for a service?

The following text will answer these research questions.

Last-mile delivery services

Last-mile delivery services are services that are offered by delivery companies that concern the last stretch of the logistics chain from the last distribution center to the recipient's preferred destination point (Olsson, Hellström, & Pålsson, 2019). The actual transfer of the parcel from PostNL to a consumer takes place in this final stage of the delivery process. In pursuit of improved performance and responsiveness to growing customer demands, last-mile delivery providers are seeking new delivery service solutions (Vakulenko et al., 2019a). Industrial journals report evidence of organizations worldwide testing new solutions such as parcel lockers, drones, crowdsourced delivery services, and autonomous vehicle deliveries, along with fulfillment models (Joerss, Neuhaus, & Schröder, 2016).

Important delivery service properties

Consumers are concerned with last-mile delivery services because they offer flexibility and convenience (Lim et al., 2018). Convenience, the amount of time and effort a consumer perceives to save in accomplishing certain activities, is regarded as a continuous and increasingly important trend in consumer behavior. Harrington, Srai, Kumar and Wohlrab (2015) propose five key constructs to effectively capture the interests and potential objectives of the consumer: cost, quality, time, flexibility and reliability. Consumer demands for service quality is increasing, whereby consumers are looking for more personalized services with flexible options for the place and time of delivery, flexible conditions for purchase, and more convenient methods of collecting and returning their parcels (Vakulenko et al., 2019a).

Willingness to pay

No consensus concerning the WTP for (new) delivery services is reached in scientific literature. Since new last-mile delivery services are new to consumers, consumers cannot compare the service and therefore have difficulty in estimating their WTP and assumed level of future usage (Goebel et al., 2012). However, reports agree that younger consumers (consumers younger than 30) are most willing to pay for faster delivery such as instant and same-day delivery (Joerss et al., 2016; Pitney Bowes, 2018; Jacobs et al., 2019). Some experts predict that, in time, free shipping can be considered inappropriate due to environmental considerations or altered standards (Jacobs et al., 2019).

Since we cannot ask consumers directly about their WTP and since there is no academic consensus about consumers' WTP for a new delivery service, the best thing PostNL could do is to design new services and (in)validate consumers' willingness to pay in early stages of development.

KEY TAKEAWAYS
• In pursuit of improved performance and responsiveness to growing customer demands, last-mile delivery providers are seeking new delivery service solutions.
• Convenience is regarded as an continuous and increasingly important trend in consumer behavior.
• Five key constructs effectively capture the interests and potential objectives of the consumer: cost, quality, time, flexibility and reliability.
• Consumer demands for service quality is increasing, whereby consumers are looking for more personalized services with flexible options for the place and time of delivery.
• No consensus concerning the WTP for (new) delivery services is reached in scientific literature.
• The best thing PostNL could do is to design new services and (in)validate consumers' willingness to pay in early stages of development.

3.
the postal playground

3. THE POSTAL PLAYGROUND

3.1. CONTEXT STUDY APPROACH

Now that we have an understanding of the theory behind last-mile delivery services, the consumers' perspective on delivery services, and consumers' willingness to pay for delivery services, we have to understand PostNL's operating context to design a fitting delivery service later on in this project. Because of the strategic nature of this project, the strategy that surrounds the new delivery service should fit the company and its context.

There are several angles from which PostNL's context can be studied. Three angles are important in particular, namely: PostNL's history and today's implications, the activities of its competitors and the lessons that can be drawn from them, and the future of the postal sector.

Besides a way to understand PostNL's business context, this context study also serves as a data collection method to formulate several search areas at the end of this chapter. Combined with the findings from the theoretical background study, this context study provides input for the identification of interesting strategic directions for a new delivery service in the form of search areas.

3.2. HISTORICAL HERITAGE

To write this chapter, two books on the history of PostNL were consulted: 'Van lopende bode tot telematica' by Dr. G. Hogesteeger (1989) and 'De status van de PTT als staatsbedrijf in historisch perspectief' by Dr. G.C.J.J. Ottenheijm (1974). Additional information was collected from several institutional and informative websites.

3.2.1. The Universal Postal Union

Writing as a commercial enterprise
The start of postal services occurred in Mesopotamia at least 9,500 years ago. It involved the use of clay tokens, blobs of baked clay, which had lines or dots incised in them representing quantities of goods (see *figure 7*). A courier would bring tokens to a seller for so many jars of olive oil, or so many bushels of grain, and the seller would send the tokens with the goods back to the buyer. Eventually the tokens were done away with and a tablet with markings was used - and then writing really took off (Altwaweel & Squitieri, 2018).

▼ *Figure 7: Mesopotamian clay tokens from around 5900 B.C. (Akkermans, Cavallo, & Nieuwenhuyse, 2006)*
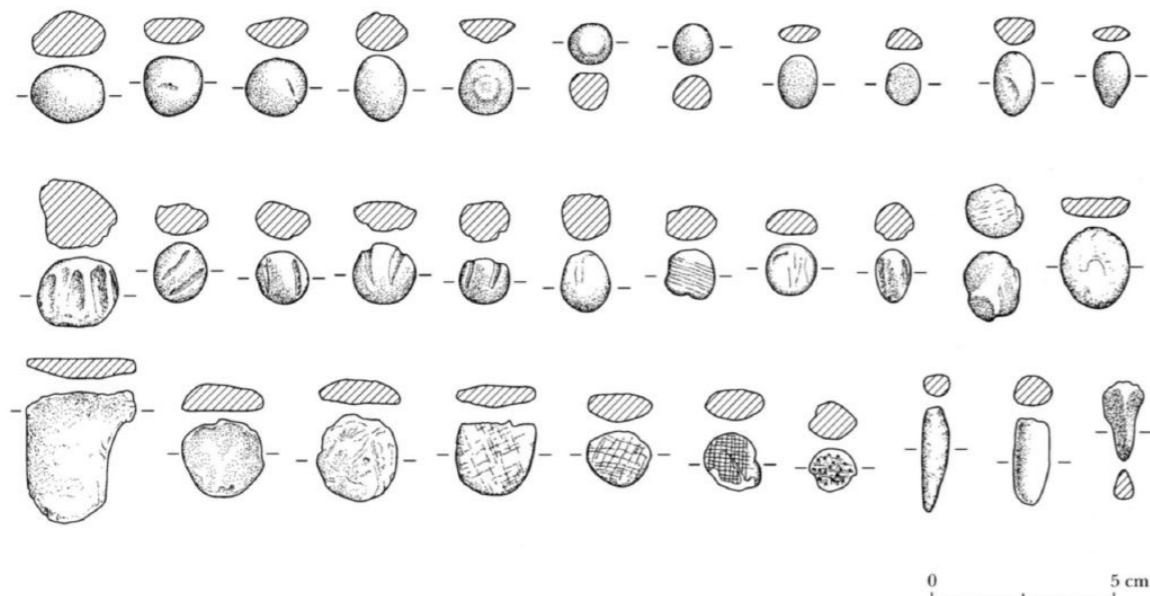

The first postal system
The first documented use of a postal system occurred in Egypt about 2400 BC, when Pharaohs used couriers to send out decrees throughout the territory of Egypt. The earliest surviving piece of mail is also Egyptian and was recovered from the Oxyrhynchus papyri cache, which dates back to 255 BC (Bruning, 2018) (see *figure 8*). But even before that time, on nearly every continent postal services existed in the form of messengers serving emperors and kings. Over time, universities and religious orders developed their own message delivery systems to exchange news and information. To speed delivery over long distances, relay stations were set up along the messengers' routes. Eventually, private individuals were allowed to use the message delivery system to communicate with one another (Universal Postal Union, n.d.-a).

The birth of modern mail systems
During the 17th and 18th centuries, the exchange of mail between countries was largely governed by postal agreements between two countries. But by the 19th century, the network of bilateral agreements had become so complex that it began to obstruct the rapidly developing commercial and trade sectors. Simplification and order were needed in the international postal services (Universal Postal Union, n.d.-a).

One of the most noteworthy reforms occurred in England in 1837, when Sir Rowland Hill introduced a pre-paid postage system (see *figure 9*). To cope with the complex network of bilateral agreements, Heinrich von Stephan drew up a plan for an international postal union. On 9 October 1874, the Treaty of Bern was signed, establishing the General Postal Union. Membership in the Union was so popular that the name was changed to the Universal Postal Union (UPU) in 1878 (Universal Postal Union, n.d.-a).

The Universal Postal Union has its headquarters in Berne, Switzerland, and is composed of 192 member countries. It is the world's second oldest intergovernmental organization and has been a United Nations specialized agency since 1948. The UPU is the primary forum for cooperation between all sorts of postal-sector stakeholders such as posts, governments and regulators (Universal Postal Union, n.d.-b). More than five million postal employees and 663,000 post offices worldwide regularly deal with the UPU. It is estimated that postal companies annually process and deliver 368.4 billion letters and 6.4 billion parcels worldwide (Universal Postal Union, n.d.-b).
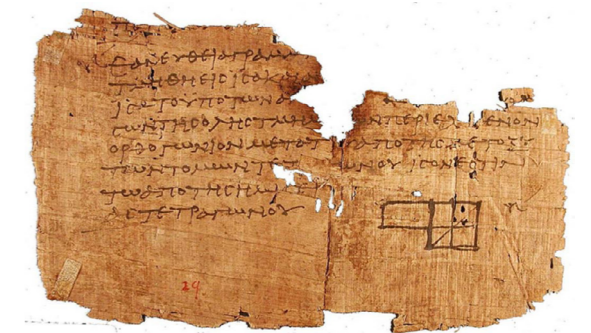
▲ *Figure 8: Oxyrhynchus papyri cache (Casselman, n.d.)*

▲ *Figure 9: Sir Rowland Hill (Dorney, n.d.)*

3.2.2. The History of the Dutch Postal System

1100 - The rise of mail
City formation has played an important role in the birth of organized postal services in every country in Northwestern Europe. Around the beginning of the twelfth century, when trade was revived, a need for sending messages arose. Throughout the centuries, the Dutch postal system became increasingly centralized, until mail was declared nationally in 1799 (Hogesteeger, 1989).

1893 - Postal and Telegraph Administration & National Telegraph
In 1881, the Rijkspostspaarbank (transl. National Postal Savings Bank) was established to provide a savings bank for the public. Twelve years later, in 1893, the Administratie der Posterijen en Telegrafie (transl. Postal and Telegraph Administration) was founded: an independent organization under the ultimate responsibility of the Ministry. The Telegraph and Telephone Act of 1904 regulated the concessions for the construction and operation of the telephone networks. In 1913 the government started to take over local telephone networks of NBTM and other providers (PostNL, n.d.-c; TNT Post, n.d.; Hogesteeger, 1989; Ottenheijm, 1974).

1915 - The State-owned Company of Post and Telegraphy & the Postal Check- and Giro Service
In 1912, the Bedrijvenwet (transl. Company Act) was promulgated and the term 'state-owned company' was introduced. It became applicable to the Administratie der Posterijen en Telegrafie in 1915, which gave it the legal status of a state-owned company: the Staatsbedrijf der Posterijen en Telegrafie (transl. State-owned Company of Post and Telegraphy). In 1918, the Postcheque- en Girodienst (PCGD) (transl. the Postal Check and Giro Service) opened up to the public. Its goal was to ease public payment traffic. The PCGD was also added as one of the services to the Staatsbedrijf der Posterijen en Telegrafie. Because telephony was the most profitable part of the company and 'telephony' was not reflected in previous naming, the company name was changed in 1928 to Staatsbedrijf der Posterijen, Telegrafie en Telefonie (transl. State-owned Company of Post, Telegraphy and Telephony). The PTT was born. (Hogesteeger, 1989; Ottenheijm, 1974).

1989 - Privatization of the PTT
It was not till the eighties that several sections of the PTT were privatized. The Rijkspostspaarbank and the PCGD were privatized first in 1986 and formed the Postbank (Hogesteeger, 1989). The Postbank fused with several banks throughout the years until they merged with ING Bank in 2009 and continued under the name ING (Libbenga, 2008).

On January 1st 1989 the state-owned company PTT was converted into NV Koninklijke PTT Nederland (KPN) (transl. Royal Dutch PTT Ltd.). This separation from the state created more commercial opportunities and brought more room for entrepreneurship (PostNL, n.d.-c). Its main operating companies were PTT Post BV and PTT Telecom BV. PTT Post was obliged to transport letters and other consignments of a maximum weight of ten kilograms domestically and internationally. KPN had to comply with the guidelines of the Ministry of Transport, Public Works and Water Management. In return, KPN had the exclusive right to transport letters up to one hundred grams, the right to place mailboxes along public roads and to issue stamps with the image of the king or queen, or the mention of 'The Netherlands' (TNT Post, n.d.).

1996 - Parting of post and telecom
In 1996 KPN took over the Australian company 'Thomas Nationwide Transport' (TNT) and merged it with her operating company PTT Post. In 1998 PTT Post and PTT Telecom were split. Together with TNT, PTT Post became a part of TNT Post Group (TPG). PTT Telecom continued independently and took over the name of KPN (PostNL, n.d.-c; TNT Post, n.d.).

2002 - TPG Post
On May 1st 2002 PTT Post changed its name into Royal TPG Post. Because of international ambitions, there was a need for a name that would allow the company to position itself well on foreign markets. The name Royal TPG Post offered better chances (TNT Post, n.d.).

2006 – TNT Post
In October 2006 TPG Post changed its name to TNT Post. The underlying reason was the increasing competition at home and abroad. With the new company name came the new color: all of TNT turned orange. Till December 2008 100 orange mailboxes were posted every week (TNT Post, n.d.).

2011 - PostNL
On May 25th 2011, TNT Post split up into the courier service TNT Express NV and the postal company PostNL. The main argument for the split was the difference in business activities since the two large TNT divisions (Mail and Express) grew apart more and more. In 2011, TNT Express separated, and the postal company continued as PostNL (PostNL, n.d.-c).

2019 - PostNL acquires Sandd
Recently, on October 22nd 2019, PostNL acquired Sandd, the second largest mail carrier in the Netherlands. Through the acquisition of Sandd, PostNL tried to create a single, strong nation-wide postal network in the Netherlands. PostNL hopes to create much more stable profits and cash flows due to additional mail volumes following the integration (NOS, 2019).

The history of PostNL is visually depicted in *table 1*.

▼ *Table 1: the history of PostNL*
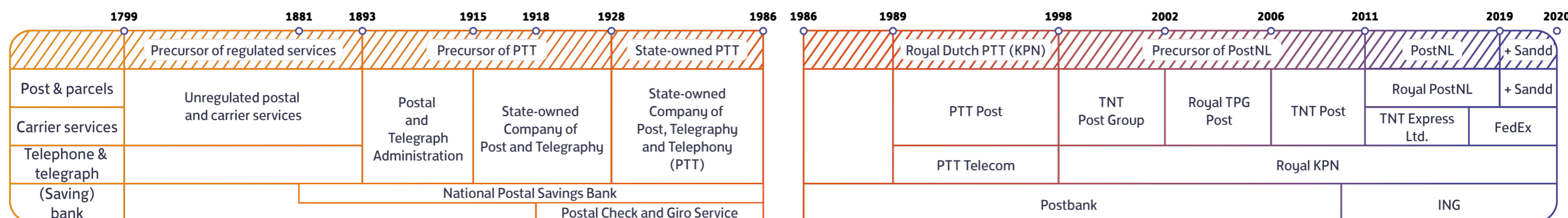
3.2.3. Implications for today's societal role

PostNL has been serving Dutch inhabitants for over 220 years. Historically, the postal company has offered a variety of services, including financial services, telegraphy- and telephony services, and mail and parcel delivery services. Back in the day, PostNL's predecessors were the only means to communicate and to banking. Every citizen was dependent upon PostNL's services. First as a state-owned company and later as an exclusive private organization, PostNL has always had to safeguard integrity and trust.

Today, PostNL offers many numerous services: marketing solutions, night distribution, food logistics, fulfilment solutions, @Home delivery and installation, flora logistics, cross-border mail and parcels, cargo, health logistics, express and data solutions are some examples of PostNL's service portfolio (PostNL, 2020).

PostNL can draw from its unique incumbent position and its integer and trustworthy image. PostNL has always been present in every street almost every day of the week. In the beginning solely in the form of a postman, today also in the form of a parcel delivery van. The postal company continues to serve consumers all over the Netherlands every day. People know PostNL and people trust PostNL to do the job they are supposed to do. This leaves PostNL with a unique consumer relationship from which PostNL can build new and relevant services. Because PostNL has always been the indispensable link between senders and recipients, and - more recently - the connector between the physical and digital world (PostNL, n.d.-a), PostNL also has an excellent position to convey this connection creator and facilitator image.

PostNL's incumbent position, its trustworthy image, its nationwide consumer network, and the opportunity to create and facilitate meaningful connections are difficult to copy and make PostNL unique. It makes PostNL relevant and provides its consumer with added value over the long term. This phenomenon is also known as a company's 'unfair advantage' (Lamarque, 2018). Because 'unfair' gives the advantage a negative undertone, there will be referred to PostNL's 'fair advantages' from now on.

> **KEY TAKEAWAYS**
> • On January 1st 1989 the state-owned company PTT was converted into NV Koninklijke PTT Nederland (KPN) (transl. Royal Dutch PTT Ltd.). This separation from the state created more commercial opportunities and brought more room for entrepreneurship.
> • On May 1st 2002 PTT Post changed its name into Royal TPG Post.
> In October 2006 TPG Post changed its name to TNT Post. With the new company name came the new color: all of TNT turned orange.
> • On May 25th 2011, TNT Post split up into the courier service TNT Express NV and the postal company PostNL. In 2011, TNT Express separated, and the postal company continued as PostNL.
> • On October 22nd 2019, PostNL acquired Sandd, the second largest mail carrier in the Netherlands.
> • Because PostNL has always been the indispensable link between senders and recipients, and - more recently - the connector between the physical and digital world, PostNL has an excellent position to convey this connection creator and facilitator image.
> • PostNL's incumbent position, its trustworthy image, its nationwide consumer network, and the opportunity to create and facilitate meaningful connections are difficult to copy and make PostNL unique.

3.3. MULTICASE STUDY

To get a good understanding of PostNL's business context, studying the practices of the competition would be an appropriate practice. Inspired by fellow graduates, I decided that a multicase study would be fitting. This multicase study has two goals: (1) discover the competitive landscape PostNL is dealing with and (2) discover which competitors' practices could be a source of inspiration to PostNL.

Amazon (Prime), Coolblue and Posti are the competitors that are chosen. In the following text, only the most important lessons per competitor are discussed. An extensive description of the method, sampling strategy, analysis and conclusions of the complete study can be found in *Appendix A*.

3.3.1. Amazon vs. PostNL

Amazon's strategy

Zooming in on Amazon's strategy, Amazon communicates that: "Amazon is guided by four principles: customer obsession rather than competitor focus, passion for invention, commitment to operational excellence, and long-term thinking." (About Amazon Staff, n.d.) It is remarkable that three out of four statements are directly translated into media bank themes: customer obsession, passion for invention and operational excellence are continuously communicated in press releases. It creates the impression that corporate strategy is well aligned with marketing and external communication.

When we focus on Amazon's annual report, we find a strong connection between 'customer experience' and 'strategy': these topics appear to be inseparable. For example: "Amazon values customer obsession over competitor focus" links back directly to "Amazon wants to be Earth's most customer-centric company". Same goes for "Amazon's principal competitive factors are selection, price, convenience, including fast and reliable fulfillment. Additional factors include quality, speed and reliability of services" and "Amazon provides easy functionality, good fulfillment and timely customer service". A final remark is the absence of naming sustainability in its annual report which makes me question the real value Amazon attaches to sustainability.

Lessons from Amazon

PostNL does not provide a delivery PostNL does not provide a delivery subscription, nor access to a wide-range of conjoint services, nor an irresistible offer to lure people. Offering a delivery subscription, expanding its service portfolio, and focusing on shopping and entertainment are interesting strategies that PostNL could consider.

Compared to Amazon, PostNL does not focus much on inventing and long-term thinking. PostNL's Innovation Studio is one step in that direction, but PostNL is not quite there yet. Ofcourse, Amazon is a huge shopping platform with millions of buyers worldwide in the first place which provides the required leverage to develop and roll out services such as Amazon Prime. However, this does not mean that PostNL cannot learn from Amazon's practices. PostNL should not try to become the next Amazon, but should learn from some of Amazon's principles such as how Amazon intertwines its strategy with customer experience.

3.3.2. Coolblue vs. PostNL

The Coolblue brand

It is no surprise that the Coolblue's annual report is mostly about customer experience and services. Coolblue's focus on delivering the best possible customer experiences is clearly expressed ("To achieve a high NPS, Coolblue needs to exceed customer expectations."). This is in line with the customer centric image mentioned earlier. In my opinion, Coolblue is a strong brand that is recognized for its blue-orange color scheme and customer service ("Everything for a smile"). What might underlie this, is the extent of attention that Coolblue pays to its values. According to the annual report, Coolblue's values are reflected in everything they do. There are no hard strategies mentioned in the report. Instead, values are mentioned as guidelines. Its values are strongly correlated to the company's culture in which every employee is expected to explicitly comply to the company values.

Service portfolio

Similar to Amazon, Coolblue is also primarily a shopping platform. And also similar to Amazon, Coolblue offers extra services next to regular delivery, albeit to a lesser extent. Coolblue cleverly sells the product, its installation and its insurance. Next to buying a product, consumers can also lease products through a subscription. Coolblue offers services that are not directly linked to its core, but improve customer satisfaction which, at the end of the day, is Coolblue's primary goal. A service development strategy for PostNL could be to focus predominantly on services that enhance customer satisfaction, rather than services that comply with PostNL's core business.

Lessons from Coolblue

PostNL wants to improve customer satisfaction. It could be wise to draw lessons from Coolblue's practices since Coolblue successfully conveys the message "Everything for a smile". This success stems from the establishment of Coolblue: customer satisfaction and profitability have been the two main goals ever since Coolblue was founded (Coolblue, 2019a). The goals are repeated in annual reports, advertisement and employee compliance. A strategic consideration for PostNL could be to strive for such customer focus throughout all of its activities.

3.3.3. Posti vs. PostNL

Posti is the Finnish equivalent of PostNL, except from that Posti is still state-owned.

Annual report

Posti devotes much attention to stamps in terms of post stamp design competitions, the release of new stamp editions and the illustrations on their post stamps. It gives the impression that Posti values traditional mail a lot. Whereas commercial enterprises such as Amazon and Coolblue report on product and service innovation and suchlike, state-owned Posti reports on human resources, and process and operation changes. It could be that Posti has a different role in society than commercial parties.

Remarkably, the message Posti wants to convey based upon its annual report is completely different from the message Posti conveys through its news releases. Whereas the annual report is mainly about sustainability and social responsibility, the news releases are mostly aimed at processes, prices and strikes. Sustainability and social responsibility are almost never mentioned in the news releases.

Lessons from Posti

There are three lessons that PostNL can learn from Posti. Firstly, PostNL should be glad that it became a private, commercial enterprise and not a state-owned company. PostNL does not have to exhaustively report to the government which allows PostNL to focus on consumers. Secondly, Posti's annual report describes its sustainability and social responsibility objectives very clearly. Since sustainability and social responsibility are growing more important every day (McClimon, 2020), PostNL might formulate a strategy to take a step into these directions. Posti might be interesting research material to do so. Thirdly, Posti puts significant effort in developing its parcel locker network and appears to deliver most of its parcels to parcel lockers. This has the obvious benefits of first-time-right deliveries (cost reduction) and the freedom to pick-up a parcel whenever the consumer wants (convenience). It is plausible that there comes a point in time where consumers do not expect or want home delivery, but last-mile solutions like the parcel locker. It could be a strategic consideration for PostNL to be ready when this happens.

3.3.4. Lessons learned from the case competitors

Amazon, Coolblue, Posti and PostNL are all different and unique delivery services providers that have developed their own way of serving consumers. Each of them has their own focus and brand image. They might be different from PostNL, but that does not mean that PostNL cannot be inspired by them. *Table 2* is a representation of what competitors do better, similar or worse than PostNL.

Amazon
At Amazon, last-mile delivery is just a small part of the complete service provision offered to consumers. To support the complete purchase and delivery experience, Amazon responded with a holistic service that enhances this experience whilst leading to more sales: Amazon Prime. Prime entails much more than just free delivery. The membership offers so many benefits that a consumer gets hooked by at least one aspect that he or she cannot resist. It could be interesting for PostNL to consider a similar format: to not just focus on the delivery itself, but consider the complete delivery context and offer a service that spans a broader part of this context than only the delivery itself.

On a strategic level, Amazon does a great job in aligning its strategy as reported in the annual report with the messages conveyed through its media and press release bank. It appears as if the company's values are transmitted to the consumer perspicuously. Recently PostNL launched its internal strategy, the oranje kompas, to give its employees direction to become the favorite deliverer. A strong alignment of annual report, oranje kompas and external press releases could help PostNL to create a strong brand image towards consumers.

Coolblue
PostNL's recently formulated goal to become the favorite deliverer of the Netherlands requires that customer experience is put in a central position. Similarly, Coolblue's aim is to do "Everything for a smile". Consumer focus has been at the core of the blue-oranje company ever since it was found. PostNL is gradually moving towards a comparable consumer focus and might mimic some of Coolblue's practices, such as making customer experience one of the fundamental focuses of the company. Similar to Coolblue, PostNL needs to consider to emphasize its customer experience goal in its annual reports, advertisements and employee compliance (i.e. oranje kompas). PostNL should strive for a consumer focus throughout all of its activities.

Posti
One of Posti's strengths is its ability to convey its sustainability and social responsibility objectives very clearly. The workload and self-employed contract form of PostNL deliverers have been under scrutiny - especially since the rise in delivery volumes due to COVID-19. PostNL could be inspired by Posti's communication efforts with respect to PostNL's social responsibility to be a good employer. A step in that direction could be to publish an annual sustainability and social responsibility report, and to publish more on these topics.

Posti has put significant effort in developing its parcel locker network. As will be explained in the next chapter The Future of the Postal Sector, it is plausible that last-mile solutions like parcel lockers will gain popularity. PostNL might want to be prepared in case this happens and study Posti's parcel locker network.

> **KEY TAKEAWAYS**
> • A strong alignment of annual report, oranje kompas and external press releases could help PostNL to create a strong brand image towards consumers.
> • PostNL needs to consider to emphasize its customer experience goal in its annual reports, advertisements and employee compliance (i.e. oranje kompas). PostNL should strive for a consumer focus throughout all of its activities.
> • PostNL could be inspired by Posti's communication efforts with respect to PostNL's social responsibility to be a good employer. A step in that direction could be to publish an annual sustainability and social responsibility report, and to publish more on these topics.

3.4. THE FUTURE OF THE POSTAL SECTOR

This chapter provides a peek into the future of the postal sector and an overview of the most important trends that will influence the postal sector. Trend reports from major players in the field have been used primarily for this analysis such as: McKinsey, Deloitte, BCG and Escher. The trend analysis is focused on the technological future of last-mile delivery, the future of e-commerce, future consumer delivery needs and the future of the postal sector. The DEPEST checklist was used to list as many trends as possible from a variety of sources and topics. Then, the trends were clustered in trend themes. The most important identified trend themes are presented below.

3.4.1. Ecommerce and delivery trends

The online shopping industry continues to grow: consumers can see themselves doing more online shopping and online sales continue to grow as a share of overall retail sales (Choe, Rosenberger, Garza, & Woolfolk, 2017; Breaking Blue, 2016). It is expected that B2C e-commerce volumes triple in the next 20 years (Wolleswinkel, Lukic, Steffens, & Govers, 2016). Also cross-border e-commerce and trade continues to gradually grow (Pitney Bowes, 2019; Różycki & Kerr, 2019). The increase of (cross-border) e-commerce sales is creating very high growth in parcel volumes (Escher, 2019; Breaking Blue, 2016). Dilution of Dutch households, an aging population, population discoloration and urbanization are all demographic trends that will have their impact on the (e-commerce) retail sector (Beroepsonderwijs Bedrijfsleven, 2019).

The growth of e-commerce has a direct impact on delivery services. Same-day and instant delivery will grow to 20 to 15 percent combined share of the market by 2025, and are likely to grow significantly further (Joerss, Neuhaus, Schröder, 2016; Joerss, Schröder, Neuhaus, Klink, & Mann, 2016). This type of express parcel delivery is a business that postal operators are expanding into (Escher, 2019). Price remains the key decision criterion for the majority of consumers: more than 50 percent

▼ *Table 2: PostNL's relative position to its competitors*

	amazon	coolblue	posti
Product and service portfolio	+	−	−
Alignment strategy and communication	+	+	=
Consumer focus	+	+	=
Sustainability	−	+	+
Social responsibility	−	=	+
Last-mile innovation	+	=	=

chooses a delivery service merely based on price, 20 percent prefer the cheapest home delivery option, 20 to 25 percent choose same-day or instant delivery, and the remaining 5 percent would pay extra for a reliable service (Joerss, Schröder, Neuhaus, Klink, & Mann, 2016).

When we look at individual deliveries, fuel and wages make up most of the cost which can only be minimally controlled by carriers because these costs are influenced by market forces (Choe, Rosenberger, Garza, & Woolfolk, 2017). Traditional delivery is still unsuited for high-drop-factor deliveries such as e-grocery delivery (Joerss, Schröder, Neuhaus, Klink, & Mann, 2016). Carriers will therefore continue to look for more efficient and effective delivery (Escher, 2019).

3.4.2. Consumer trends
It is likely that the current advantage of postal companies in parcel delivery will erode because of several threats. Receiver centricity is an opportunity that they cannot afford to miss. They need to transform from sender focused to receiver focused and rethink what they can do to meet the needs of the senders who pay and the receivers to whom they deliver (Lukic, Chan, Govers, Banerjee, & Jap, 2018; Wolleswinkel, Lukic, Steffens, & Govers, 2016).

A major consumer trend is the need for greater convenience: consumers will increasingly expect parcels to be received with ease, to be picked up at residential or business locations, simplified tracking, flexible opening hours of access points, lower shipping prices, same-day delivery and returns for free or very little costs, transparency about the delivery status, etc. (Escher, 2019; Choe, Rosenberger, Garza, & Woolfolk, 2017; ERGP, 2016). Consumers will expect more ways to engage with their posts and are looking for the same seamless experience they are getting in sectors such as banking and travel booking (Escher, 2019; Wolleswinkel, Lukic, Steffens, & Govers, 2016).

The future of the postal consumer will be all about control. Consumers want the choice of using many channels to conduct their business and want more control and choice of when, where, how and who will deliver. They want to be in control of their own postal experiences (Escher, 2019; Breaking Blue,

2016; Wolleswinkel, Lukic, Steffens, & Govers, 2016).

3.4.3. Postal sector trends
A big opportunity to postal incumbents over the next five or ten years is to become preferred delivery partners to smaller e-tailers and to traditional brick-and-mortar retailers who are expected to sell more and more online (Lukic, Chan, Govers, Banerjee, & Jap, 2018). Another opportunity for postal operators is the distrust that is caused by social media giants such as Facebook and Google. In most countries, the postal incumbent has protected integrity and privacy for years, allowing them to position themselves as a trusted provider (Escher, 2019). Increased collaboration and partnerships between posts, couriers and retailers are expected (Escher, 2019). Also public-private-partnerships that allow for city distribution centres and (micro) hubs will increase (Ploos van Amstel, 2017). These types of partnerships provide further opportunities. A final opportunity comes from financial services: an increasing number of postal operators are moving into financial services to leverage their retail network and knowledge of the mass consumer market (Escher, 2019).

If we focus on the threats posed by postal sector trends, we find that the competition in parcel delivery is rising which pressures incumbents to improve delivery times and to adopt new technologies. Congestion builds in cities with a rising number of parcel carriers who are delivering parcels every day. They will queue in streets to deliver parcels and put pressure on pollution and safety (Escher, 2019).

3.4.4. Sustainability trends
From a governmental angle we see that delivery vans are a target of many politicians, who see commercial vehicles as a leading cause of congestion, pollution and other problems (Różycki & Kerr, 2019). Ultra-low emission zones and clean air zones are invoked by the government to encourage parcel companies to invest in zero emission vehicles. It is likely that more cities will see penalties for non-compliant vehicles. There will be a requirement for zero emission transport, particularly in central and densely populated areas which leads to e-mobility (Ploos van Amstel, 2017).

There is a big consumer movement towards environment and sustainability. Consumers are willing to choose for organizations who have sustainable business practices and are 'good' for the environment. Consumers favour the companies who sustainably handle their delivery (Escher, 2019). Two in five Dutch consumers are prepared to pay extra for an e-tail delivery if the logistics behind the delivery are accomplished sustainably. Almost 75 percent does not mind to wait longer for a delivery if that makes the delivery more sustainable. On average, the delivery process may take four days longer (Emerce, 2020). City dwellers buy more sustainably (Hernandez & Meinders, 2019).

3.4.5. Technological trends
The future of the postal sector is largely influenced by technological innovations. Hence, this is the trend theme that holds the highest number of trends. Many sources report innovations in last-mile delivery: drones, droids, automated guided vehicles and robots are all expected to play a role in the future of delivery (Escher, 2019; Choe, Rosenberger, Garza, & Woolfolk, 2017; Joerss, Schröder, Neuhaus, Klink, & Mann, 2016). Crowdsourced delivery is also expected to play an increasing role in last-mile delivery (Corredera & Leta, 2019; Wang, Yuen, Wong, & Teo, 2019).

Another big theme concerns big data and data analysis. Advanced analytics and connectivity will be used more often to improve quality and reduce operating costs in collecting, sorting and line-haul. Big data also offers a major opportunity: a delivery network that knows individual consumer preferences better than anyone. Postal carriers can leverage more and more consumer data and profiling information. This data can optimize the delivery experience and process (Escher, 2019; Wolleswinkel, Lukic, Steffens, & Govers, 2016). Retail innovations such as voice search, -control and -ordering will change consumers' buying behaviour and shopping experience (Butt, 2020).

Technological advancement will also improve post-owned warehouses and distribution centers. Over the next five years, robotics and AI will lead to greater process improvements, cost reductions and efficiency. Posts will be expanding service points with more pick-up and drop-off locations to move away from the high fixed costs of a traditional postal retail

network. Postal companies will also build more fulfilment centers to deal with the increased volume of parcels from e-commerce (Escher, 2019). Carriers can better predict patterns in local demand, allowing them to stock inventory and make drop-offs in convenient locations (Choe, Rosenberger, Garza, & Woolfolk, 2017). Last-mile delivery will draw on the logistics resources of the crowd for parcel deliveries more often (Wang, Yuen, Wong, & Teo, 2019).

A final technological trend topic entails asset utilization and fleet management. Carriers and retailers will gain more and more insight into fleet utilization to help optimize the overall efficiency. Carriers will have instant access to data on individual vehicles and the entire fleet, integrating carriers, e-tailers, third parties and consumers. Asset utilization will be increased by real-time data concerning shippers and drivers. Sharing assets could allow carriers to take better advantage of their own networks' capabilities and provides additional capacity during peak demand (Choe, Rosenberger, Garza, & Woolfolk, 2017).

> **KEY TAKEAWAYS**
> • The growth of e-commerce has a direct impact on delivery services. Same-day and instant delivery will grow to 20 to 15 percent combined share of the market by 2025, and are likely to grow significantly further.
> • A major consumer trend is the need for greater convenience: consumers will increasingly expect parcels to be received with ease, simplified tracking, low shipping prices, same-day delivery, transparency about the delivery status, etc. Consumers want more control and choice of when, where, how and who will deliver.
> • There is a big consumer movement towards environment and sustainability. Consumers are willing to choose for organizations who have sustainable business practices and are 'good' for the environment. Consumers favour the companies who sustainably handle their delivery.
> • Many innovations in last-mile delivery are reported: drones, droids, automated guided vehicles and robots are all expected to play a role in the future of delivery.

3.5. SEARCH AREAS

Many insights have been gathered throughout the literature- and context study. These insights need to be synthesized into search areas from which a design direction can be chosen (see *figure 10*). To ensure that no relevant search areas are overlooked, a synthesizing method was developed that is based upon open coding. The steps of the method are as follows:

1. Identify all relevant insights by coding all the gathered information line-by-line;
2. Print all codes onto paper and cut out seperate code cards;
3. Cluster code cards into themes;
4. Mix and combine themes into search areas.

Pictures of this process can be found in *Appendix B*.

Nine insight themes were identified from which eight search areas were extracted. This chapter presents the nine themes, the eight search areas and the process of choosing a search area as design direction.

▼ *Figure 10: search area construct*
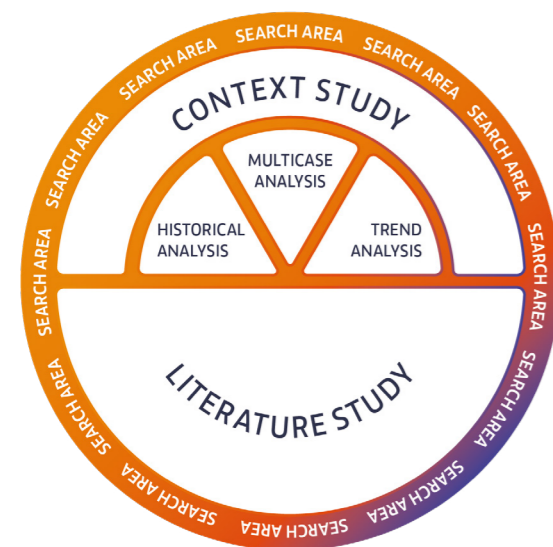
3.5.1. Insight themes

Clustering the codes helped to identify insight themes. Below, a list is presented of the themes. Their underlying codes are presented in *Appendix C*.

THEME 1
Super fast delivery needs are increasing and younger customers seem willing to pay for it.

THEME 2
The required level of delivery quality differs per delivery. People want to control the quality level and price per delivery.

THEME 3
People feel bad for having a negative impact on the environment and are willing to compensate.

THEME 4
Consumers have the potential to become crowdsourced deliverers.

THEME 5
PostNL has data of almost every Dutch inhabitant and therefore has the opportunity to make services personal and relevant on a national level.

THEME 6
New and more diverse last-mile solutions are developed and operated.

THEME 7
PostNL traditionally has the role of connecting people and enabling them to communicate from door to door on a national level.

THEME 8
The purchase decision for a service is strongly influenced by consumers' social networks and social interactions.

THEME 9
PostNL's extensive network and past experiences with many types of services might ease the adoption of new services.

3.5.2. Search areas

After the insight themes were formed, they were shuffled and combined to find search areas that could serve as interesting starting points for a further design direction. Per search area an example of a service that could fit that search area is presented.

SEARCH AREA 1
Services that allow consumers to take as much as they please without feeling guilty or, even more, enable them to feel climate positive.
EXAMPLE > An exchange service: 'take and give back'. Let people take as much as they like and enable them to give back ("Plant 5 trees to win back this month's CO2 emission.")

SEARCH AREA 2
Services that enable people to connect and communicate beyond tangible things like products.
EXAMPLE > You can ask PostNL to visit your grandma to mow the lawn and bring her a bouquet of flowers.
EXAMPLE > Ask PostNL to bring your broken bicycle to the repair shop and to return it when it's fixed.

SEARCH AREA 3
Super fast delivery services based upon innovative last-mile solutions.
EXAMPLE > eScooter one-hour delivery.

SEARCH AREA 4
Services that are not limited to PostNL's current position in the need-use chain but encompass some other positions as well.
EXAMPLE > Tell PostNL where to buy a product and PostNL will make sure they won't stop delivering until you can use the product that you want to use (incl. returns and replacements) (e.g. a new TV).

SEARCH AREA 5
Hyper-personal services based upon PostNL's digital assets in another sector than the postal sector.
EXAMPLE > Perfect-fit household insurance based upon property invoices.

SEARCH AREA 6
Services in which a collaborative network is established for collaborative consumption and -logistics.
EXAMPLE > A delivery service that can be shared with roommates/neighbors.
EXAMPLE > PostNL provides a platform that a neighborhood can use to buy products in bulk for lower prices and have them delivered at home/in the neighborhood.

SEARCH AREA 7
Services in which the quality (e.g. speed and location) of the delivery can be determined for every single delivery
EXAMPLE > A delivery service in which the consumer can choose for super fast (€5,-), regular (€0,-) or slower (- €1,-).

SEARCH AREA 8
Services in which all tangible products a consumer needs to get indoors are jointly delivered.
EXAMPLE > Parcels, groceries, medicine and clothing are gathered by PostNL and delivered (to a predetermined location at a certain time).

3.5.3. Search area choice

After the definition of insight themes and search areas, it was time to pick one of the search areas to continue this graduation project with. Several stakeholders were invited to join a 'search area session' in which the participants were asked to discuss the search areas. Both my company mentors, Jeroen and Jikkelien, plus the customer journey owner of PostNL's Customer Excellence department, Karen Pot, were invited to this session. Karen is aware of most of the trajectories, projects and initiatives that have been launched or are currently under development at Customer Excellence. I requested her presence and opinion to make sure that the search area to-be would not be poaching on other initiatives' territories. Also, I was curious if some search areas were already exploited in the past.

The intention was to combine Jeroen's, Jikkelien's and Karen's experiences with PostNL projects to come to a sound choice. At the same time, I had to make sure that their experiences would not negatively coincide with the choice for a search area that is new and innovative (e.g. "We already thought about this but figured that it is not going to work."). Therefore, a voting system with three question categories was developed:

1. Which 3 search areas do you like best and why?
2. Which 3 search areas do you know least of?
3. Which 3 don't appeal to you and why?

All three questions had a purpose:
Question 1 would clarify which concepts made the participants the most enthusiastic and would therefore create the most leverage and cooperation;
Question 2 was built in to protect novelty: it had to be made sure that search areas that were placed in "doesn't appeal" were not only placed there because people "know least of" that search area.
Question 3 would filter out the search areas that would be hardest to pursue.

Each participant, including myself, received three votes per category. The votes were then put into a matrix. After some discussion about previous initiatives, associations people had with certain search areas, the newness of search areas and participants' gut feeling, we decided to go for the search area that was fairly new and inspiring which made the participants feel excited:

"Services in which a collaborative network is established for collaborative consumption and collaborative logistics".

Fortunately, this search offers the possibility to do something new, to do something that connects people cleverly, to exploit PostNL's fair advantage of national icon - from a strategic perspective it offers the most interesting directions. As explained earlier, it is not desirable to make consumers pay for a service which they previously did not have to pay for. To establish a direct payment relationship with the consumer, PostNL needs to come up with a service that is different and relevant to the consumer. I believe this search area offers the opportunity to do so.

KEY TAKEAWAYS
• Insights from the literature study and context study were gathered to form insight themes.
• These insight themes were shuffled and combined to form search areas.
• From these search areas, the search area that is fairly new to PostNL and inspiring was chosen: services in which a collaborative network is established for collaborative consumption and -logistics.

4.

collaborative consumption

4. COLLABORATIVE CONSUMPTION

Now that we have chosen the search area that concerns collaborative consumption and collaborative logistics, it is key to thoroughly understand its meaning. I aim to do so by means of (1) a smaller second literature study and (2) qualitative research in the form of semi-structured interviews. The intention of the literature study is to understand what is already known about collaborative consumption. The goal of the qualitative interviews is to comprehend the consumer's perspective on collaborative consumption, including service design implications. Combining all these insights, this chapter finishes with formulating a problem statement that will be used as the starting point for ideation. But first: the literature on collaborative consumption.

4.1. LITERATURE STUDY ON CC

4.1.1. Introduction to collaborative consumption

Consumer consumption behaviour is changing. The ecological, societal and developmental impact of consumption is receiving increasing attention. Growing concerns about climate change and the yearning for social inclosure by local consumption stimulate consumers to find appealing consumption alternatives. Social concerns about consumption sustainability causes consumers and society as a whole to explore more efficient use of products and resources (Hamari, Sjöklint, & Ukkonen, 2015; Möhlmann, 2015).

The last couple of years the world has witnessed many technological advances in the field of information and communications technology (ICT). The rise of e-commerce, online peer communities, internet and mobility, and mobile communications are merely a few examples (Baojun & Lin, 2016; Hamari, Sjöklint, & Ukkonen, 2015; Ertz, Durif, & Arcand, 2019). ICT developments have not only broadened the range of consumer accessibility, but also created a new domain of consumer trust in which complete strangers exchange products and resources (Allahviranloo & Baghestani, 2019). The enhanced concern for the environment, growing consumer awareness and advancement in ICT have shaped new forms of trade practices (Ertz, Durif, & Arcand, 2019). A great example of an emerging economical-technological trade practice is collaborative consumption.

4.1.2. Definition of collaborative consumption

Rachel Botsman and Roger Roo, two pioneers who are known for their collaborative consumption advocacy, define collaborative consumption (or: CC) as follows: "Traditional sharing, bartering, lending, trading, renting, gifting, and swapping redefined through technology and peer communities". They continue: "Collaborative consumption gives people the benefits of ownership with reduced personal burden and cost and also lower environmental impact - and it's proving to be a compelling alternative to traditional forms of buying and ownership" (2010). Ertz, Durif and Arcand (2019) point out that CC should not be narrowed down to peer-to-peer, online or access-based consumption schemes, but should characterize consumers' ability to be both providers and receivers of resources within a given resource circulation scheme. This means that consumers are able to switch roles, engage in embedded entrepreneurship and collaborate to produce and access resources.

While sharing behaviour has been evident for centuries among corporations and communities, new forms of CC now increasingly find applications in the private, public and nonprofit sector (Möhlmann, 2015). Many websites, apps, online communities and social media platforms facilitate sharing among consumers in their local areas or even across borders for products and services such as bicycles (Mobike), cars (SnappCar), working or parking spaces (Spaces), car rides (Uber), housing (Airbnb), tools (Peerby), meals (Thuisbezorgd) and many more. You probably have encountered one or more yourself.

Collaborative consumption has three basic directions, called (1) product usage systems, (2) cooperative lifestyles and (3) reshuffling of products (Nwaorgu, 2018). The latter is considered the most popular form of CC and shuffles products from a place where they are not needed to any other place where they are in deficiency (Ertz, Durif, & Arcand, 2019). In this resource distribution system individuals may provide and obtain resources permanently or temporarily, either free or for a (monetary) fee (Taeihagh, 2017). PostNL has enabled consumers to receive and send products for over decades. Therefore, it could be a strategic consideration to focus on reshuffling of products since that direction fits PostNL's current operations best.
A different collaborative consumption stream that could be strategically interesting to

PostNL is socially collaborative consumption. In this case, individuals' interactions with each other are a result of people meeting each other. Individuals are connected with neighbors or relatives to form social networks that draw from the benefits of CC. Individuals save money as they buy less products or services whilst still having access to these products and services. This social cause of CC is marked as the renewal of community (Nwaorgu, 2018). Looking back at PostNL's rich community-serving history (see *chapter 3.2.2. The History of the Dutch Postal System*), we see that PostNL has a strong position to facilitate this type of social collaborative consumption.

4.1.3. Collaborative logistics

Another development in the field of collaborative consumption focuses directly on PostNL's core business: logistics. Collaborative logistics (CL) is an innovative concept that follows the socio-economical values of collaborative consumption whereby its main idea is to involve individuals in the delivery of products. It is a delivery model in which a professional delivery fleet is supplemented partially or completely with crowdsourced deliverers. (Gdowskaa, Viana, & Pedroso, 2018). Collaborative logistics, alternatively termed crowd logistics, crowdshipping or crowdsourced delivery, encourages individuals to use their spare capacity to carry parcels for other people. Its aim is to maximize logistics efficiency and reduce emissions and traffic (Rai, Verlinde, Merckx, & Macharis, 2017).

According to Rai et al. (2017): "Collaborative logistics provides consumers access to a more extensive range of products and superior delivery service by being faster, more flexible, more convenient, more personal, traceable in real-time and better priced. Businesses benefit from CL since it requires only an asset-light infrastructure that makes investments in vehicle fleet, employees and maintenance redundant." Also from a social point of view, the local character of CL is emphasized because it enables the crowd to have personal contact with the neighborhood and empowers communities (Rai et al., 2017).

This connects perfectly to PostNL's fair advantage of being the incumbent connector of people.

Three different modes of transferring items among consumers can be distinguished. First, consumers themselves pick up the products from the supply locations and take them to their own homes. This is called self-sourcing. Second, items are picked up by crowdshippers and are brought to the consumers' homes, which is called home delivery. In the third mode, a crowdshipper takes the products to his or her place from where the consumer can pick them up. This phenomenon is based upon collaborative transportation and is called neighborhood delivery (Behrend & Meisel, 2018). Currently, PostNL takes care of the second mode of delivery: professional home delivery. Shifting towards a collaborative logistics model opens the door for crowdshipped home delivery and potentially neighborhood delivery. It could be a strategic decision that allows PostNL to tap into all the aforementioned CL benefits.

> **KEY TAKEAWAYS**
> • Collaborative consumption (or: CC) is defined as: "Traditional sharing, bartering, lending, trading, renting, gifting, and swapping redefined through technology and peer communities".
> • Collaborative consumption gives people the benefits of ownership with reduced personal burden and cost and also lower environmental impact. It's proving to be a compelling alternative to traditional forms of buying and ownership.
> • While sharing behavior has been evident for centuries among corporations and communities, new forms of CC now increasingly find applications in the private, public and nonprofit sector.
> • The idea behind collaborative logistics (CL) is to involve individuals in the delivery of products. It is a delivery model in which a professional delivery fleet is supplemented partially or completely with crowdsourced deliverers.

4.2. QUALITATIVE RESEARCH ON CC

To explore the consumer's perspective on collaborative consumption, to discover their needs, demands and wishes, and to formulate preliminary service design requirements, 11 qualitative interviews were conducted. This section presents the research approach, the interview results and design implications.

4.2.1. Qualitative research approach

Research goal
The research goal is to obtain consumer needs, pains and the underlying values of collaborative consumption which will serve as starting points for ideation. To ascertain that the interview results are relevant to this graduation project, it has to be made sure that the outcomes can be used to develop a service. Since CC is quite a broad concept, it was chosen to scope CC down to sharing (and borrowing) digital and logistics services. The research results will be used to formulate a problem statement and to formulate preliminary design requirements.

The aim of the interviews is to answer several research questions:
1. Why are people sharing (and borrowing) digital services?
2. Why are people sharing (and borrowing) logistics services?
3. What do people like or dislike about sharing services?
4. How do people perceive the future of sharing services?

Research method
The CC literature study has presented the basic information on CC but lacks a certain understanding of people's emotions and experiences concerning collaborative consumption. With semi-structured interviews, the flexible nature of the interview allows to meander around the topics on the interview guide and may delve into unforeseen information and uncover previously unknown issues. Semi-structured interviews can address complex topics through probes and clarification. Its questions are often

accompanied by why and how questions (Adams, 2015; Wilson, 2014). It are the why- and how questions that will allow to tap into the participants' emotions and experiences. It comes as no surprise that semi-structured interviews are the chosen research method.

After the interviews are conducted, all interviews will be transcribed, resulting in raw interview data in the form of text that needs to be analyzed. The end goal is to assemble and reconstruct the data in a meaningful and comprehensible fashion (Jorgenson, 1989). I aim to do so through open coding. Open coding serves to summarize, synthesize, and sort the data. It becomes the fundamental means of developing the analysis (Charmaz, 1983) and it will help me to understand the participants' emotions, experiences and meanings towards collaborative consumption. Atlas.ti will be used to perform line-by-line coding and to develop code families and superfamilies. A codebook will be developed as a means of an overview of the interview results, guided by a discussion of the results later in this chapter.

The path of expression
The focus of the interview is 'collaborative consumption'. Because the concept of and the ideas behind collaborative consumption are rather new to people and because most people are not familiar with the term, interviewees cannot directly be asked questions about CC. Therefore, 'the path of expression' will be applied (Sanders & Stappers, 2012). This entails that:
1. the interviewee first needs to be immersed into current experiences;
2. feelings and memories of the past need to be activated;
3. the interviewee needs to be able to dream about the future; and
4. let the interviewee generate and express new ideas relating to future experiences.

The first three steps of the path of expression are emphasized in the interviews. Generating new ideas is saved for the idea generation phase. The focus of the interview will be on CC and the scope will be on sharing services.

Sensitizing diary
Without mentioning the term 'collaborative consumption', the interviewees should achieve a state of immersion as prescribed in step 1 of the path of expression. Also, according to Sanders & Stappers (2012), it is required that the interviewee has been involved in the problem or situation for some time to gain insights into the deeper layers of understanding. Therefore, a simple sensitizing diary was developed that participants need to fill in starting four days prior to the interview. In this diary, the participant is asked to reflect upon his or her day three days in a row and write down one situation in which he or she shared a service and one situation in which a service was borrowed. The participant is also asked about his or her experiences and emotions around that moment of sharing or borrowing. On the fourth day, the interview will take place. Next to its goal to help the participant immerse into the topic of CC, the sensitizing diary will also play a role in the first part of the interview as a guided conversation starter. The complete diary can be found in *Appendix D*.

Sampling strategy
According to Patton (2002), purposeful sampling is used in qualitative research to identify and select information-rich cases for the most effective use of limited resources. The interviewees need to be information-rich while the resources are limited, which makes a purposeful sampling strategy imminent. Purposeful sampling involves the identification and selection of individuals that are especially experienced with or knowledgeable about the phenomenon of interest (Cresswell & Plano Clark, 2011). Because the common underlying needs of consumers regarding collaborative consumption have to be discovered, the range of variation has to be narrowed and the focus needs to be on similarities between individuals. According to Palinkas et al. (2015), a snowball sampling strategy considers this because it identifies individuals of interest from sampling people who know people that generally have similar characteristics who, in turn know people, also with similar characteristics. Therefore, the snowball sampling strategy was chosen as a sampling strategy.

The sample

There is no such thing as 'the collaborative consumption user' or a specified CC target group. Therefore, some assumptions need to be made to describe the interviewees that would fit this qualitative study. Looking at users of CC platforms such as Peerby or Airbnb, the people who would be eager to make use of services that facilitate CC are people who handle a mobile device easily, who look for ways to save costs and who are interested in the environment or social communities. It is assumed that the individuals that need to be targeted for this qualitative study are people who would consider themselves 'digital savvy' and as people who get excited by trying new things. Preferably, the participant should also have some experience with CC. A simple manifestation of such a collaborative consumption experience could be having experience with a shared service.

Subsequently, any individual who qualifies as suitable research participant would:
• ... have a modest income or enjoy finding innovative ways of saving money;
• ... have affinity with shared services (such as Airbnb, Uber, Peerby, BlaBlaCar, Mobike, etc.);
• ... identify as Rogers' 'innovator', 'early adopter' or ' early majority'; and
• ... have experience with online platforms or -networks (such as Marktplaats, Facebook, internet banking, etc.).

This presumably means that we are talking about participants with ages between 18 and 40 years old.

▼ *Table 3: participant sample*

AGE < 20	AGE 20 - 30	AGE 30 - 40	AGE > 40
1 (f)	1 (f)	1 (f)	1 (f)
	3 (m)	3 (m)	1 (m)

Drawing on the snowball sampling strategy, I asked people within my network that fit the participant description to look around in their social networks for suitable participants. Because of the many reactions (thanks to PostNL who allowed me to award participants with a 50 euro gift card), I had the opportunity to select a sample of participants that were spread across age and gender to allow for some control in sample variation. The sample was composed as depicted in *table 3*.

Interview guide

As explained before, semi-structured interviews will be performed for this qualitative study. An important aspect of this type of interview is to prepare an interview guide. The interview guide was developed to such a degree that it would serve as a tool to steer towards answers to the research questions. At the same time, the guide offered the flexibility to probe or ask deeper why and how questions when requested. The interviews should take about one hour each.

After some iterations, the final interview guide was developed with the following characteristics:
• It begins with an easy conversation starter in the form of talking about the sensitizing diary;
• It follows the guidelines of the path of expression;
• It focuses on digital- and logistics shared services with collaborative consumption as underlying theme;
• It allows to explore participants' opinions on what makes a good or bad service; and
• It allows participants to imagine the future of shared service.

The final interview guide can be found in *Appendix E*.

COVID-19 constraints

As many of my fellow graduates and I have encountered, COVID-19 has put some restraints on the execution of qualitative research. Hence, the research method should be COVID-19-proof, which in this case meant: no direct contact with the participants. Luckily, semi-structured interviews can be conducted relatively easily through digital communication software such as Zoom or Skype. To take away some of the awkwardness that can occur when you meet someone for the first time through a digital medium and to minimize miscommunication, I had phone calls with all participants prior to the interview and sent thorough instructions through email several times. Furthermore, I asked all participants about their preferred digital communication medium for the interview and the sensitizing diary. Unambiguous and clear-cut communication were key to conducting these digital interviews.

4.2.2. Research results

Conducting the interviews

Apart from some interviews that had to be
Apart from some interviews that had to be rescheduled, conducting the interviews went quite smoothly. Participants were on time and no issues arose with software nor internet quality. I noticed that online interviews demand more mental energy than face-to-face interviews. I guess you can say that that is made up for by savings in traveling time.

Participants' reactions to the sensitizing diary were divergent: some people really enjoyed the 'funny booklet' and some people completely missed the point. Nonetheless, the diary proved to activate people's thoughts on sharing services, making them somewhat mentally prepared for the interview.

Results

Atlas.ti was used for the line-by-line coding of the interview transcripts. Then, the codes that had a similar meaning were grouped into families and superfamilies. After the code families were formed, I looked for code density within families to identify the information that was mentioned most frequently. This is presented in a codebook that can be found in *Appendix F*. Based upon this information, the meaning of the data within and between families was grounded. The results that are based upon a fairly number of codes are presented below.

> Logistics and digital (shared) service

Sometimes people feel burdened to borrow digital services (n = 7). Likewise, the participants have a predominantly negative association with borrowing a logistics service (n = 5).

Sometimes people borrow a digital service because it is more practical to use someone else's service than using or having the services yourself (n = 4). Logistics services are almost only shared out of practical considerations: price or efficiency (n = 16).

"I don't like to borrow, so I try to minimize that by having my own subscriptions and services."

> Payment

• Most participants share services to save costs (n = 18).

• Some participants think that services will be offered via a subscription model more often (n = 5).

• Most participants are willing to pay for the services that they use (n = 11). Their motivations to pay are based on principles, ease, to keep control or to enjoy the full experience.

"I am prepared to pay for a service that I enjoy."

> COVID-19
• Due to COVID-19, participants make use of services in a different way (n = 29), whereby people make (much) more use of digital services that allows them to stay in touch with others (n = 12). Also, COVID-19 'forces' the elderly to make use of services that are new to them (n = 4).

• Some participants expect COVID-19 to change the status quo: they expect people to work differently in the future and that people will order more online (n = 11).

"My parents have used the Albert Heijn delivery service for the first time. That is only because of corona because otherwise they would have never used it."

> Privacy
• Participants generally find it annoying to have to share account or login details (n = 17) because they do not know with whom else the data is shared (n = 6) and because other people get access to personal data (n = 5).

• Participants are aware that companies collect data about them and find this bothersome, especially from a privacy violation perspective (n = 18). In some cases, the participant has no problem with it, for example when this improves the service or the participant has to pay less (n = 10).

"I share less because I need to give my account away. It means that somebody else can log in as me and change or collect my personal data."

> Sustainability
• Almost all participants mentioned to find it important that people consume more sustainably (n = 19).

• Some of the participants mentioned that they are advocates of shared economy (n = 6).

"I must say I am very open to a shared economy."

> Future
• All participants agree that the number of digital and logistics services will rise in the future (n = 13).

• Some participants expect that people will share more services in the future (n = 5).

• Participants especially expect growth in the usage of car sharing services (n = 9) and expect logistics services to become more sustainable (n = 5).

"I do think that more will be shared - for certain."

> Miscellaneous findings
During the code analysis codes were identified that were mentioned only once or twice but, possibly combined with other singular codes, contain such interesting insights that I want to include them in the research results. These code groups are described below.

• Participants mostly share services out of practicality: cost reduction, efficiency or ease.

• Participants mostly share services within their households, followed by family and finally with friends. The participants share their accounts in any case with their partners, partly because they do not have to administer two accounts and to enjoy the benefits of the service together, such as collecting loyalty points together or saving costs.

• Some participants find it troublesome to lend tangible things because those can be lost or damaged. On the other side, some participants prefer lending tangible things over intangible things because they have better control of when lending the service is ended.

• Some participants who share services with each other find it a hassle to periodically pay and receive money.

• Some participants expect that everything can be delivered in the future.

• Some participants would like unlimited access to a service, content wise and in the number of

devices connected. That services put a limit to the maximum number of users or sub-accounts is understood by the participants.

• Some participants rather do not do things with services they are not supposed to (like borrowing someone elses' OV card to travel for free) because of morality and to avoid conflicts. They still do because of practical or financial considerations.

• Participants use some logistics services only because they have no other choice (an airplane, no option to choose a carrier, etc.).

• Some participants proclaimed to be advocates of the shared economy. This is contradicted by them saying that they rather not borrow services unless it has enough financial or practical benefit.

▶ Design requirements
Remarkably, almost every interviewee had a clear opinion about what makes a service a good or a bad service. Some of the notions were repeatedly mentioned, others were mentioned only once. By means of inspiration and guidelines for the subsequent service design phase, all interviewee notions are listed. This will help to understand what people want and do not want to experience while using the service to-be.

The interviewees find that good services…
• offer a tutorial;
• allow to terminate the service on a monthly basis;
• let you choose to pay per month or year;
• are easy to use;
• are user friendly;
• offer the possibility to try out first;
• are personalizable;
• can be accessed from multiple platforms;
• are customizable;
• offer the possibility to make sub-accounts;
• offer flexible subscription fees; and
• should do at least what you expect from it.

The interviewees find that bad services…
• send too many push notifications;
• show advertisements;
• are hard to get rid of;
• have ugly user interfaces;
• are difficult to understand; and
• determine what the user can or cannot see.

Discussion
As with many qualitative studies, this study was limited to certain resources. In this case the biggest one was time. Preparatory activities such as the acquisition of and communication with participants took a lot of time, not to mention the preparation of the sensitizing diary and interview guide. Of course, the interviews and the processing of the data were labor intensive too. Therefore, I was limited to conducting only 11 interviews.

The research questions were about understanding why people share and borrow digital and logistics services, what they like or dislike about sharing services and how they perceive the future of sharing services. As the research results demonstrate, at least a basic understanding of why people use shared services and what they find important was obtained. The intention to share resources is there, but people recall negative associations with borrowing services. Participants predict an increase in (personal) future usage. These insights have to be kept in mind while creating the new service.

It was noticed that people have many different intrinsic motivations to share or borrow services. Where one participant does so entirely out of practical or price considerations, the other participant does so out of environmental and sustainability considerations. Because of this broad spectrum of motivations, it was not possible to focus on one or two and many motivations had to be considered superficially. These many motivations make the playground for the service to-be a broad and interesting one.

Something else that was noticed was the participants' awareness of the increase in shared service offers. Virtually every participant noticed that more shared services will be developed in the future and that they will probably be the future users. Shared services seem to be inevitable in future day-to-day life. It would be great if PostNL could play a significant role in this future.

4.3. PROBLEM STATEMENT

One of the first lessons you learn as an Industrial Design Engineering student is that your design has to solve a problem. Presumably a problem that the intended user encounters, otherwise your design will not be relevant and therefore mostly useless. To draw from this early lesson, a solid problem statement has to be defined to design a relevant service. This problem statement will simultaneously serve as the starting point for the subsequent ideation phase. Therefore it is important that this problem statement is formulated clearly in such a manner that it speaks to your imagination.

Defining this problem statement is not that easy. Many problems with sharing services arose from the interview results. Which one to address? Several problem statements were proposed and discussed with several people from PostNL. The statement that appealed most to people was:

"People are keen to contribute to the sharing economy, but are hindered by the negative associations they have when sharing or borrowing a service (e.g. dependence on the other person, extra effort in comparison with having the service yourself or tensions that can cause improper borrowing) and are only willing to share or borrow when it offers sufficient financial or practical benefits."

That is a whale of a problem statement. It requires a couple of readings before it can be understood and does not speak to your imagination, thus some adjustments are required. The core of the problem statement was identified and the statement was reformulated into:

"How can we enable people to share resources effortlessly by means of a reception-style delivery service?"

If we dissect this sentence, we find that the problem statement consists of three elements:
1. We focus on 'sharing resources', which means: sharing with or borrowing from other people. 'Resources' can be anything: time, money, skills... This coincides with the literature study on collaborative consumption.
2. It is also important that this happens 'effortlessly'. People are willing to share but only if this does not cause any hassle. We need to make sure that the service enables people to experience convenience rather than obstruction.
3. We know from the project brief that this graduation assignment is aimed at designing a delivery service from the receiver's perspective. It seems sensible to interweave this assignment in the problem definition. This also helps with creating some focus for the ideation phase.

Now that many insights are gathered from the interviews and a clear problem statement is formulated, we can move on to the next phase of the design process: the ideation phase.

5.
design for
collaborative consumption

5. DESIGN FOR COLLABORATIVE CONSUMPTION

5.1. DESIGN APPROACH

The ideation phase is one of the most exciting parts of a service design trajectory. It is the phase in which creativity, rather than logic, is required to find original, out-of-the-box and inspiring solutions. It is the phase within any design project where 'the magic happens'. At the same time, I find this phase a bit intimidating. If you do not succeed in finding a fitting solution to your design problem, this will have a severe negative impact on the design project. To reduce the chances of the latter happening, a thorough creative session plan was thought out. Although a careful idea generation plan does not guarantee brilliant ideas to pop up, it does create an inspiring environment in which ideas can be generated more easily. This increases the chances that a fitting solution is found, which in turn will benefit the complete design project.

▼ Figure 11: creative diamond 2.0

The 'creative diamond 2.0' was adopted as a creative problem solving model for the ideation phase (see *figure 11*). It was developed by Katrina Heijne and Han van der Meer in their book Road Map for Creative Problem Solving Techniques. In addition to the well-known creative diamond model, a 'reverging' stage is placed between the diverging and converging stages. The goal of the reverging stage is to revisit and rearrange the options, to reveal and refine the problem- and solution space, and to reset and resource group dynamics (Heijne & Van der Meer, 2019). PostNL is not fully involved in all ideas that are developed during the diverging stage, but is fully involved in the converging phase. Therefore, they have to be led through a reverging stage to make sure that we are all facing the same direction before we start making choices in the converging stage.

5.2. IDEA GENERATION

As was explained in *chapter 4.3. Problem Statement*, the problem statement "How can we enable people to share resources effortlessly by means of a reception-style delivery service?" can be divided into three parts: 1) *sharing resources*, 2) *effortlessly* and 3) *reception-style delivery service*. The problem statement as a whole is too broad to be a creative session topic, but divided into three these parts can be directly translated into creative session topics. The three topics were assigned to different groups of people:
1. Sharing resources to PostNL and to myself
2. Effortlessly to family
3. Reception-style delivery service to IDE students

In total, four creative sessions were conducted. Two sessions were aimed at sharing resources because - based upon the collaborative consumption study - this is what creates the most value for the service to-be. Due to COVID-19 restrictions, the sessions with PostNL and IDE students were held remotely through Mural and Zoom. The individual session and the session with my family had a traditional creative session format.
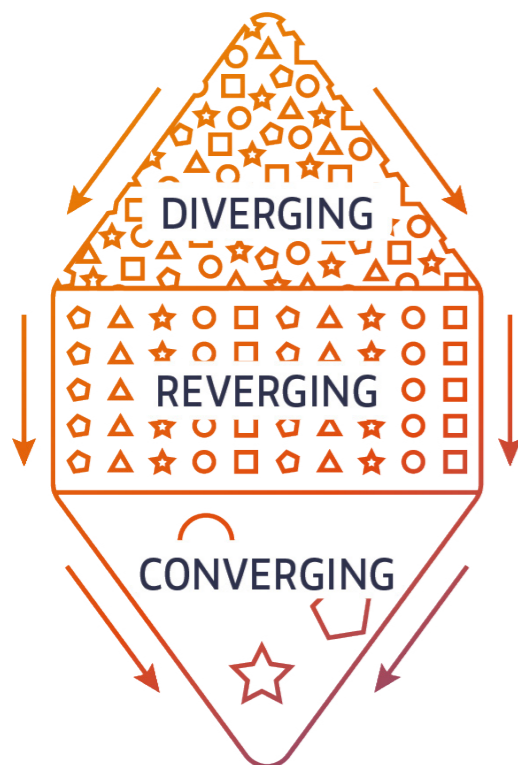
Creative session techniques
The techniques that were used in the creative group sessions derive from the book Road Map for Creative Solving Techniques by Katrina Heijne and Han van der Meer (2019). The techniques that were used during the sessions were chosen carefully: the medium of the session (online or traditional), the participants' familiarity with creative sessions and the participants' knowledge base were all taken into account. The session outlines are presented in *table 4*.

Idea processing
Because two of the sessions were held online and two offline, the ideas were documented differently: digital Post-its in Mural and physical paper Post-its. To reconcile both types, the physical Post-its were transferred to digital Post-its in Mural. Screenshots of the digital sessions and pictures of the offline sessions can be found in *Appendix G*. A large Mural was created in which all the idea Post-its were pasted (see *figure 12*). Thereafter, clusters were formed around common themes underlying the ideas. Occasionally a subcategory was formed within a cluster. Within the clusters and subcategories I looked for separate ideas and listed them within PowerPoint to present them to PostNL.

▼ Figure 12: Mural wall

▼ Table 4: creative session outlines

	Creative session 1	Creative session 2	Creative session 3	Creative session 4
WHO	PostNL (n = 4)	Family (n = 2)	Me (n = 1)	IDE students (n = 4)
HOW	Zoo & Mural	Face-to-face	-	Zoom & Mural
FOCUS	Sharing resources	Effortlessly	Sharing resources	Delivery service
METHOD	1. How To... 2. Direct analogy (favourite company)	3. Flower association 4. Direct analogy (famous people)	5. Mindmap 6. Direct analogy "think as a professional" 7. Direct analogy "superheroes"	8. How To... 9. Direct analogy (favourite company) 10. Brainwriting 4.3.5.

5.3. CONCEPT CHOICE

5.3.1. Idea selection

21 ideas were presented to Jeroen and Jikkelien in a first idea presentation session. The main goal of this presentation was not to make choices already - I wanted to know if they had the feeling that these ideas were sufficient and meeting their expectations. It served as a means of the reverging stage. Jeroen and Jikkelien expressed their contentment. At the same time, many ideas were killed instantly. This undesired converging mindset required an adjustment of the creative diamond 2.0 model. Because we found it too rash to work from 21 ideas to 1 with only one reverging stage, it was chosen to add two sequences of reverging and converging stages to the selection process, as is displayed by *figure 13*. The 21 initial ideas can be found in *Appendix H*.

After a couple of the 21 ideas were eliminated, the second reverging stage was aimed at refining the 9 ideas that were still standing. This time, close attention had to be paid to ensure that PostNL adopted an open mindset to the ideas to see the possibilities rather than the downsides of the ideas. It had to be made sure that the ideas live and grow inside people's minds. The ideas were given names and all the possibilities of the ideas were emphasized. This approach proved to be very fruitful: in a second idea presentation the nine ideas were discussed constructively. The nine ideas are presented in *Appendix I*.

▼ *Figure 13: adapted creative diamond 2.0*

5.3.2. Concept selection

The next step is to select 3 or 4 ideas out of 9, transform these ideas into concepts and then make a final choice. I realized that it would be a challenge to convince PostNL to choose ideas that are aimed at the future, or that are further away from their core business than they would feel comfortable with. To protect the originality and newness that encloses most of the ideas, Han advised me to adopt the reverging technique 'SML sequencing'. The goal of SML sequencing is to rearrange the ideas along an axis that presents a timeline with short term, medium term and long term ideas. It creates an overview of the options as a whole and builds understanding within the group (Heijne & Van der Meer, 2019).

I developed a Mural in which I made three columns. The first column was destined for short term ideas, the second for medium term ideas and the third column for long term ideas. Together with PostNL I divided the nine ideas over three columns. To protect novelty, the assignment for the group then was to choose one idea out of every column. Based upon an open discussion we chose one idea per column plus one extra idea that would be promoted to concept. These are the 4 ideas that were chosen are:

1. PostNalles
2. Peoplease
3. Solipost
4. Bluis

Concept elaboration

After four ideas were chosen as final concepts, elaboration was needed to deepen the meaning and implications of the concepts. Discussions about the concepts with friends and families helped me to elaborate on the concepts and to formulate an accurate description of each concept. What I noticed was that none of the four concepts are unambiguous: all concepts enclose several versions that adapt to the level of complexity of the concept. By this I mean that all concepts have a simple version on the one hand and a complex version on the other, and versions in between. I felt that it is important to mention the possibilities that the complexity of each concept entails to understand the different forms that one concept can adopt.

Next to the level of complexity, the match with the problem statement ("How can we enable people to share resources effortlessly by means of a reception-style delivery service?") per concept was presented since that was the concepts' design goal. Also the fair advantages of each concept were displayed to emphasize reasons why PostNL should do it and not a competitor. Lastly, other remarks were formulated per concept that had to be kept in mind whilst making a choice.

The final four concepts are presented on the next pages.

PostNalles

PostNL allows crowdsourced deliverers to take over (a part of) a delivery according to the exact needs and wishes of a consumer.

SIMPLE ← → **ADVANCED**

PostNL enables crowdsourced deliverers to take over the very last-mile: from a retail location on.	PostNL enables crowdsourced deliverers to take over from distribution/fulfilment centres.	PostNL enables crowdsourced deliverers to deliver anything from anyone at any time.

Sharing resources effortlessly

The delivery of a product is based upon the needs and wishes of the consumer (time, location, speed, etc.). Receiving a product is therefore very convenient. However, the service is mostly focused on receiving and not sharing, unless P2P sharing delivery services are made possible in the most advanced scenario of the concept.

Fair advantages

• PostNL has the fair advantage that PostNalles can enhance the current delivery experience because of the symbiosis with the current delivery system, in contrast to newcomers.
• Fits the idea that PostNL is a historical icon in connecting people with each other (in the advanced stage).

Remarks

• Sooner or later, this service will be developed and launched by a company (based upon trends in crowdsourced delivery, growth and maturing of e-commerce, and growing demand of consumer ease). Question is how PostNL is going to respond.
• Relatively few assets needed, except from investment in a digital infrastructure and maintenance. Interesting for business that currently lack a webshop. PostNalles enables easy shipment and delivery (in the advanced stage).

Bluis

Bluis is a hyperlocal, multifunctional parcel safe that is shared by neighbours.

SIMPLE ← → **ADVANCED**

The parcel safe is the current PBA that can be used for receiving and sending parcels, or storing items temporarily. Neighbors pay a monthly fee to make use of the parcel safe.	It has a special design to fit the environment of neighborhoods and types of usage. A Bluis membership comes with other advantages, such as: discount on sending parcels or free shipping at Marktplaats or Peerby Go from Bluis to Bluis.

Sharing resources effortlessly

Bluis makes receiving (and sending) a parcel convenient because the consumer always has easy access to his parcel and full control about when he will pick it up. The Bluis is shared by neighbours and can be used to share resources.

Fair advantages

• Bluis fits the idea that PostNL is a historical icon that connects people with each other. It creates a meeting point inside the neighbourhood. PostNL has the ability to (re)connect neighbours through the Bluis, but also to connect peers Bluis-to-Bluis.

Remarks

• The concept is easy to imagine because PostNL already has some PBAs. Whether new ones should be designed or the old ones can be used is a question.
• PostNL's initial investment is quite big because PBAs (or such like) need to be bought. However, it is expected that the ROI is happens quickly (within 2 years).
• It is unclear what different municipalities will have to say about Bluises in their neighbourhoods. That should be taken into service validation.
• Many 'fun' advantages could be coupled to the Bluis, as Amazon does with Amazon Prime.

Solipost

Solipost offers steady and guaranteed parcel delivery to consumers.

SIMPLE ← → **ADVANCED**

PostNL passes a house at pre-determined timings (ice cream truck model). The consumer knows well in advance if he or she can receive the parcel or not. The parcel can be easily or even automatically redirected.	Consumers can register for a delivery timeslot together with neighbours. PostNL only passes a house 2 or 3 times a week. If the consumer isn't home, he or she can make arrangements with different neighbours to receive parcels at different timeslots.

Sharing resources effortlessly

Receiving a parcel gets more convenient because of the small timeslot, accurate timing, timely redirection of a parcel and because the consumer knows exactly where he stands. Only in the advanced form, people share temporary storage and delivery timeslots.

Fair advantages

• PostNL is probably the only postal carrier that can offer this service because of its national and frequent presence, and its trustworthy image.
• The advanced concept fits the idea that PostNL is a historical icon that connects people with each other. PostNL has the ability to (re)connect neighbors.

Remarks

• The transition towards an ice cream truck model will take some time because people need to get used to the new format. It is likely that people prefer the current delivery system. There are some risky assumptions here.
• Solipost probably has a positive influence on FTR.
• Offers nice opportunities to pair with the Delivery Passport, bundling or the home parcel safe.
• Regarding the advanced concept, other services could be coupled as well, such as: shipment/returns of parcels from multiple neighbours at the same time, collective AH delivery, collective delivery from other parcel carriers too, etc.

Peoplease

PostNL allows consumers to easily lease products.

SIMPLE ← → **ADVANCED**

PostNL provides super fast B2C and C2B delivery and returns of leased products that need to be repaired, replaced or recycled.	PostNL provides a leasing platform with many leasable products combined to help people to easily lease products.

Sharing resources effortlessly

Good example of collaborative consumption: it stimulates people to share resources and to not consume but use. Leasing could be P2P (such as Peerby Go) or B2C leasing (lighting by Philips). PostNL needs to offer high convenience by offering seamless B2C, 2CB and P2P delivery and returns.

Fair advantages

• PostNL's already broad network of business relations allows to create many leasing partnerships quickly.
• If focused on P2P sharing, PostNL can use its fair advantage of being the national connector to literally establish a network of collaborating consumers.

Remarks

• Big disadvantage: businesses first need to establish leasing offerings before PostNL can provide lease delivery services. The sharing economy movement will eventually demand leasing opportunities, but the timing is unsure.
• Leasing is very sustainable: companies develop durable products that can easily be repaired, refurbished or recycled. The concept would be good for PostNL's sustainability image.

5.3.3. Concept choice

▶ **Criteria**

To give structure and guidance to the concept choice session with PostNL, a list of criteria was required that on the one hand would reflect what PostNL finds important and that on the other hand creates space for the novelty and originality of the concepts.

PostNL is used to make choices based upon the well-known desirability - feasibility - viability model. That same model is proposed by Calabretta, Gemser and Karpen (2016): "Strategic design helps a company to choose the opportunity that is based on a balanced consideration of the extent to which the opportunity fits the needs and wishes of people (desirability), the assets and processes of the company (feasibility), and the performance objectives of the company (viability)." To meet PostNL's criteria standards, it is tactful to adapt (a form of) this model.

Once again, it was necessary to pay attention to the protection of novelty during the concept choice session. A tool that facilitates the decision-making process behind the internal adoption of radical innovation concepts was proposed by Florescu, Baha and Van der Meer (2020). Their 'viability model' describes how desirability, feasibility and suitability are the fundamental criteria for evaluating the viability of a radical innovation concept; viability being the critical criterion for the decision-making process behind the internal adoption of radical innovation concepts (see *figure 14*). The viability model is adopted for the concept choice session.

The following list of criteria was created:

Desirability   ◀
1. Does it enable consumers to share resources effortlessly?
2. Does it lead to cost reduction, efficiency and/or ease for the consumer?
3. Do people want to pay for it?

+

Feasibility   ◀
4. Can PostNL make consumers pay for the service within one year (example: 1000 people pay €0,50 for the service per parcel or month or...)?
5. Does it fit within PostNL's strategic plans to become the favorite deliverer and build a sustainable direct payment relationship with the consumer?
6. Does PostNL have access to the required know-how?
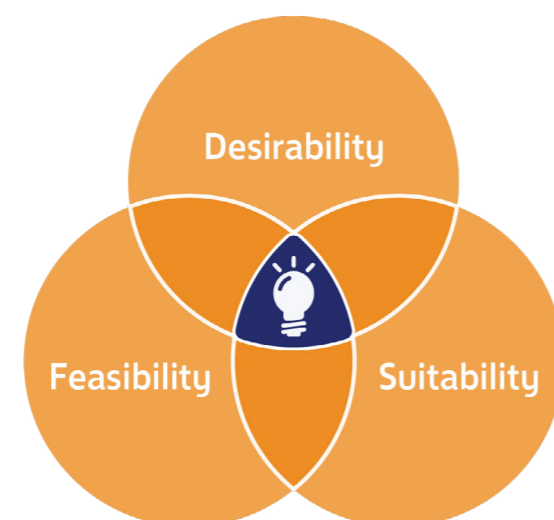7. How much resources and investments will it take (e.g. #FTE)

+

Suitability   ◀
8. Does it fit PostNL's core values (oranje kompas)?
9. Does it fit PostNL's fair advantages (i.e. status of national icon, history of trust and loyalty, nationwide distribution network, etc.) (making it competitive advantages)?

=

Viability

▼ *Figure 14: the viability model*

▶ **Concept choice session**

Due to COVID-19, the concept choice session happened digitally with Jeroen, Jikkelien and a coworker from the Innovation Studio. Digital discussions about how concepts score on multiple criteria are not ideal. Therefore it was important to prepare the session carefully and develop a way to guide the discussion. An Excel model was developed in which the participants could individually score each concept on each criterion with a score from 1 to 5 (see *Appendix J*). The individual scores were displayed together on one overview page that showed averages per concept and outlier scores. The idea was to create a means of structured comparison and discussion.

The model proved its worth and we were able to avoid unnecessary discussion. Two concepts could already be crossed out: Peoplease and Bluis did not make the cut. Since we did not have enough time to choose one out of the two concepts that were left (PostNalles and Solipost), we decided to continue the discussion three days later. This had a surprising effect on the participants' opinions about the concepts: the remaining two concepts had been growing inside people's minds throughout the days which made the participants rethink their initial scores. This time, the score average for one concept became inevitable: PostNalles was the big winner.

KEY TAKEAWAYS
- The 'creative diamond 2.0' was adopted as a creative problem solving model for the ideation phase. It was completed with an extra round of reverging and converging.
- In total, four creative sessions were conducted with different ideation topics and different participants.
- In a first session, 21 ideas were presented to PostNL. In a second session, the remaining and refined 9 ideas were presented to PostNL. From these 9 ideas, 4 ideas were chosen that were transformed into concepts.
- The viability model was adopted for the concept choice session. During this session, participants rated the 4 concepts following a list of criteria. The overall rating of PostNalles made it the winning concept.
- It was a challenge to convince PostNL to choose ideas that are aimed at the future, or that are further away from their core business than they would feel comfortable with. It was necessary to pay attention to the protection of novelty during the converging stages.

6.
PostNalles put to the test

6. POSTNALLES PUT TO THE TEST

6.1. CONCEPT VALIDATION

The previous concept direction decisions that were made during this graduation project have always been based upon the strategic logic that followed from the results of the studies that were performed during this project. The search area *collaborative consumption and -logistics*, the problem statement *sharing services effortlessly through a reception-style delivery service* and the concept *PostNalles* are examples of direction decisions. In line with strategic logic, it became evident that what is perceived as *most valuable* is the key driver of most direction decisions: what the participants of decision sessions perceive as most valuable determines the direction mostly. In the search area case, it was the excitement behind trying something new that was perceived as most valuable. In the concept choice for PostNalles, it was presumed consumer desirability that was perceived most valuable.

The strategic choices that were made during this graduation project have led to the PostNalles concept. As explained, the choices were based upon study results and the perceived value of directions. But, as with almost every new idea or concept, the value of the concept only becomes clear when the concept is presented to the consumer. Consumers determine the value of a concept, not the designer.

Ideally, the concept would be tested through extensive user testing. Unfortunately, due to time restrictions that come with a graduation project, it is not possible to do so. Therefore it is required to make choices in which aspects of the concept should be tested first. In this case, it would be smart to (in)validate the risky assumptions that decide if the concept should be further developed in the first place.

A first major risky assumption is: consumers want to use the service. This assumption is important because it determines the concept's desirability. If there is no desirability, the concept should be discarded quickly. A second risky assumption is: consumers are willing to pay for the service. This second assumption is important because the willingness to pay is a big aspect of the project brief.*

Many different products can be delivered in many different ways through an all-encompassing delivery service. It is important to create a focus in these usage scenarios because 1) it is not possible to build and launch a brand new service within a reasonable timeframe that encompasses all possible usage scenarios and 2) it is certainly not possible to focus on all usage scenarios within the graduation time frame. At the same time, the usage scenarios will largely influence one of the final deliverables of this project: the service blueprint. *Customer actions* is one of the lanes in the service blueprint. The usage scenarios will determine the customer journey and therefore the customer actions that will be included in the service blueprint. The usage scenarios will answer the what-, why-, were- and when questions behind the service blueprint.

*In the project brief it was agreed that the willingness to pay for the service has to be validated. Through the course of this graduation project it became clear that 100% validation is not possible unless a fully operational delivery service can be used and paid for by consumers. Therefore, the WTP that follows the study results is merely a willingness to pay indication.

All in all, it was decided to perform several studies that together give answer to three main research questions:
1. Do people want to use the new delivery service?
2. Are people willing to pay for the new delivery service?
3. What are the most common usage scenarios of the new delivery service?

These research questions require a mix of study types: to find out if people want to use the service, qualitative why-questions and opinion questions are suitable. Qualitative opinions can be supported by quantitative numbers that reflect people's interest by means of a numerical score. The willingness to pay can be indicated by asking people directly to indicate how much money they are willing to pay for the delivery service. The quantitative outcomes can be supported by the qualitative question why people want to pay that amount of money. The most common usage scenarios can be determined quantitatively. At the same time, the why behind why people want to use the service are also intertwined with the usage scenarios. The interplay of study types for these three research questions is interesting.

Service design puts emphasis on combining quantitative studies and qualitative research. Qualitative consumer research can yield significant insight with a small number of respondents to create an understanding of people's experiences. Quantitative research can yield market facts and predictable patterns that apply to most consumers. Combining the two types of research enables designers to discover consumer needs, wants and desires (Reason, Løvlie, & Flu, 2016).

This chapter discusses three studies that were conducted to answer the three research questions:
1. A qualitative narrative study that focuses on people's personal stories;
2. A quantitative survey that focuses on usage scenarios, and
3. A mix study that focuses on how people want to receive their deliveries.

Every study contains a question or multiple questions regarding the willingness to pay.

The conduct of the three studies including their methodologies, samples and results are discussed in the following text. How the results are processed in the service blueprint will be discussed in *chapter 7.3. Service Blueprint*.

KEY TAKEAWAYS
• Two main risky assumptions will be (in) validated: 1) consumers want to use the service and 2) consumers are willing to pay for the service.
• This chapter discusses three studies that were conducted to answer three research questions:
1. A qualitative narrative study that focuses on people's personal stories;
2. A quantitative survey that focuses on usage scenarios, and
3. A mix study that focuses on how people want to receive their deliveries.
• The three main research questions that will be answered are:
1. Do people want to use the new delivery service?
2. Are people willing to pay for the new delivery service?
3. What are the most common usage scenarios of the new delivery service?

6.2. QUALITATIVE NARRATIVE STUDY

6.2.1. Research goal

Before the PostNalles concept can be further developed, there needs to be a clear indication that people want to make use of the service concept. The desirability of the concept needs to be tested. To do so, it is important to create an understanding of why people (do not) want to use the service. This can be achieved by asking people "how would you use the service?" and "what do you think about the service within the context you have in mind?" The main research question for this study is: "Do people want to use the new delivery service?"

In contemplation of the service blueprint that is designed in *chapter 7.3. Service Blueprint*, it is important to comprehend user stories before the blueprint can be constructed. User stories shape the customer actions lane in the blueprint which, in turn, forms the base of the blueprint. User stories help to understand customer experiences and help to move logically through a process of creating ideas, testing options and detailing solutions (Reason, Løvlie, & Flu, 2016). Henceforward the term *usage scenarios* will be used.

Next to understanding consumers' motivations to (not) use the service and usage scenarios, it could be interesting to get a first indication of the willingness to pay. The willingness to pay is an indication of the willingness to use which is assigned by the consumer with a monetary value. "What do you find reasonable delivery costs for your order?" is therefore included in this study.

6.2.2. Methodology

Before people can answer the questions that will lead to understanding people's motivations to use the service, it is required that participants imagine the context of their use. Since the context of use differs from consumer to consumer and because it is a research goal to discover usage scenarios, it is interesting to inquire for people's personal user stories. Therefore, making people tell their own stories through narratives is chosen as a qualitative research technique. The technique allows the narratee to fill in gaps in detail by drawing upon their own imagination. The engagement with the narrative itself is intensified because the recipient of a story must imagine possibilities (Price, Matthews, & Wrigley, 2018).

Because speaking to multiple participants directly is not possible due to COVID-19, some creativity is required to gather multiple narrative responses. A fill in the blanks story was composed in Google Forms to facilitate the creation of participants' own narratives. To sketch the outlines of the stories that participants have to fill in, a table was composed with all possible products that could be delivered against all imaginable delivery reasons that I could think of. The complete table can be found in *Appendix K*. The three main reasons that I imagined for consumers to use the service were: 1) pure convenience/ease, 2) no time to get something or 3) the inability to get something. Based upon these three reasons, three fill in the blanks stories were created:

> **Scenario 1 - Consumer wants to receive a product conveniently**
It's Saturday, ___(time)___, and you are at ___(location)___. You have been wanting to have ___(product)___ for some time now, but you are not in the mood to go and get it, because ___(reason)___. You open the delivery app to order ___(product)___. You want to have the product delivered ___(time; [within, before, at, after])___ at ___(delivery location)___. You feel that delivery costs of ___(€ price)___ are reasonable for your order.

> **Scenario 2 - Consumer wants to have a product but hasn't got the time to get it**
It's Tuesday, ___(time)___, and you are at ___(location)___. You just realized that you need ___(product)___ before ___(point in time or day)___, but unfortunately, you don't have the time to go and get it because ___(reason)___. You open the delivery app to order ___(product)___. You want to have the product delivered ___(time; [within, before, at, after])___ at ___(delivery location)___. You feel that delivery costs of ___(€ price)___ are reasonable for your order.

> **Scenario 3 - Consumer wants to have a product but isn't able to get it**
It's Thursday, ___(time)___, and you are at ___(location)___. You were meaning to get ___(product)___, but unfortunately, you are not able to leave your location because ___(reason)___. You open the delivery app to order ___(product)___. You want to have the product delivered ___(time; [within, before, at, after])___ at ___(delivery location)___. You feel that delivery costs of ___(€ price)___ are reasonable for your order.

The three scenarios are divided across the participants, thus one participant fills in one of the three scenarios. Before the participants would tell their own stories, the story behind the new delivery service was told first, accompanied by *figure 15*:

"Recently a new type of delivery service was launched. With this delivery service you can have everything delivered anytime, anywhere. Think of it as a marriage between PostNL and Uber Eats where you can have articles delivered such as: chargers, contact lens fluid, a bag of crisps, garment from the local boutique ... Literally everything you need.

Your delivery will be brought to you by a bicycle courier or a PostNL parcel deliverer. You indicate what you want to receive and the deliverer ensures that you will receive it where and when you want. This can be very specific ("I would like to receive orange-pink tulips from the local florist at 2:00 pm sharp at work") or unspecified ("I would like to receive a pack of toilet paper at home today before 9:00 pm").

You pay for the product plus variable delivery costs that depend on the desired speed and distance of the delivery. "

After the participants read the delivery service story and narrate their own stories through the fill in the blanks story, the participants are asked "what do you think of this new delivery service?" and "when would you use this delivery service?"

The Google Forms ends with a couple of questions about the participant: "How often do you receive deliveries?" "how often do you use an app to order something?" and "what is your age?"

The complete Google Forms can be found in *Appendix L*.

▼ *Figure 15: story visualization*

Order whatever you would like to have

The deliverer collects your order from every possible location

The deliverer delivers your item where and when you like

6.2.3. Sample

If we consider the early stages of service development, it must be accounted for that not every usage scenario can be fully elaborated right away. It is a logical step to focus first on the most common usage scenarios and expand the service from there on. This study aims to discover similarities and depth across usage scenarios and should adopt a sampling strategy that suits this aim. Snowball sampling is such a sampling strategy that is suited for examination of commonalities. As with the qualitative interview study earlier on in this project, snowball sampling identifies cases of interest from sampling people who know people that generally have similar characteristics who, in turn, know people, also with similar characteristics (Palinkas et al., 2015).

Because people need to be able to imagine the context in which they would use the new delivery service, it is reasonable to focus on participants who have been in contact with other digital delivery services before, such as Uber Eats, Thuisbezorgd or ordering via a webshop. I know for a fact that many of my friends and family correspond to this description. Consequently, the initial snowball sample was formed by friends and family who, in their turn, forwarded the narrative survey to their friends and family.

It has to be said that snowball sampling is liable to various forms of bias (Patton, 2002). For instance, it is possible that the most common usage scenarios following from this study seem to be applicable to a wider population while that is not legitimate. However, since this study focuses on the desirability of the new service, the opinions of the participants in the sample reflect a first impression of the desirability of the service. Additional usage scenario research will be performed in a second, quantitative study.

6.2.4. Results

As explained in *chapter 6.2.1. Research goal*, the main goal of this narrative study was to discover if people want to use the new delivery service. That research question can be answered by asking participants how they would use the service and what they think of the service. Next to understanding participants' motivations, this study also took initial soundings as of what people are willing to pay for the delivery service. In this result section, the focus lays on the what, to where, how fast, why and the willingness to pay for the service. It also discusses the gathered opinions.

The narrative survey was completed by 47 participants with an average age of 28,9 years. The analysis of the data was performed by converting the Google Forms data into an Excel file. The data inside this file was analyzed qualitatively by forming categories of similar replies. For instance: the answers to the question of what people would order were divided into categories. In turn, these categories could be used to draw quantitative conclusions from. The same applies to participants' opinions: these were clustered to form an encompassing view of what people think of the service. An example of the data analysis can be found in Appendix M. The highlights of the findings are presented in the text below.

- **What articles do people want to receive mostly?**
  As depicted by *figure 16*, the biggest category of what is 'food and drinks'. 18 articles belong to this category. Within this group, people would use the service mostly to order a single item from the supermarket, such as a bag of ice cubes, a bottle of rosé or cheese. The second largest category is 'others', which is composed of 11 articles such as clothing and kitchen utensils. Remarkably, 5 people indicated that they would like to use the service to order gifts for friends and family.

▼ *Figure 16: what*

- **Why do people want to have these articles delivered?**
  As *figure 17* depicts, the biggest reason for people to have something delivered is out of 'ease'. Convenience and laziness relate to 'ease'. This reason was mentioned 13 times. The second biggest reason for people to order is because they are 'not capable' of getting the article themselves. Being stuck at work or fear of COVID-19 are instances of this category. 'No time' is the third category of why people want to have something delivered, with 9 mentions. Ofcourse, there is a clear overlap between the categories 'ease', 'not capable' and 'no time': the unwillingness or inability to spend time on getting an article. As a result, a hard distinction between the three categories cannot be made. The unwillingness or inability to spend time is without doubt the biggest reason for people to use the service.

▼ *Figure 17: why*

- **Where do people want to receive the delivery?**
  As can be seen in *figure 18*, with more than half of the participants mentioning this location, 'home' is the evident winner of where people want to have their articles delivered. Home is followed by 'work' with 9 responses and 'other' with 8 responses. 'Other' includes answers such as 'to a party' or 'to my partner'. 'Recreational location' refers to locations such as the beach or the park.

▼ *Figure 18: where*

- **When do people want to receive their delivery?**
  'Before a certain time' was mentioned by almost half of the participants regarding when they would like to receive their delivery (see *figure 19*). People mentioned 'somewhere before the end of the day', 'within 1.5 hours' and such like. The second largest category is 'ASAP' with 16 responses.
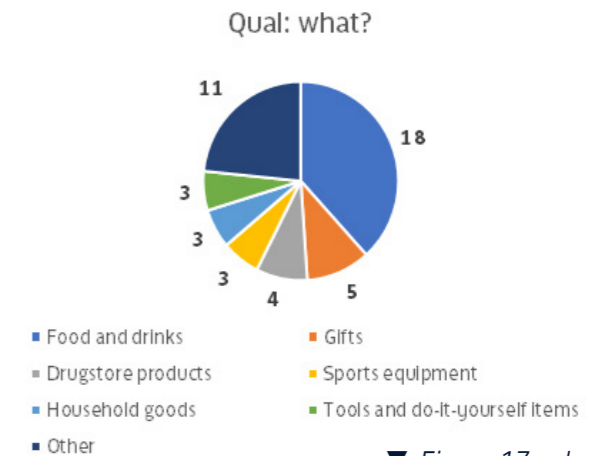
▼ *Figure 19: when*

What, why, to where and when combined

Based upon the what, why, to where and when analyses, the most common usage scenarios can be composed. If we look at the number 1 most frequently mentioned context elements per category and combine them, we can sketch a couple of common usage scenarios.

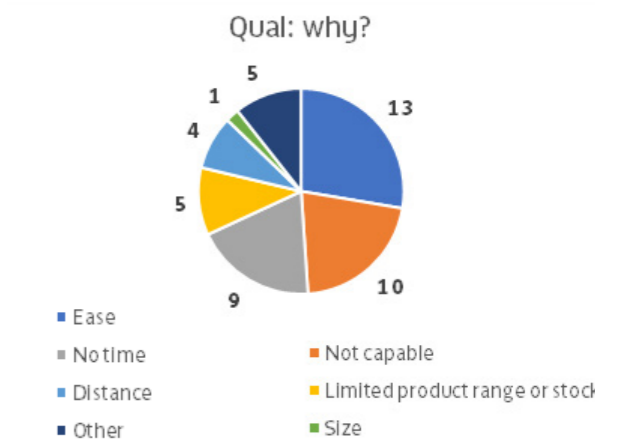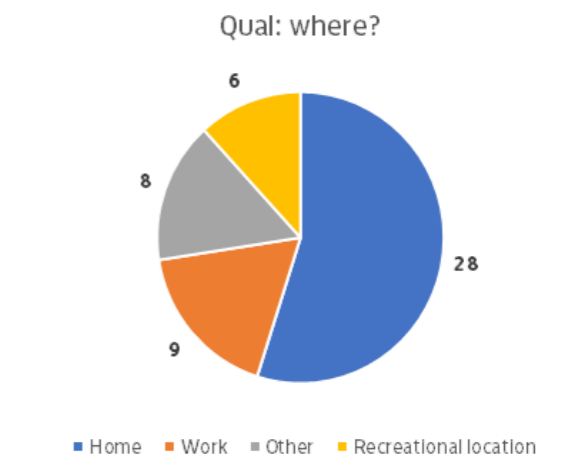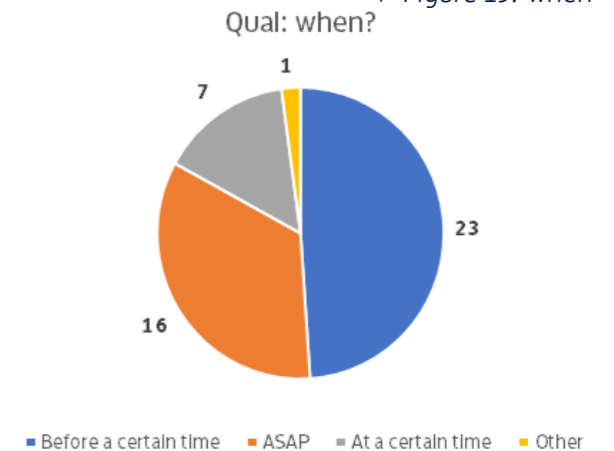| 1# what: | food and drinks |
1# reason:	ease
1# to where:	home
1# when:	before certain time

> SCENARIO 1

A consumer fancies a big bag of crisps but is too hung over to get off the couch. The consumer does not have to receive the bag as soon as possible, but he or she would like to receive the crisps within one hour.

> SCENARIO 2

A consumer would like to eat a grilled cheese sandwich for lunch. While making the sandwich, he or she realizes that he or she ran out of cheese. The consumer does not want to go to the supermarket for only some cheese. The consumer is hungry and wants to receive the cheese as soon as possible.

> SCENARIO 3

A consumer is hosting a barbecue for some friends. While setting the table, the consumer finds out that he or she forgot to buy peanut sauce. The consumer does not want to leave his or her friends to go to the supermarket. The consumer would like to use the peanut sauce within one hour.

Willingness to pay

The average willingness to pay is €6,02. The lowest delivery costs that were indicated was €1,-, whereas the highest delivery costs indicated was €30,-. The median for the delivery costs is €5,-.

As opposed to a numeric value, one participant indicated that she is willing to pay a certain percentage of the product price as delivery costs: 'I am willing to pay 10% of the product price'. Another participant said that she wants the delivery costs to be included in a subscription fee.

Opinions

The participants of the study gave elaborate answers to the question: "What do you think of this new delivery service? Please indicate why you think so." In many of the cases, people gave mixed answers, for instance: a positive remark and a point of attention, or a negative remark with a tip on how to solve that negative remark. Their answers were divided into positive, negative and neutral comments. Within these three categories, the comments that were made multiple times were combined. A list of the comments is presented below:

REMARK	N (62)
Positive	31
Handy	7
Good idea!	5
Nice that you can order everything at any time	3
Sounds nice!	2
Especially nice if you hurry or don't have the time	2
Helps when you made a planning mistake	2
Good development to make market dynamic	1
Nice that you can order when shops are closed	1
Creates jobs	1
Saves time	1
Supports local sellers instead of giants (bol.com)	1
Practical	1
Good initiative, especially with COVID-19	1
Flexible	1
Benefit of large assortment and reliability	1
Good for sellers who don't have their own webshop	1

REMARK	N
Negative	19
It stimulates lazy behavior	5
Superfluous	3
It evokes scooter pollution	2
PostNL deliverers lose jobs	1
Sellers get dependent of PostNL	1
Not literally every product can be delivered	1
Logistically worrisome	1
Opening hours of shops can be worrisome	1
Not sure of feasibility	1
The quality of the delivery goes down	1
Lacks personal connection with seller	1
Delivery costs are relatively high	1
Neutral	12
Luxury product	1
What if the driver gets stuck in traffic?	1
Products can be cheaper than the delivery cost	1
Looks like Ubutler	1
Usage depends upon delivery costs	1
If I need something I don't directly think about this	1
How does the revenue model work?	1
Would be nice if the delivery is by bicycle	1
How does it work with service costs for an activity?	1
What to do if the product you wanted isn't available?	1
Taps into fast delivery trend	1
Serves convenience	1

A total of 62 opinions were collected, of which 31 positive, 19 negative and 12 neutral comments.

Looking at the positive reactions, we see that people find the service very handy and practical. People also replied multiple times with 'nice' and 'good idea'. The fact that you can order anything at any time is convenient to people, especially when time is scarce. People also seem to perceive societal-economical benefits, such as enhancing market dynamics and the support of local sellers.

Focusing on the negative comments, the main objection is the stimulation of lazy behaviour. People also find that similar services exist enough already. The other negative remarks are mostly based upon uncertainties like the logistics behind the service and the feasibility of the service. People are also afraid that PostNL deliverers lose their jobs and that the quality of the delivery goes down.

The neutral comments are mostly about practical matters such as what to do if an article is not available, or what if the deliverer gets stuck in traffic. The participants perceive the service as a luxury service that serves convenience and builds upon the fast delivery trend.

Notable correlations

Many correlations have been researched during the analysis of the study data. For instance: it could be assumed that the most positive opinions would correlate to the highest WTP. However, this does not come forth from the data. Also age and order frequency do not influence the WTP or opinion on the service.

A non-significant yet notable correlation exists between the what and WTP. Almost all articles that are assigned with delivery costs to €5,- are small or cheap items such as: an item from the supermarket, a corkscrew, a gift or sunscreen. If people are willing to pay higher delivery costs (> €15,-), the size or price of that article is relatively great. Think of a concrete statue or second hand golf clubs. Consequently, it seems as if an article is ordered that is relatively low in price and size, people expect the delivery costs to be low.

6.2.5. Discussion

Using a narrative technique as a qualitative research method was an experiment to me. I was unfamiliar with asking participants to write their own stories through a digital fill in the blanks story instead of asking people physically about their experiences. Luckily, unambiguous answers were given to the fill in the blank questions, meaning that the participants understood the assignment. Based upon the straightforward opinions of the participants, it also seems as if the story about the new delivery service appealed to people's imagination and helped them to visualize the context in which they would use the service. All in all, I am happy with the results of the narrative study.

Zooming in on the raw data of the study, we find that it is not possible to identify quantitative correlations between answers. For instance: no sound conclusions can be drawn from comparing the desired speed of the delivery and the WTP. That is not surprising when we consider the nature of a qualitative study. The value of this study is not in analysing data as separate bits of information, but combining these elements into actual usage scenarios.

Several findings from this study reflect previous research findings. For instance: in *2.2.3. The consumer's perspective on last-mile delivery services* it was explained that convenience is a continuous and increasingly important trend in consumer behavior. In this inquiry, 'ease' was mentioned most frequently as a reason to use the service. Even one of the participants stated that the service serves convenience. In contrast to what I expected, getting the delivery as soon as possible is not necessarily relevant; as long as people receive their delivery before a certain time, they experience the service as convenient.

A final point of discussion is the contradictions in people's opinions. Many participants find the service handy yet lazy. Some participants feel that the service will create jobs and positively influence the current delivery market, whereas other participants are afraid that people will lose jobs. What people perceive as positive aspects of the service need to be enhanced and the negative aspects should be addressed and solved.

6.2.6. Conclusion

This qualitative narrative study has led to an understanding of what, why, to where and when people want to receive deliveries. The most frequently mentioned elements of usage scenarios are: food and drinks, out of ease, before a certain time, to home. A usage scenario that fits these elements could be: "A consumer fancies a big bag of crisps but is too hung over to get off the couch. The consumer does not have to receive the bag as soon as possible, but he or she would like to receive the crisps within one hour."

Participants are willing to pay an average of €6,02 per delivery. The smaller or cheaper the desired article, the less people are willing to pay.

A total of 62 opinions were collected. The most frequently mentioned comment is 'handy!'. The fact that you can order anything at any time is convenient to people, especially when time is scarce. At the same time, participants are worried that the service makes you lazy. Some people also find that similar services exist enough already. Some participants ask questions about practical matters such as what to do if an article is not available, or what if the deliverer gets stuck in traffic. The participants perceive the service as a luxury service that serves convenience and builds upon the fast delivery trend.

The main research question of this study was "Do people want to use the new delivery service?" Based upon people's ability to imagine their usage stories, the many positive reactions and the willingness to pay for the service, it can be said that people find the service desirable. However, it has to be said that this study featured a small sample and that further (quantitative) research is needed to back up this conclusion. It was also found that people are willing to pay for the service.

> **KEY TAKEAWAYS**
> • The main research question for the qualitative narrative study is: "Do people want to use the new delivery service?" Participants are also asked about their willingness to pay.
> • Making people tell their own stories through narratives is chosen as a qualitative research technique. The technique allows the narratee to fill in gaps in detail by drawing upon their own imagination.
> • The narrative survey was completed by 47 participants with an average age of 28,9 years.
> • This qualitative narrative study has led to an understanding of what, why, to where and when people want to receive deliveries. The most frequently mentioned elements of usage scenarios are: food and drinks, out of ease, before a certain time, to home.
> • Participants are willing to pay an average of €6,02 per delivery. The smaller or cheaper the desired article, the less people are willing to pay.
> • The most frequently mentioned comment is 'handy!'. The fact that you can order anything at any time is convenient to people, especially when time is scarce. At the same time, participants are worried that the service makes you lazy.
> • Based upon people's ability to imagine their usage stories, the many positive reactions and the willingness to pay for the service, it can be said that people find the service desirable.

6.3. QUANTITATIVE SURVEY STUDY

6.3.1. Research goal

Now that a first idea of possible usage scenarios is developed, the service appears to be desirable and people are willing to pay for the service, it needs to be inquired if the service appeals to a larger audience. To support the findings from the qualitative study, a quantitative survey study will be performed. The questions in the quantitative study will be an elongation of the questions that were asked in the narrative study. Where the narrative study focused on people's personal stories, the survey study focuses on quantifiable usage scenarios. The focal point of the study is not to explain the new service, but to pinpoint consumer needs apart from the service.

The survey study aims to answer several research questions:
1. What consumer needs does the service need to fulfill?
2. How interested are consumers in solving their needs?
3. How much are people willing to pay?
4. Who is the target group (based upon demographics)?

Based upon the results of this study, three usage scenarios will be composed that will serve as input for the customer action lane in the service blueprint. Thereupon a first draft of the service blueprint can be made.

6.3.2. Methodology

The survey study will be executed at the track and trace page of the PostNL website. Every tenth visitor of the page will see a pop-up with the question "Want to have everything delivered everywhere?" The participant is asked to think back to the last time he or she wanted to have an article from a store, but getting it was too inconvenient.

The questionnaire commences with focusing on consumer needs and poses open questions such as "what article did you want to have?" and "what stopped you from getting it yourself?".

The second part of the questionnaire requests participants to give a score from 1 (not at all) to 5 (very interesting): "how interesting do you find a delivery service that can deliver any product, at any time, wherever you want?" This question is followed by "how much do you want to pay per delivery?" (list with numbers from 0 to 10). Lastly, the participant is asked to provide some personal information such as age and delivery frequency. The complete survey can be found in *Appendix N*.

The aim is to receive 300 responses. The survey is conducted in the online survey program Usabilla and linked to the PostNL track and trace page for desktop and mobile. The analysis of the results will be done in Excel.

6.3.3. Sample
Upon this phase of concept development, no clear indications of a distinctive target group have been discovered. It is assumed that younger and digital-savvy consumers who have experience with ordering via apps would adopt the service quickly. Since this study focuses on consumer needs and not so much on what early adopters would order, it was decided to keep the sample as broad as possible. Recall that one of the research questions of this study is to discover who the target group is. Every tenth track and trace page visitor receives a pop-up with the request to take the survey.

6.3.4. Results
The survey has been online for over two weeks. After two weeks, only 176 useful responses were collected instead of the desired 300 responses. Nevertheless, it was still possible to perform a quantitative analysis. An example of the data anlysis in Excel can be found in *Appendix O*.

The survey results were downloaded from Usabilla and exported to Excel. Because half of the questions were open questions, part of the response data was textual and part of the data was numerical. Some textual data had to be mutated before the data could be analyzed. Similar to what I did to the textual data of the narrative study, I color coded the answers to

what, *why* and *to where*, and categorized them. This way, the frequency of answers could be analyzed systematically.

First, the general statistics coming forth from this study are presented. Secondly, the choice for the three whats will be presented. Thirdly, the choice for the three *whys* will be presented. Then, the most common *whens* are presented. Then, the *whats*, *whys* and *whens* are combined into three usage scenarios. Also people's regular order frequency and age are compared to WTP and interest.

General statistics
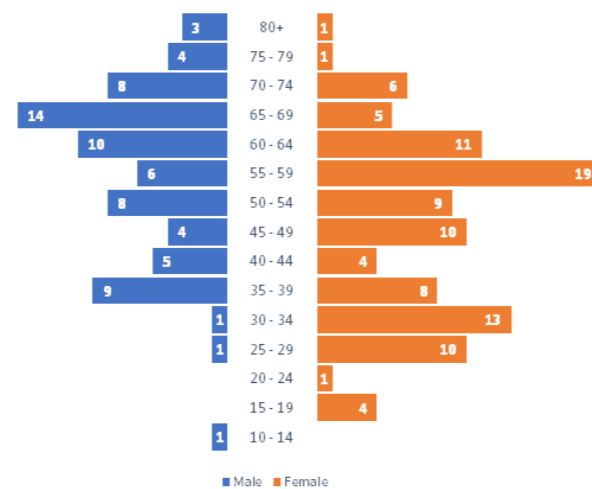
▲ Figure 20: demographics

176 participants completed the survey, whereof 74 males, 103 females, as is visualized by *figure 20*, and 5 individuals who rather not provide their gender. The average age of the participants is 51,8 years old. The ages 20 - 29 are strongly under-represented. Participants were asked to give an interest score from 1 to 5 to a service that would deliver anything at any time, anywhere. The average interest score is 4,03. The average willingness to pay is €2,66. The median for the delivery costs is €2,50.
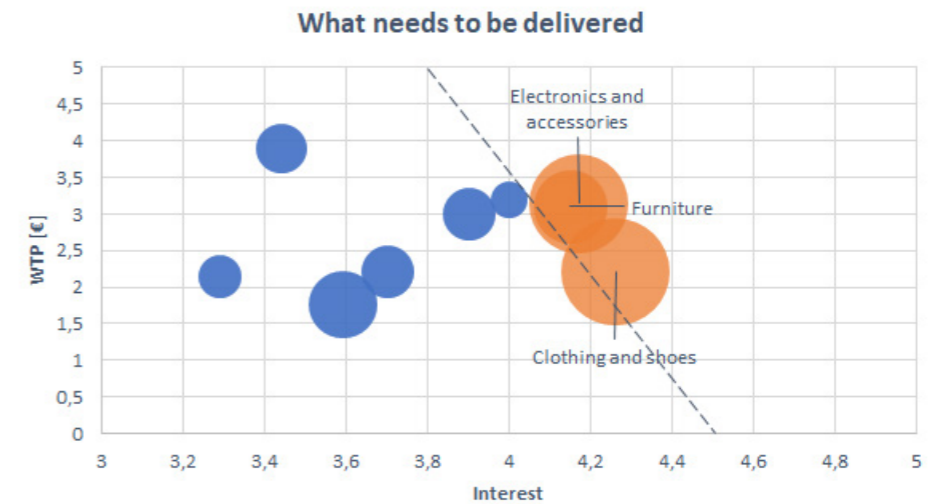
▲ Figure 21: what diagram

What articles do people want to receive mostly?
As depicted by the *table 5* below, *clothing and shoes* (n = 42), *electronics and accessories* (n = 36) and *furniture* (n = 20) are the most frequently mentioned articles that people would like to have delivered. To build a service around usage scenarios that are actually desirable by people, it makes sense to not only look at frequency, but also at which articles spark the highest interest and what articles do people want to pay most for.

Figure 21 above presents the articles from the angle of WTP (vertical axis), interest (horizontal axis) and frequency (size of bubble). A clear visual distinction can be made between promising and unpromising *what*-candidates. Based upon the highest WTP-, interest- and frequency levels, the categories *clothing and shoes*, *electronics and accessories* and *furniture* will be used to perform further analyses with.

▼ Table 5: what

What	N	Avg. interest [1 to 5]	Avg. WTP [€]	# times 0	% 0 WTP
Clothing and shoes	42	4,26	2,21	15	35,7
Electronics and accessories	36	4,17	3,14	11	30,6
Furniture	20	4,15	3,1	6	30
Drugstore products	17	3,59	1,76	5	29,4
Pet and accessories	10	3,7	2,2	4	40
Tools and do-it-yourself items	10	3,9	3	4	40
Household goods	9	3,44	3,89	3	33,3
Kitchen utilities	7	3,29	2,14	1	14,3
Baby and child	5	4	3,2	1	20

Reason to get it delivered
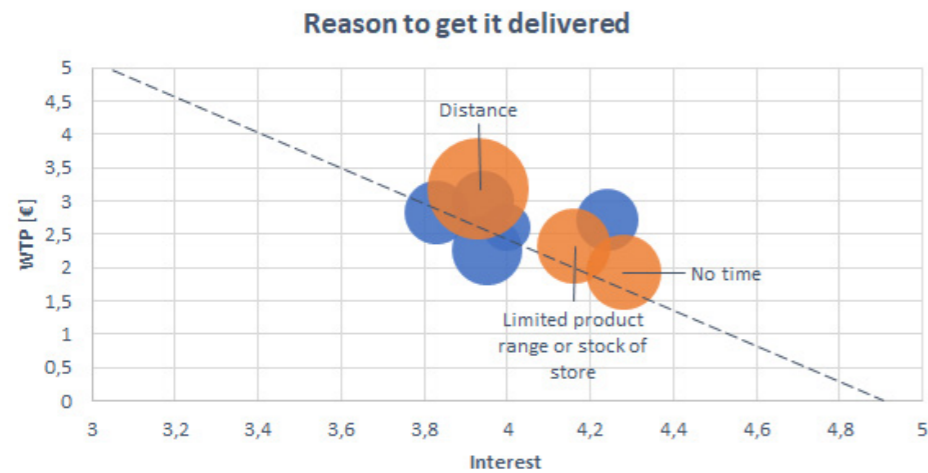
▲ *Figure 22: why diagram*

● **Why do people want to have these articles delivered?**

As depicted by the *table 6* below, *distance* (n = 45), *no time* (n = 25) and *limited product range or stock of store* (n = 25) are mentioned most frequently as reasons why a participant could not get the article himself or herself. *Distance* is a fairly vague reason because it can mean several things: somebody did not have time to travel the distance (no time), somebody could not arrange the transport of the article (not capable) or maybe somebody was just too lazy to get outside and fetch the article (ease). Therefore the reason *distance* should be taken with a grain of salt.

Several findings follow from *table 6* below:

- *Distance* correlates to the highest WTP in money and a high percentage of people who are willing to pay in the first place.
- *No time* correlates to the highest interest score, but people are least willing to pay in money or willing to pay in the first place.
- People are willing to pay for *ease* and are mostly willing to pay for *ease* in the first place. However, the interest is relatively low compared to other reasons.
- *COVID-19 and too busy in stores* correlates to high interest, an average WTP but the lowest number of people who are willing to pay in the first place.

▼ *Table 6: why*

| Reason	N	Avg. interest [1 to 5]	Avg. WTP [€]	# times 0	% 0 WTP
Distance	45	3,93	3,18	11	24,4
No time	25	4,28	1,92	11	44
Limited product range or stock of store	25	4,16	2,32	9	36
Other	22	3,95	2,27	8	36,4
Not capable	18	3,83	2,83	7	38,9
Ease	17	3,94	3	4	23,5
COVID-19 and too busy in stores	17	4,24	2,71	8	47,1
Size	10	4	2,6	4	40

Looking at *figure 22* that represents WTP, interest and frequency of *why*, we see that it is not possible to make a clear distinction between reasons. Because we want the service blueprint to be based upon the three most common usage scenarios, we should also choose the three most common reasons why people are not able to get something themselves. Since the average WTP and interests of the categories do not differ that much, it was decided to focus on the top three most frequently mentioned reasons: *distance*, *no time* and *limited product range or stock of store*.

● **When do people want to receive their article?**

We now know the top three articles that people would like to have delivered and the top three reasons *why* people want to have articles delivered. The next step to determine three usage scenarios is to relate the top three articles (*clothing and shoes*, *electronics and accessories*, and *furniture*) to when consumers want to have it delivered.

As is shown in *figure 23*, more than half of the participants (n = 61) would like to receive their article as soon as possible. The second most frequent *when* is *doesn't matter* with 16 mentions, closely followed by *at a certain time* with 13 mentions.

▼ *Figure 23: when chart*
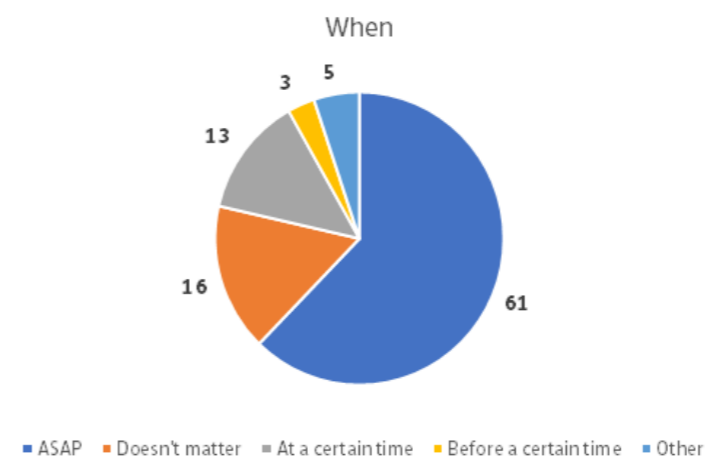
The three usage scenarios

Based upon the choice for *what*, *why* and *when*, three usage scenarios can be sketched that will be used as input for the customer action lane in the service blueprint:

> **1. Clothing and shoes * Limited product range or stock of shop**

A certain pair of shoes is not available in the local store, but a branch in the adjacent city does have the shoes in stock. The consumer doesn't want to travel to the other branch and needs the shoes before tonight.

> **2. Electronics and accessories * Distance**

A consumer needs a telephone charger but thinks that the store is too far away. The telephone is almost empty. The consumer wants to have the charger as soon as possible.

> **3. Furniture * No time**

A consumer wants to have a ceiling lamp from IKEA but doesn't have the time to get it himself. The consumer wants to hang the lamp before this evening.

Target group selection

One of the research questions for this survey is "who is the target group (based upon demographics)?" Several questions were asked to gain understanding of who a potential target group could be:

1. How frequently do you receive home deliveries?
2. What is your age?
3. What is your gender?
4. What is your domestic situation?

First, the correlation between order frequency and interest score and WTP was researched. As *table 7* depicts, it was found that *frequent orderers* have the most interest in the service by far (interest score of 4,83), but more than half of them expect free delivery. The group of *average orderers* is not especially interested in the service, but they are willing to pay the most money and they are the group who is mostly willing to pay in the first place. The *non-frequent orderers* are least interested in the service and are willing to pay the least amount of money. Based upon the results of order frequency, it can be said that the people in the *frequent orderers* and *average orderers* group would be best suited as the target group.

Then, the correlation between age and WTP was researched.

Figure 24 displays the interest in the service based upon age. The vertical axis represents the interest score [1 to 5]. The horizontal axis represents age. It was found that all participants younger than 32 years have at least some positive interest in the new service (interest score of at least 3; N = 26). Based upon the distribution of the data in the diagram, it can be concluded that age does not influence interest in the service.

Similarly, *figure 25* displays the correlation between the amount of money people want to pay for the service (vertical axis) and the age (horizontal axis). From this distribution, it can be concluded that age does not influence the WTP.

People's domestic situations do not have an influence on interest or WTP.

▲ *Figure 25: WTP for the service*

▼ *Figure 24: interest in the service*
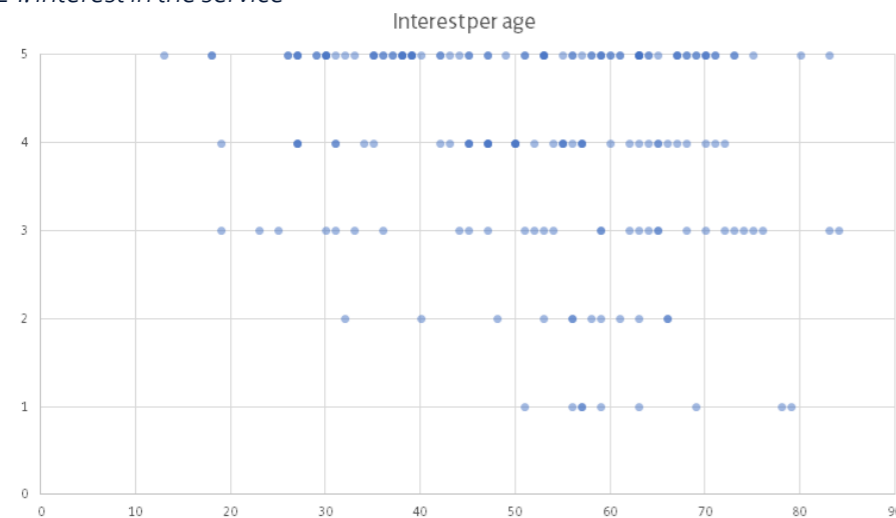
▼ *Table 7: order frequency*

Order frequency	N	Avg. interest [1 to 5]	Avg. WTP [€]	# times 0	% 0 WTP
Frequent orderers (≥ 4 times a month)	73	4,83	2,47	39	53,4
Avg. orderers (between 2 and 3 times a month)	54	3,89	3,09	13	24,1
Non-frequent orderers (≤1 times a month)	52	3,71	2,42	22	42,3
Size	10	4	2,6	4	40

▷ 6.3.5. Discussion

The first results of this study are rather promising: from a scale from 1 to 5 people have indicated an average interest score of 4,03. This means that the average participant has rated the service somewhere between interesting and very interesting, which is a positive indication of the desirability of the service.

One of the salient results of this study is the age distribution of the participants: the age group 20-29 is strongly under-represented. This raises the question why this group is not represented. Were they not triggered by the title of the survey "Want to have everything delivered everywhere?" Does this age group not visit track and trace pages in general? Or are they just less willing to fill in surveys? Since I suppose that younger, digital-savvy consumers who are already familiar with delivery apps probably are a big part of the target group, it is essential to receive their responses to this survey as well. Complementing this study with younger participants is an important next step in concept development and should be performed in following studies.

Another point of discussion is the third usage scenario: *furniture * no time*. Three usage scenarios are chosen as a basis for the service blueprint. From there on, the service can be developed further. From a strategic perspective, it would be wise to focus on usage scenarios that are not asset intensive to begin with. However, *furniture* (e.g. cabinets, carpets, couches, etc.) requires larger vehicles and larger equipment than, for instance, a bag of candy that can be delivered by bicycle.

In the qualitative narrative study it was discovered that *food and drinks * ease* is the most common usage scenario. Since the participants of the narrative study represent the potential target group presumably better (avg. age 28,9 vs avg. age 51,8) and because *food and drinks* require less asset intensive investments than *furniture*, I propose to replace *furniture * no time* with *food and drinks * ease*.

6.3.6. Conclusion

This study aimed to answer several research questions:

1. What consumer needs does the service need to fulfill?
2. How interested are consumers in solving their needs?
3. How much are people willing to pay?
4. Who is the target group (based upon demographics)?

The aim was to answer the consumer need question by sketching the most common usage scenarios. The *whats*, *whys*, *wheres* and *whens* of the usage scenarios together represent the range of consumer needs concerning the desired deliveries. In agreement with PostNL it was decided that this graduation project will proceed with these three usage scenarios:

> 1. Clothing and shoes * Limited product range or stock of shop
A certain pair of shoes is not available in the local store, but a branch in the adjacent city does have the shoes in stock. The consumer doesn't want to travel to the other branch and needs the shoes before tonight.

> 2. Electronics and accessories * Distance
A consumer needs a telephone charger but thinks that the store is too far away. The telephone is almost empty. The consumer wants to have the charger as soon as possible.

> 3. Food and drinks * Ease
A consumer has a lazy day today and fancies a tasteful snack from the supermarket, but the consumer doesn't feel like going out and getting the snack himself or herself. The consumer is hungry and would like to eat the snack ASAP.

The average consumer is interested in the service. An average interest score of 4,03 (on a scale from 1 to 5) was assigned by the participants. Frequent orderers even indicate that they find the new service almost 'very interesting' with a score of 4,83. These numbers indicate that consumers have the desire to use the service.

People are willing to pay an average price of €2,66. The median for the delivery costs is €2,50. There is no correlation between people's age and the willingness to pay or level of interest.

The results of this study indicate that frequent orderers have the most interest in the service by far (interest score 4,83 out of 5). Average orderers are willing to pay the most money and are mostly willing to pay in the first place. The *frequent orderers* and *average orderers* group would be best suited as the target group. Because age group 20 - 29 is strongly under-represented in this study and assumed to be a large part of the potential target group, it is important to involve them in future studies. People's domestic situations do not have an influence on interest or WTP.

> **KEY TAKEAWAYS**
> • The survey study aims to answer several research questions:
> 1. What consumer needs does the service need to fulfill?
> 2. How interested are consumers in solving their needs?
> 3. How much are people willing to pay?
> 4. Who is the target group (based upon demographics)?
> • To answer the consumer needs questions, the most common usage scenarios are sketched. The whats, whys, wheres and whens of the usage scenarios together represent the range of consumer needs concerning the desired deliveries.
> • The survey is posted on PostNL's track and trace web page. The survey has been online for over two weeks and yielded 176 completed responses.
> • Three usage scenarios are: 1) Clothing and shoes * Limited product range or stock of shop, 2) Electronics and accessories * Distance and 3) Food and drinks * Ease.
> • An average interest score of 4,03 (on a scale from 1 to 5) was assigned by the participants. Frequent orderers even indicate an interest score of 4,83.
> • People are willing to pay an average price of €2,66. There is no correlation between people's age and the willingness to pay or level of interest.

6.4. DELIVERY MODE STUDY

6.4.1. Research goal

The previous two studies have provided the indication that people are interested in using the service and that they are willing to pay for the service. The previous studies also provided the three most common usage scenarios and helped to understand why consumers want to use the service. The *what*, *why*, *where* and *when* of the desired deliveries were researched, but one key element of deliveries has not yet been scrutinized: the *how* of deliveries.

During a great journey of ideation and iteration, the original concept of collaborative consumption and collaborative logistics was transformed into PostNalles. Along the way, the development focus shifted from CC to designing the most desirable service. Defining the *how* of PostNalles offers the opportunity to integrate the principles of collaborative consumption back into the design. But first it needs to be researched if consumers find it valuable to assimilate the principles of CC into the service.

The willingness to pay for the service has been quantitatively researched in the previous two studies. Participants were asked to indicate an amount of money that they find reasonable delivery costs. To better comprehend these numbers, it is needed to find out why people want to pay that amount of money. Therefore, next to how articles need to be delivered, this study will also focus on *why* people want to pay what they indicate they want to pay.

This last study focuses on the *how* of the delivery and why consumers are willing to pay what they want to pay. The goal is to answer three research questions:

1. How do consumers want their deliveries to be delivered?
2. Why do consumers want to receive their deliveries that way?
3. Why are consumers willing to pay what they are willing to pay?

6.4.2. Methodology

Two of the three research questions of this study are *why* questions, which indicates that qualitative questions have to be asked. At the same time, we want to know the numbers behind *how* participants want to receive their deliveries. The combination of qualitative and quantitative probing asks for a mixed-style study in which numerical answers, multiple-choice answers and textual answers can be given. For example: first, a participant is asked how much he or she would want PostNL to deliver his or her order (numerical). Then the participant is asked why he or she (not) wants PostNL to do the delivery (choose from multiple options).

As with the quantitative survey study, this study will also be conducted at PostNL's track and trace page. This time, the study is conducted in Enalyzer (this software has better functionalities for mixed-style surveys than Usabilla). The aim is to gather 300+ completed responses. Because we specifically want to probe for collaborative consumption, the survey was composed as follows:

1. The participant reads one of the three usage scenario studies.
2. The participant is asked how much he or she would like PostNL, a private person/smaller delivery company, or someone who is close to the article to deliver the article (score 1: not at all to 5: very much).
3. Depending on the answers of the last question, the participant is asked "Why do you (not) prefer a private person/smaller delivery company to deliver your item?" and "Why do you (not) prefer someone who is near the article to deliver your item?" Participants can choose their answers from a list of possible reasons, including a "other, namely..." answer.
4. To get someone who is near the item to bring it along for the consumer is a manifestation of collaborative consumption. Therefore, two deepening questions are asked about the delivery by someone who is close to the article anyway:

   a) "Imagine that having your article delivered by someone who is near your item is more sustainable than other types of delivery. Would you rather choose this option?" (score 1: definitely not to 5: certainly).

   b) "Imagine that having your article delivered by someone who is near your item is cheaper than other types of delivery. Would you rather choose this option?" (score 1: definitely not to 5: certainly).

These questions are followed by questions about how much people are willing to pay for the delivery by the three different parties. They are also asked why they are willing to pay that amount of money. The last two questions are about age and gender. The complete survey can be found in *Appendix P*.

6.4.3. Sample

Since every visitor of PostNL's track and trace webpage could potentially be a user of the new delivery service, every tenth visitor is invited to take the survey.

6.4.4. Results

Three surveys were put online: one survey for each usage scenario. The three surveys have been online for about a week which resulted in 330 participants completing the surveys. Enalyzer has a functionality that produces reports of survey results. These reports are rich in analysis data and are used in this result section. However, these reports apply to one survey only, i.e. one type of usage scenario. The analysis of the three surveys combined is performed in Excel.

First, the general statistics of this study are presented. Secondly, the results per survey are discussed. Finally, the results of the three studies combined are presented.

General statistics
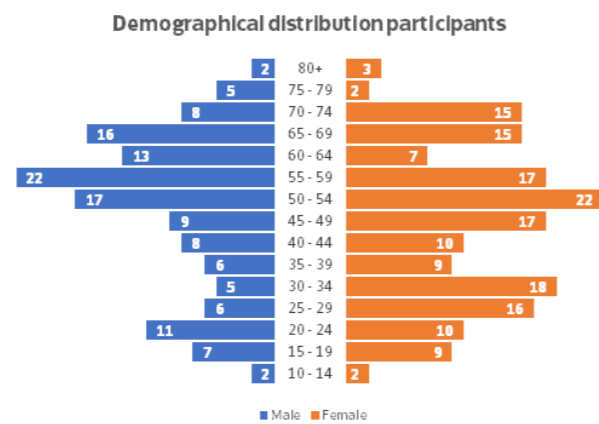
▲ Figure 26: demographics

330 participants completed the survey, whereof 137 males, 172 females, as is visualized by *figure 26*, and 19 individuals who rather not provide their gender. The average age of the participants is 47,4 years old. Participants with ages between 45 years and 59 years have completed the surveys most frequently. The average willingness to pay is €2,31 for the three usage scenarios combined.

▶ Usage scenario 1: Clothing and shoes * Limited product range or stock of shop

How much would you like the following parties to deliver your shoes?
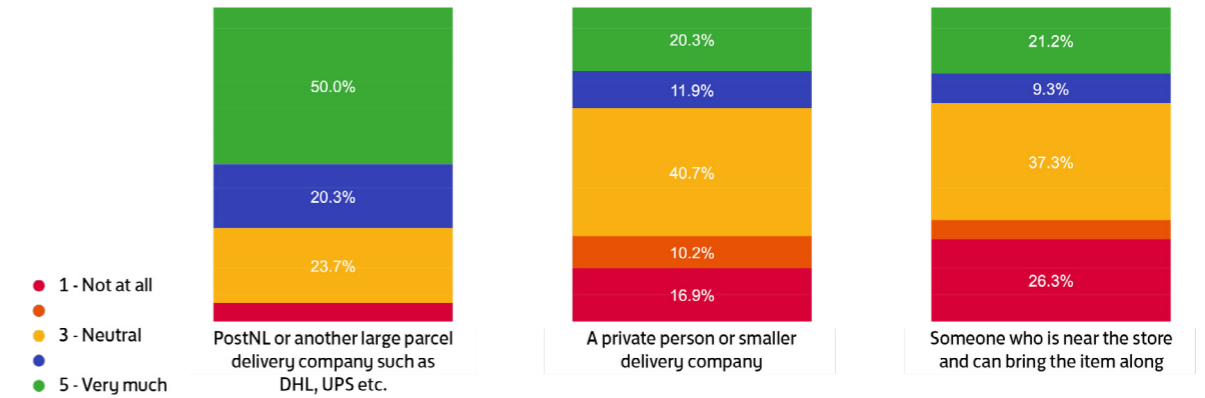
▲ Figure 27: deliverer preference for shoes

Figure 27 shows that 50% of the participants stated that they would like PostNL or another large parcel delivery company very much to deliver their shoes. A private person or smaller delivery company was neutrally preferred with a slight skewness to the positive side. To have the shoes delivered by someone who is near the store is neutrally preferred with a slight skewness to the negative side.
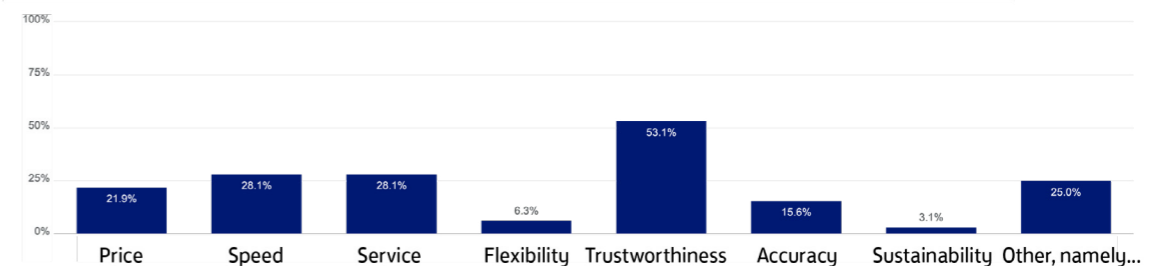
▲ Figure 28: reasons for not prefering a private person or smaller delivery company

To participants who do not want to have their shoes delivered by a private person or smaller delivery company, trustworthiness appears to be the biggest reason not to prefer these delivery parties (see *figure 28*). The reasons price, speed and service are the most common secondary reasons not to prefer these delivery parties. This indicates that participants perceive these delivery parties to be untrustworthy, costly, slow and lacking service.

Participants did not choose flexibility and sustainability often as reasons not to prefer a private person or smaller delivery company. Therefore, it could be assumed that the participants perceive delivery by these parties to be flexible and sustainable.

Why do you prefer to have your shoes delivered by a private person or smaller delivery company?

Chart values: Price 7.9%, Speed 55.3%, Service 28.9%, Flexibility 26.3%, Trustworthiness 34.2%, Accuracy 28.9%, Sustainability 2.6%, Other, namely... 18.4%
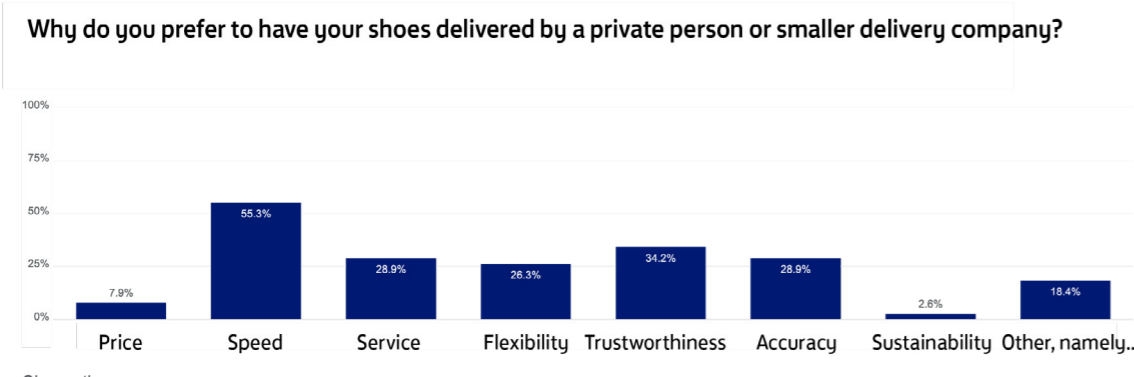
▲ *Figure 29: reasons for prefering a private person or smaller delivery company*

To participants who do want to have their shoes delivered by a private person or smaller delivery company, speed appears to be the biggest reason to prefer these delivery parties (see *figure 29*). The reasons service, flexibility, trustworthiness and accuracy are the most common secondary reasons to prefer these delivery parties. Earlier it was found that participants perceive delivery by a private person or a smaller delivery company to be untrustworthy and lackin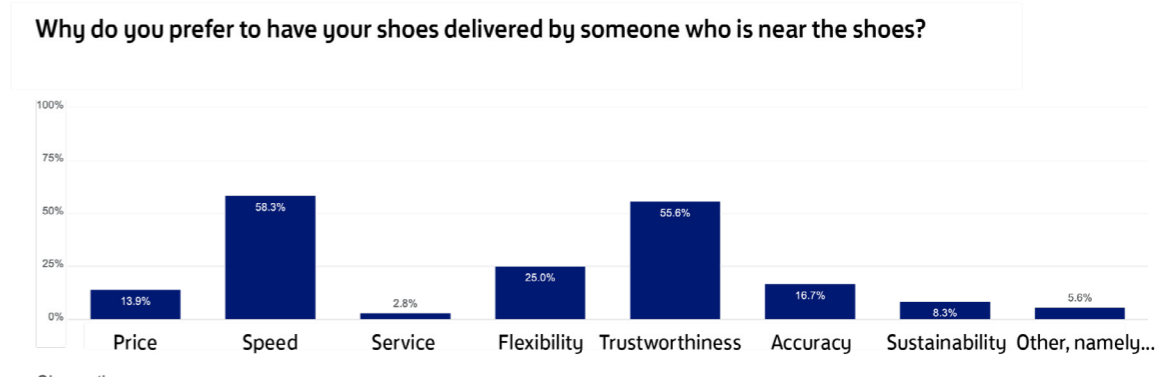g service whereas now participants indicate to prefer these delivery parties because of trustworthiness and good service. These are contradictory findings.
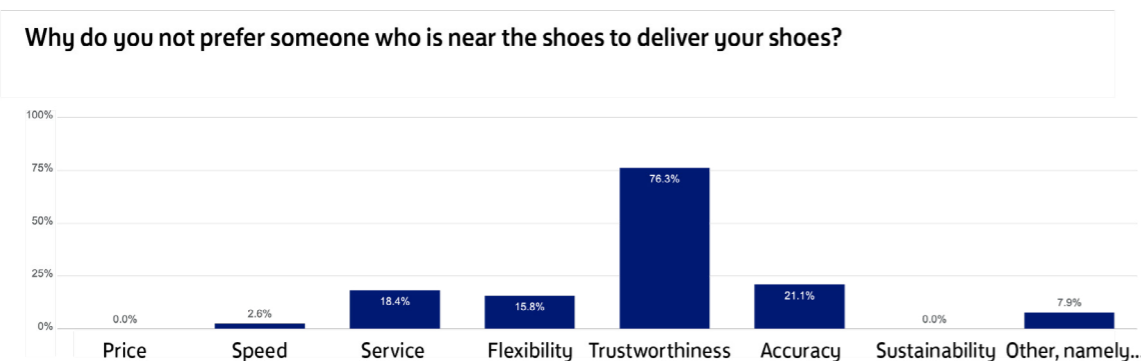
Participants did not choose price and sustainability as reasons to prefer a private person or smaller delivery company. Therefore, it could be assumed that the participants perceive delivery by these parties to be expensive and unsustainable. This is contradictory to the previous assumption that participants find delivery by these parties sustainable. Hence, no conclusions can be drawn concerning whether or not participants perceive delivery by a private person or smaller delivery company to be sustainable.

Why do you not prefer someone who is near the shoes to deliver your shoes?

Chart values: Price 0.0%, Speed 2.6%, Service 18.4%, Flexibility 15.8%, Trustworthiness 76.3%, Accuracy 21.1%, Sustainability 0.0%, Other, namely... 7.9%

▲ *Figure 30: reasons for not prefering someone near the shoes*

To participants who do not want to have their shoes delivered by someone who is near the shoes, trustworthiness appears to be the biggest reason not to prefer this delivery party (see *figure 30*). The reasons service, flexibility and accuracy are the most common secondary reasons not to prefer this delivery party. This indicates that participants perceive this delivery party to be untrustworthy, lacking service, inflexible and inaccurate.

Participants did not choose price, speed and sustainability as reasons not to prefer someone who is near the shoes. Therefore, it could be assumed that participants perceive delivery by this party to be cheap, quick and sustainable.

Why do you prefer to have your shoes delivered by someone who is near the shoes?

Chart values: Price 13.9%, Speed 58.3%, Service 2.8%, Flexibility 25.0%, Trustworthiness 55.6%, Accuracy 16.7%, Sustainability 8.3%, Other, namely... 5.6%

▲ *Figure 31: reasons for prefering someone near the shoes*

To participants who want to have their shoes delivered by someone who is near the shoes, speed and trustworthiness appear to be the biggest reasons to prefer this delivery party (see *figure 31*). The reasons price and service are the most common secondary reasons to prefer this delivery party. Earlier it was found that participants perceive delivery by someone near the charger to be untrustworthy and lacking service whereas now participants indicate to prefer this delivery party because of trustworthiness and good service. These are contradictory findings.

Participants did not choose service, accuracy and sustainability as reasons to prefer someone who is near the shoes. Therefore, it could be assumed that participants perceive delivery by this party to fall short of service, accuracy and sustainability. Again, contradictory to the previous assumption that participants find delivery by this party sustainable, no conclusions can be drawn concerning whether or not participants perceive delivery by someone who is near the shoes to be sustainable or not.

Imagine that having your shoes delivered by someone who is near your shoes is more sustainable than other types of delivery. Would you rather choose this option?

Chart values: Definitely not 16.1%, 7.6%, Neutral 37.3%, 16.9%, For sure 22.0%

▲ *Figure 32: influence of sustainability*

Participants do not seem to be more motivated to choose for delivery by someone who is near the shoes on the basis of sustainability: participants are mostly neutral about sustainability (see *figure 32*).

Imagine that having your shoes delivered by someone who is near your shoes is cheaper than other types of delivery. Would you rather choose this option?
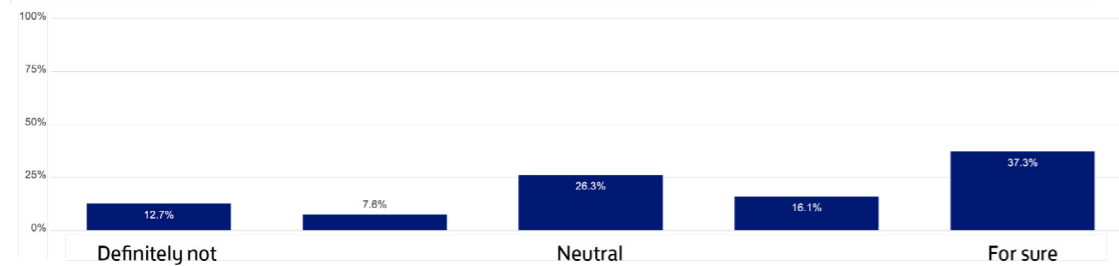
▲ *Figure 33: influence of price*

Participants seem to be motivated to choose for delivery by someone who is near the shoes on the basis of price perception: participants are leaning towards 'for sure' when asked if they would choose for delivery by someone near the shoes if that would be cheaper than other options (see *figure 33*).

▼ *Table 8: WTP and preference deliverer for shoes*

avg. WTP [price €0 to €10]	[€]
PostNL or other large deliverer	**3,58**
Private person or smaller deliverer	3,31
Someone nearby	**2,51**
Average	3,13
avg. preference for deliverer [score 1 to 5]	[1 to 5]
PostNL or other large deliverer	**4,11**
Private person or smaller deliverer	3,10
Someone nearby	**2,95**
Average	3,39

Participants are willing to pay an average of €3,58 for the delivery of the shoes when PostNL or another large delivery company delivers the shoes (see *table 8*). In comparison to the other delivery parties, participants are willing to pay the most for delivery by PostNL or another large deliverer and the least for delivery by someone near the shoes: €2,51. The average WTP for the shoes is €3,13.

Participants convincingly prefer PostNL or another large delivery company to deliver the shoes with a preference rating of 4,11 out of 5. Participants prefer someone near the shoes the least to deliver the shoes with a preference rating of 2,95.

▶ **Usage scenario 2: Electronics and accessories * Distance**

How much would you like the following parties to deliver your charger?

- 1 - Not at all
- 3 - Neutral
- 5 - Very much
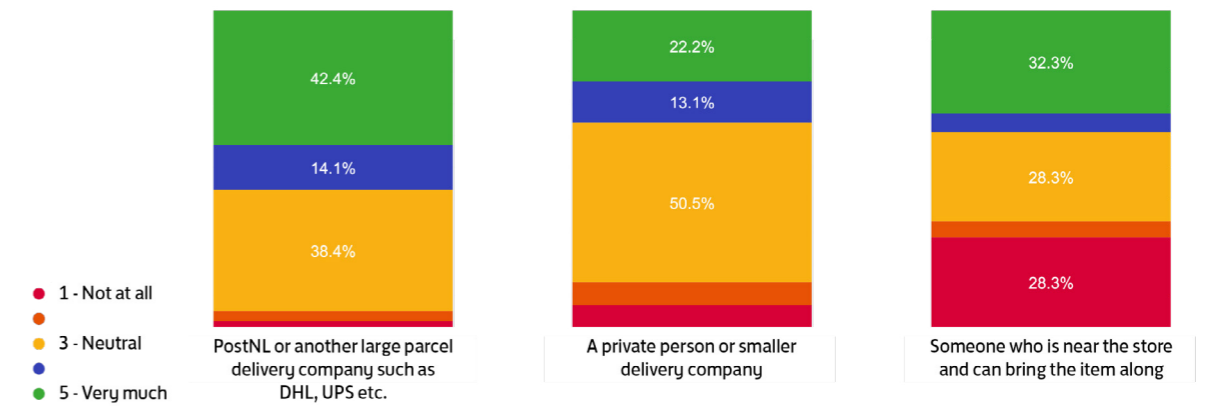
▲ *Figure 34: deliverer preference for the charger*

Figure 34 shows that 42% of the participants stated that they would like PostNL or another large parcel delivery company very much to deliver the charger. An almost equal number of participants stated that they are neutral about PostNL or a large deliverer delivering the charger. A private person or smaller delivery company was neutrally preferred with a slight skewness to the positive side. To have the charger delivered by someone who is near the store is preferred neutrally.

Why do you prefer not to have your charger delivered by a private person or smaller delivery company?
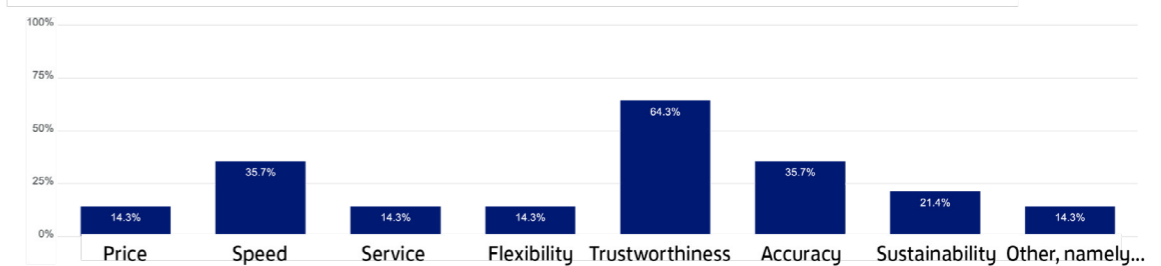
▲ *Figure 35: reasons for not prefering a private person or smaller delivery company*

To participants who do not want to have the charger delivered by a private person or smaller delivery company, trustworthiness appears to be the biggest reason not to prefer these delivery parties (see *figure 35*). The reasons speed and accuracy are the most common secondary reasons not to prefer these delivery parties. This indicates that participants perceive these delivery parties to be untrustworthy, slow and inaccurate.

Participants did not choose price, service and flexibility often as reasons not to prefer a private person or smaller delivery company. Therefore, it could be assumed that the participants perceive delivery by these parties to be cheap, providing good service and flexible.

Why do you prefer to have your charger delivered by a private person or smaller delivery company?
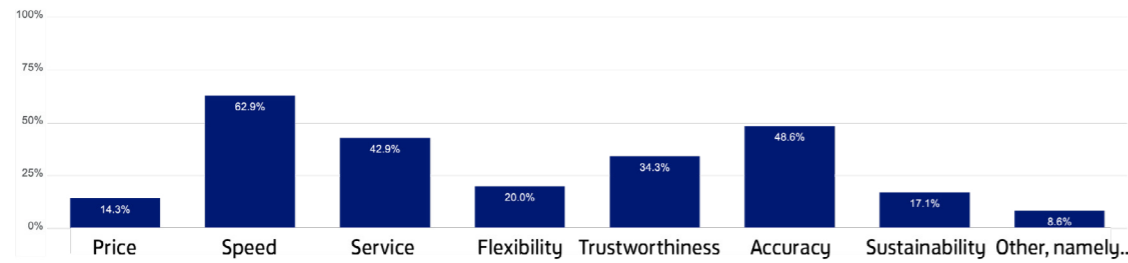
▲ *Figure 36: reasons for prefering a private person or smaller delivery company*

To participants who do want to have the charger delivered by a private person or smaller delivery company, speed appears to be the biggest reason to prefer these delivery parties (see *figure 36*). The reasons service, trustworthiness and accuracy are the most common secondary reasons to prefer these delivery parties. Earlier it was found that participants perceive delivery by a private person or a smaller delivery company to be untrustworthy, slow and inaccurate whereas now participants indicate to prefer these delivery parties because of speed, trustworthiness and accuracy. These are contradictory findings.
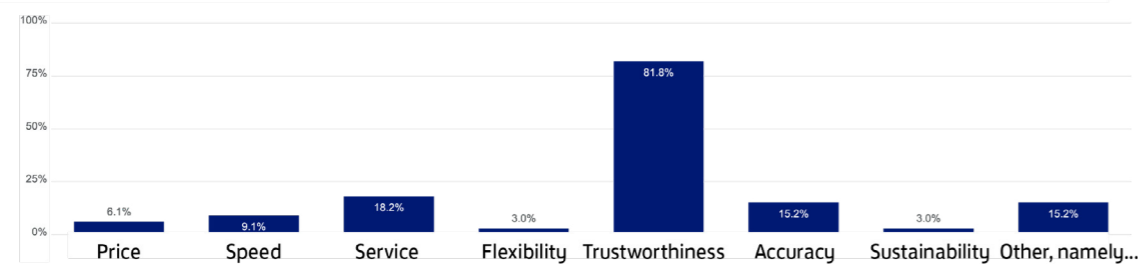
Participants did not choose price and sustainability as reasons to prefer a private person or smaller delivery company. Therefore, it could be assumed that the participants perceive delivery by these parties to be expensive and unsustainable. This is contradictory to the previous assumption that participants find delivery by these parties cheap. Hence, no conclusions can be drawn concerning whether or not participants perceive delivery by a private person or smaller delivery company to be cheap.

Why do you not prefer someone who is near the charger to deliver your charger?

▲ *Figure 37: reasons for not prefering someone near the charger*

To participants who do not want to have the charger delivered by someone who is near the charger, trustworthiness appears to be the biggest reason not to prefer this delivery party (see *figure 37*). The reasons service and accuracy are the most common secondary reasons not to prefer this delivery party. This indicates that participants perceive this delivery party to be untrustworthy, lacking service and inaccurate.

Participants did not choose flexibility and sustainability as reasons not to prefer someone who is near the charger. Therefore, it could be assumed that participants perceive delivery by this party to be flexible and sustainable.

Why do you prefer to have your charger delivered by someone who is near the charger?
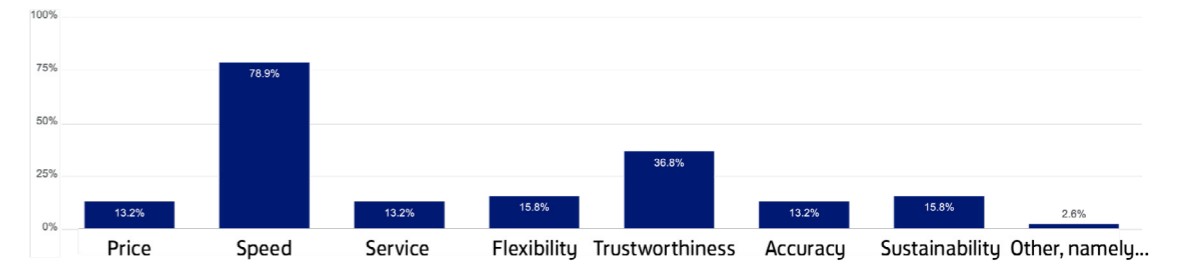
▲ *Figure 38: reasons for prefering someone near the charger*

To participants who want to have the charger delivered by someone who is near the charger, speed and trustworthiness appear to be the biggest reasons to prefer this delivery party (see *figure 38*). The reasons flexibility and sustainability are the most common secondary reasons to prefer this delivery party. Earlier it was found that participants perceive delivery by someone near the charger to be untrustworthy. This is a contradictory finding.

The other reasons to choose for delivery by someone near the charger were chosen equally often.

Imagine that having your charger delivered by someone who is near your charger is more sustainable than other types of delivery. Would you rather choose this option?
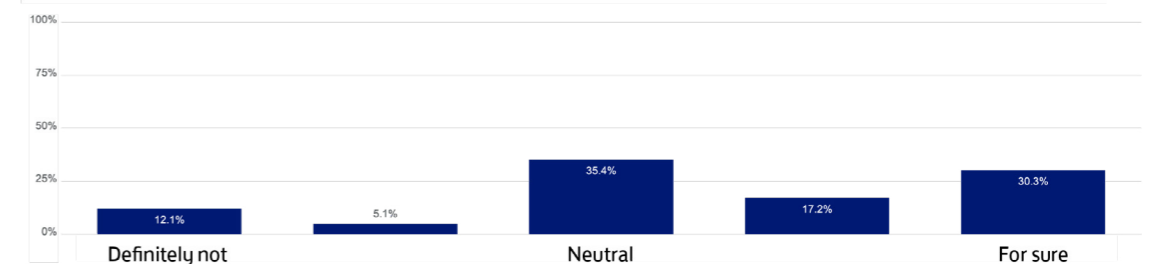
▲ *Figure 39: influence of sustainability*

Participants seem to be more motivated to choose for delivery by someone who is near the charger on the basis of sustainability: 47,5% of the participants indicate that they would choose delivery by someone near the charger sooner because of sustainability (see *figure 39*).

Imagine that having your charger delivered by someone who is near your charger is cheaper than other types of delivery. Would you rather choose this option?
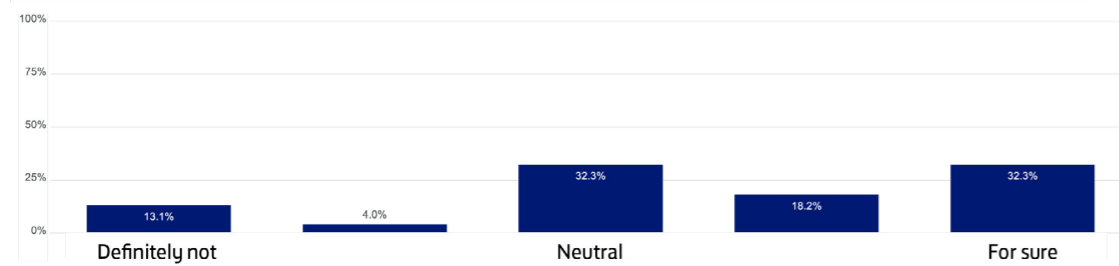
▲ *Figure 40: influence of price*

Participants seem to be motivated to choose for delivery by someone who is near the charger on the basis of price perception: participants are leaning towards 'for sure' when asked if they would choose for delivery by someone near the charger if that would be cheaper than other options (see *figure 40*).

▼ *Table 9: WTP and preference deliverer for the charger*

avg. WTP [price €0 to €10]	[€]
PostNL or other large deliverer	2,68
Private person or smaller deliverer	**2,85**
Someone nearby	**2,07**
Average	2,53

avg. preference for deliverer [score 1 to 5]	[1 to 5]
PostNL or other large deliverer	**3,92**
Private person or smaller deliverer	3,36
Someone nearby	**3,09**
Average	3,46

Participants are willing to pay an average of €2,85 for the delivery of the charger when a private person or smaller delivery company delivers the charger (see *table 9*). In comparison to the other delivery parties, participants are willing to pay the most for delivery by a private person or smaller delivery company the least for delivery by someone near the charger: €2,07. The average WTP for the charger is €2,53.

Participants prefer PostNL or another large delivery company to deliver the charger with a preference rating of 3,92 out of 5. Participants prefer someone near the charger the least to deliver the shoes with a preference rating of 3,09.

▶ **Usage scenario 3: Food and drinks * Ease**

How much would you like the following parties to deliver your snack?

● 1 - Not at all
●
● 3 - Neutral
●
● 5 - Very much
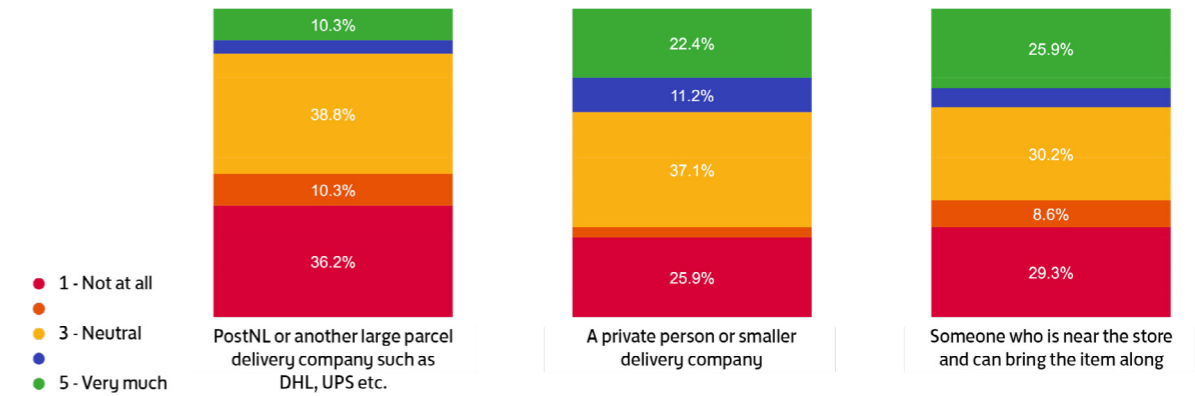
▲ *Figure 41: deliverer preference for the snack*

Figure 41 shows that an astonishing 85,3% of the participants is neutral about or does not want PostNL or another large deliverer to deliver their snack. A private person or smaller delivery company was neutrally preferred with a slight skewness to the positive side. To have the snack delivered by someone who is near the store is neutrally preferred.

Why do you prefer not to have your snack delivered by a private person or smaller delivery company?
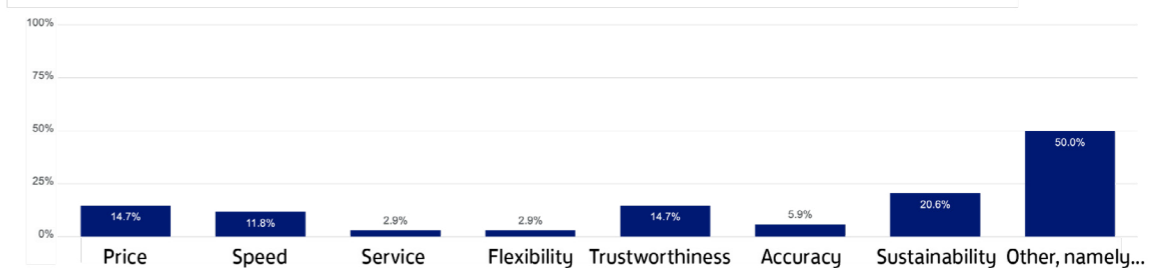
▲ *Figure 42: reasons for not prefering a private person or smaller delivery company*

To participants who do not want to have their snack delivered by a private person or smaller delivery company, sustainability appears to be the biggest selectable reason not to prefer these delivery parties (see *figure 42*). The 'other, namely…' option has many more replies. Participants indicate that they cannot imagine that they would order a snack and thus do not want anyone to deliver the snack. They also reply that if you are longing for a snack, you should get it yourself. These participants seem to be principally against having a snack delivered.

Why do you prefer to have your snack delivered by a private person or smaller delivery company?

Price 15.4% | Speed 51.3% | Service 41.0% | Flexibility 28.2% | Trustworthiness 46.2% | Accuracy 38.5% | Sustainability 23.1% | Other, namely... 2.6%

▲ *Figure 43: reasons for preferring a private person or smaller delivery company*

To participants who do want to have the snack delivered by a private person or smaller delivery company, speed and trustworthiness appear to be the biggest reasons to prefer these delivery parties (see *figure 43*). The reasons service and accuracy are the most common secondary reasons to prefer these delivery parties.

Participants did not choose price and sustainability as reasons to prefer a private person or smaller delivery company. Therefore, it could be assumed that the participants perceive delivery by these parties to be expensive and unsustainable. This coincides with the previous finding that the participants perceive the delivery of a snack to be unsustainable.

Why do you not prefer someone who is near the snack to deliver your snack?

Price 6.8% | Speed 13.6% | Service 11.4% | Flexibility 9.1% | Trustworthiness 50.0% | Accuracy 13.6% | Sustainability 9.1% | Other, namely... 36.4%

▲ *Figure 44: reasons for not preferring someone near the snack*

To participants who do not want to have the snack delivered by someone who is near the snack, trustworthiness appears to be the biggest reason not to prefer this delivery party (see *figure 44*). Again, the 'other, namely...' answer was given many times and again, people replied that they do not want to order a snack or that people should get their own snacks. Other than having the snack delivered by a private person or smaller delivery company, participants now also indicate that they find privacy an issue.

Participants did not choose price, flexibility and sustainability as reasons not to prefer someone who is near the snack. Therefore, it could be assumed that participants perceive delivery by this party to be cheap, flexible and sustainable.
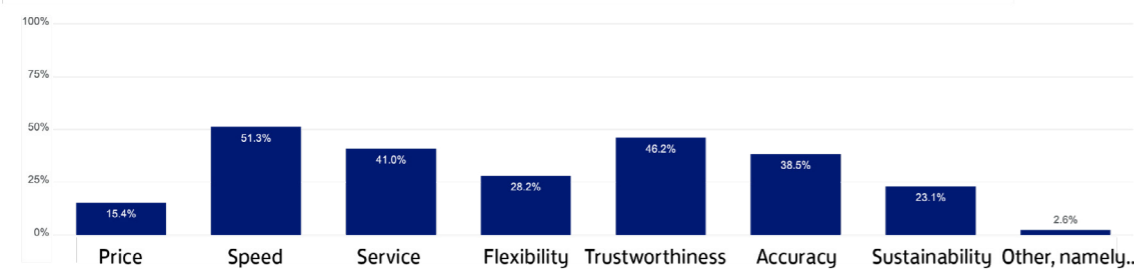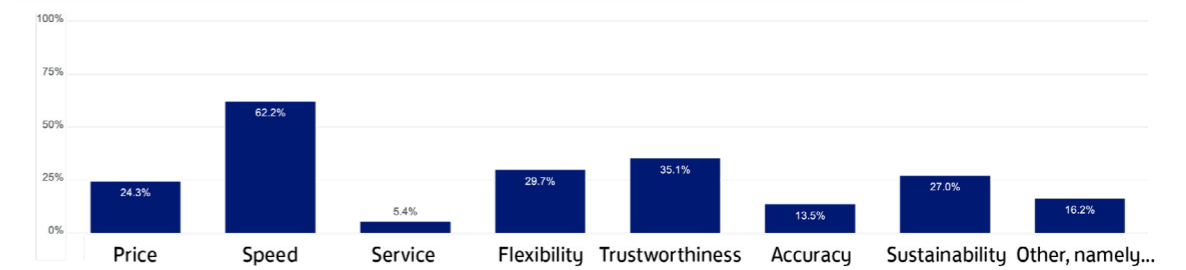
Why do you prefer to have your snack delivered by someone who is near the snack?

Price 24.3% | Speed 62.2% | Service 5.4% | Flexibility 29.7% | Trustworthiness 35.1% | Accuracy 13.5% | Sustainability 27.0% | Other, namely... 16.2%

▲ *Figure 45: reasons for prefering someone near the snack*

To participants who want to have their snack delivered by someone who is near the snack, speed and trustworthiness appear to be the biggest reasons to prefer this delivery party (see figure 45). The reasons flexibility and sustainability are the most common secondary reasons to prefer this delivery party. Earlier it was found that participants perceive delivery by someone near the snack to be untrustworthy whereas now participants indicate to prefer this delivery party because of trustworthiness. This is a contradictory finding.

Participants did not choose service and accuracy as reasons to prefer someone who is near the snack. Therefore, it could be assumed that participants perceive delivery by this party to fall short of service and accuracy.

Imagine that having your snack delivered by someone who is near your snack is more sustainable than other types of delivery. Would you rather choose this option?

Definitely not 17.2% | 6.0% | Neutral 24.1% | 14.7% | For sure 37.9%
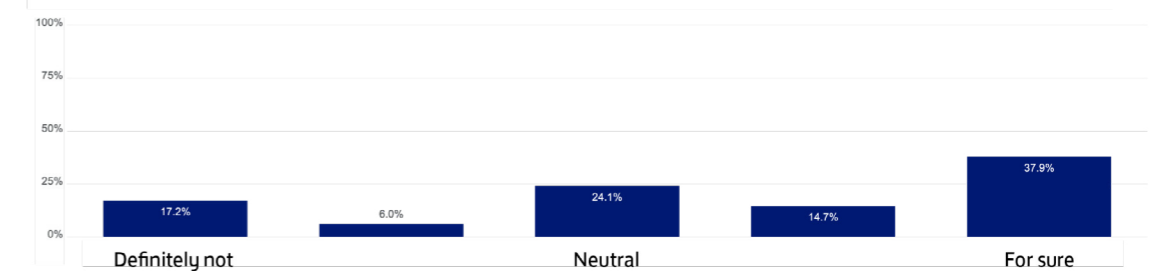
▲ *Figure 46: influence of sustainability*

Participants seem to be motivated to choose for delivery by someone who is near the snack on the basis of sustainability: participants are leaning towards 'for sure' when asked if they would choose for delivery by someone near the snack if that would be more sustainable than other options (see *figure 46*).

Imagine that having your snack delivered by someone who is near your snack is cheaper than other types of delivery. Would you rather choose this option?
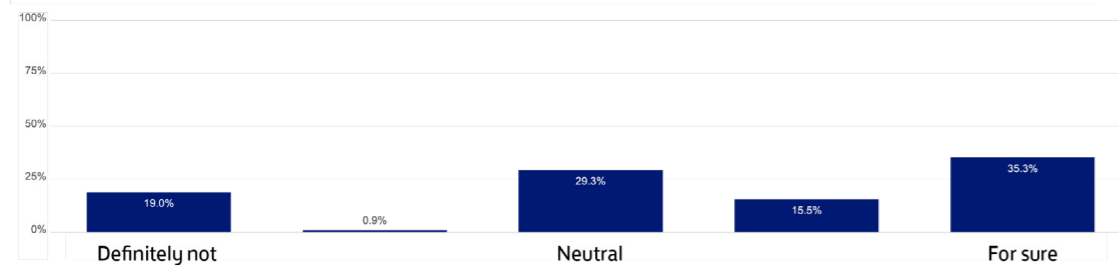
▲ *Figure 47: influence of price*

Participants seem to be motivated to choose for delivery by someone who is near the snack on the basis of price perception: participants are leaning towards 'for sure' when asked if they would choose for delivery by someone near the snack if that would be cheaper than other options (see *figure 47*).

▼ *Table 10: WTP and preference deliverer for the snack*

avg. WTP [price €0 to €10]	[€]
PostNL or other large deliverer	1,34
Private person or smaller deliverer	1,52
Someone nearby	0,95
Average	1,27

avg. preference for deliverer [score 1 to 5]	[1 to 5]
PostNL or other large deliverer	2,41
Private person or smaller deliverer	3,01
Someone nearby	2,94
Average	2,79

Participants are willing to pay an average of €1,52 for the delivery of the snack when a private person or smaller delivery company delivers the snack (see *table 10*). In comparison to the other delivery parties, participants are willing to pay the most for delivery by a private person or smaller delivery company the least for delivery by someone near the charger: €0,95. The average WTP for the snack is €1,27.

In contrast to the delivery of the shoes or the charger, the preferred delivery party for the delivery of the snack is a private person or smaller delivery company with a rating of 3,01 out of 5. PostNL or another large delivery company are least preferred to deliver the snack with a rating of 2,41.

Usage scenarios combined
The three usage scenarios have been analyzed separately to find how people respond to specific usage scenarios. In this section, the three scenarios will be compared and the combined results will be presented.

▼ *Table 11: WTP and preference deliverer combined*

| avg. preference for deliverer	Shoes	Charger	Snack	Total
PostNL or other large deliverer [score 1 to 5]	4,11	3,92	2,41	3,47
Private person or smaller deliverer [score 1 to 5]	3,1	3,36	3,01	3,15
Someone nearby [score 1 to 5]	2,95	3,09	2,94	2,99
Average [score 1 to 5]	3,39	3,46	2,79	3,13

As is depicted by *table 11*, PostNL or another large deliverer are the most preferred deliverers over the three usage scenarios with an average score of 3,47. PostNL or another large deliverer are most preferred in case of the shoes and charger, but are the least favorite deliverers in case of the snack: then a private person or smaller deliverer are preferred. Someone nearby the product is least preferred in case of the shoes and charger.

Why do you prefer not to have your item delivered by a private person or smaller delivery company?

Reason [times mentioned]	Shoes	Charger	Snack	Total	%
Price	7	2	5	14	12%
Speed	9	5	4	18	15%
Service	9	2	1	12	10%
Flexibility	2	2	1	5	4%
Trustworthiness	17	9	5	31	26%
Accuracy	5	5	2	12	10%
Sustainability	1	3	6	10	8%
Different	7	2	10	19	16%

▲ *Table 12: reasons why people do and do not want to have their item delivered by a private person or smaller delivery company*

Why do you prefer to have your item delivered by a private person or smaller delivery company?

Reason [times mentioned]	Shoes	Charger	Snack	Total	%
Price	3	5	6	14	5%
Speed	21	22	20	63	25%
Service	11	15	15	41	16%
Flexibility	10	7	10	27	11%
Trustworthiness	13	12	17	42	16%
Accuracy	11	17	15	43	17%
Sustainability	1	6	9	16	6%
Different	7	3	1	11	4%

▲ Table 12: reasons why people do and do not want to have their item delivered by a private person or smaller delivery company

Why do you not prefer someone who is near the item to deliver your item?

Reason [times mentioned]	Shoes	Charger	Snack	Total	%
Price	0	2	3	5	3%
Speed	1	3	6	10	6%
Service	6	6	5	17	10%
Flexibility	6	1	4	11	7%
Trustworthiness	29	27	21	77	46%
Accuracy	8	5	6	19	11%
Sustainability	0	1	4	5	3%
Different	3	5	15	23	14%

Why do you prefer someone who is near the item to deliver your item?

Reason [times mentioned]	Shoes	Charger	Snack	Total	%
Price	5	5	9	19	9%
Speed	21	30	23	74	34%
Service	1	5	2	8	4%
Flexibility	9	6	11	26	12%
Trustworthiness	20	14	13	47	22%
Accuracy	6	5	5	16	7%
Sustainability	3	6	10	19	9%
Different	2	1	6	9	4%

▲ Table 13: reasons why people do and do not want to have their item delivered by someone near the item

In *table 12* above the reasons why people do and do not want a private person or smaller delivery company to deliver the delivery are presented. Speed and trustworthiness are the two main reasons why people do not want a private person or smaller delivery company to deliver their items. In the case of the snack, many people replied 'other, namely...' and stated that they do not want to have a snack delivered at all.

At the same time, people do want a private person or smaller delivery company to deliver their items because of speed, accuracy and trustworthiness. This is completely contradictory to the reasons why people do not want to have their items delivered by these parties. It seems as if trustworthiness and speed are the two main reasons for people to consider a private person or smaller delivery company. These reasons either evoke a positive or negative association with these delivery parties, depending upon the participant.

Trustworthiness is mentioned 31 and speed is mentioned 18 times as reason not to choose for delivery by a private person or smaller delivery company. Trustworthiness is mentioned 42 times and speed 63 times as reason to choose for these delivery parties.

In *table 13* on the right the reasons why people do and do not want someone who is near the item to deliver the delivery are presented. Again, trustworthiness is the main reason why people do not want someone who is near the item to deliver their items. Again in the case of the snack, many people replied 'other, namely...' and stated that they do not want to have a snack delivered at all.

And again at the same time, people do want someone who is near the item to deliver their items because of speed and trustworthiness. This is completely contradictory to the reasons why people do not want to have their items delivered by this person. It seems as if trustworthiness and speed are the two main reasons for people to consider someone who is near the item. These reasons either evoke a positive or negative association with this delivery party, depending upon the participant.

Trustworthiness is mentioned 77 and speed is mentioned 10 times as reason not to choose for delivery by someone who is near the item. Trustworthiness is mentioned 47 times and speed is mentioned 74 times as reason to choose for this delivery party.

Looking at *table 14*, we find that sustainability and price influence the choice for someone who is near the item in case of the shoes the least (3 and 3,4 out of 5). Sustainability and price influence the decision for someone who is near the item the most in case of the snack

(3,53 and 3,52). Across all usage scenarios price has the most influence on participants' decision to choose a deliverer near the item. Both sustainability and price have a positive influence on participant's decision to choose for someone near the item.

| avg. preference for deliverer	Shoes	Charger	Snack	Total
avg. preference someone nearby SUSTAINABILITY	3	3,48	3,53	3,33
avg. preference someone nearby CHEAPER	3,4	3,53	3,52	3,48

▲ *Table 14: influence of sustainability and price*

▼ *Table 15: average WTP and preference for deliverers*

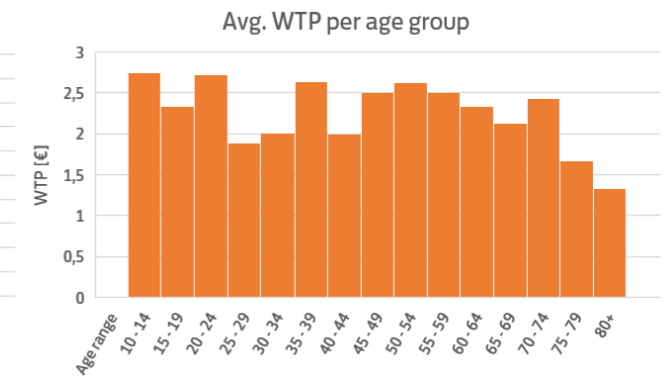| avg. WTP [price €0 to €10]	Shoes	Charger	Snack	Total
PostNL or other large deliverer	3,58	2,68	1,34	2,54
Private person or smaller deliverer	3,31	2,85	1,52	2,55
Someone nearby	2,51	2,07	0,95	1,84
Average	3,13	2,53	1,27	2,31
Percentage 0 WTP [%]	**Shoes**	**Charger**	**Snack**	**Total**
PostNL or other large deliverer	22,0	29,3	40,5	30,6
Private person or smaller deliverer	21,2	25,3	32,8	26,4
Someone nearby	43,2	45,5	53,4	47,4
Average	28,8	33,4	42,2	34,8

As depicted by *table 15* on the left page, participants are willing to pay the most for delivery by a private person or smaller deliverer: €2,55 on average. This is only €0,01 more than the average WTP for delivery by PostNL or another large delivery company across three categories. People are willing to pay the most for a private person or smaller delivery company in case of the charger (€2,85) and the snack (€1,52). In case of the shoes, people are willing to pay the most for PostNL or another large deliverer (€3,58). The WTP for someone nearby the item is lowest in all three scenarios with an average WTP of €2,31.

If we look at the percentage of people that is willing to pay for the delivery in the first place, we see that participants are mostly willing to pay in the first place for delivery by a private person or smaller deliverer (26,4%). Almost half of the participants is not willing to pay for the delivery by someone who is near the item at all. Less than a third of the participants is willing to pay for the delivery by PostNL or another larger delivery company. Across the three delivery parties, it was found that 34,8% of the participants is not willing to pay for any of the usage scenarios at all.
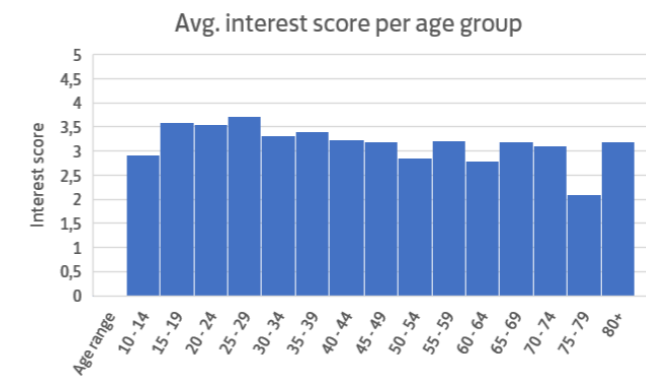
▲ *Figure 48: average interest score per age group*

▲ *Figure 49: average WTP per age group*

Figure 48 displays the interest in delivery across three delivery parties combined per age group. The vertical axis represents the interest score [1 to 5]. The horizontal axis represents the age group. The interest score is quite steady throughout all age groups with exception of the 10-14 age group and the 75-79 age group: these groups are significantly less interested in the delivery by the three delivery parties. Nota bene: these numbers do not display the direct interest in the service, but the interest in the delivery of the usage scenario item. The younger participants, ages 15 - 29 seem to be most interested in the delivery of the usage scenario item. Because of the unequally distributed ages of participants (see *General statistics*), no hard conclusions can be drawn from this data.

Figure 49 displays the WTP for the delivery across three delivery parties combined per age group. The vertical axis represents the WTP [€]. The horizontal axis represents the age group. The graph shows a cosinus-like shape with relatively high WTP for age groups 10-24, low WTP for age groups 25-34, high WTP for age group 35-39, low WTP for age group 40-44, high WTP for age groups 45-64 and low WTP for age groups 65-80+. Due to the unequally distributed ages of participants (see *General statistics*), the WTP per age group is possibly not representative of the actual WTP. Because of the unequally distributed ages of participants (see *General statistics*), no hard conclusions can be drawn from this data.

6.4.5. Discussion

A first point of discussion is the absence of the results of the last open question that concerned why people are willing to pay what they are willing to pay. Various answers were given to that question, such as: "delivery costs are already included in the order", "because this seems like a reasonable amount" and "free delivery... who doesn't want that". The aim of that question was to find where exactly people are willing to pay for, but the question failed to derive results from the participants' answers. Many people replied with a simple "no" and "because nobody works for free". I was not able to derive sensible results from the responses to this question. In case that where people are willing to pay for exactly needs to be researched in future studies, a different type of approach or wording should be used.

Another point of discussion is the general unwillingness of people to pay for deliveries. Across the three surveys, 34,8% of the participants are not willing to pay any money at all. These people should be excluded from the target group. No correlation can be found between the unwillingness to pay and demographic data such as age and gender. Therefore, a conclusion about who should be included or excluded from the target group cannot be drawn.

The results also indicate that the larger or more expensive an item is, the more people are willing to pay for its delivery, and the higher the overall delivery preference across the three types of delivery parties. For instance: people are willing to pay an average of €3,13 for the shoes and indicate a preference score of 3,39 across the three types of deliverers, whereas people are willing to pay only €1,27 for the snack and indicate a preference score of 2,79 across the three types of deliverers. It could also be that size and price are not the only determinants for WTP and delivery preference: since people are not used to having less valuable items delivered such as a snack, it could be that the participants are not so keen on having a snack delivered, therefore indicating a lower WTP and lower delivery preference score. Other information that was provided in the usage scenario might also have influenced people's WTP and preference scores, such as the delivery speed and need for the item. Therefore, if it is desired to discover how a product type influences the WTP and

preference score, future research needs to be performed.

The questions that probe for a reason why people do or do not want to have their item delivered by a certain deliverer included an 'other, namely...' answer option. Many participants used this option to state that they do not want to have that item delivered at all, or they answered "I don't see what this has to do with PostNL". It was not the intention to receive these types of answers. Nonetheless, it was a valuable lesson in survey configuration.

A last major point of discussion is the ambiguity of answers that were given to the questions that probe for a reason why people do or do not want to have their items delivered by a certain deliverer. Speed and trustworthiness are the main reasons for people to want or not want a certain deliverer to deliver their items. This is a strong finding in itself, but it would also be very valuable to find out why both reasons can either be negatively or positively associated with the preference for a certain type of deliverer. I recommend doing so in a future study.

6.4.6. Conclusion

This research was conducted to answer three research questions:
1. How do consumers want their deliveries to be delivered?
2. Why do consumers want to receive their deliveries that way?
3. Why are consumers willing to pay what they are willing to pay?

To discover how, it was researched if participants want to have their items delivered by PostNL or another large delivery company, by a private person or smaller delivery company or by someone nearby the item. Across the three surveys, participants mostly prefered PostNL or a larger delivery company to deliver their items.

As was explained in section 6.4.1. Research goal, the aim of this study also was to discover if there is value in interweaving the principles of collaborative consumption into the service design. The results of this study are not necessarily in favor of this idea since delivery by someone nearby the item scores lowest in all cases. However, the study results also indicate that when the delivery entails

a smaller or cheaper item such as a snack, people are more inclined to choose this type of delivery. If the delivery by someone nearby the item is more sustainable than other types of delivery, people are willing to choose this delivery type sooner (score 3,33 out of 5). Price is a stronger stimulus: people are willing to choose this delivery type sooner when the delivery is cheaper than other types of delivery (3,48 out of 5). In conclusion, the principles of collaborative consumption cannot be applied to all deliveries. Only specific products might be suitable to be delivered through CC principles, especially when benefits such as sustainable delivery and a lower price are offered. It is my advice to focus on the core of the new delivery service first before CC delivery options are offered too, as will be explained in more detail in *chapter 7.5 Strategic Roadmap*.

This study also focused on the reasons why people prefer certain delivery parties. The two main reasons for the participants to consider a delivery party are speed and trustworthiness. Remarkably, speed and trustworthiness are the reasons why people do want a certain deliverer to deliver their items and, at the same time, are the reasons why people do not want a certain deliverer to deliver their items. These reasons either evoke a positive or negative association with the delivery party, depending upon the participant. PostNL should address the ambiguity of these reasons in two ways: PostNL needs to make sure that delivery service is fast and PostNL needs to make sure that consumers perceive the service (and the deliverer) as trustworthy. Since PostNL has the fair advantage of having a trustworthy image, the service has to draw from this image by communicating that the new service is hosted by PostNL.

The last research question focused on why consumers are willing to pay what they are willing to pay. Unfortunately, I was not able to derive sensible results from the responses to this question. If PostNL would like to discover why people are willing to pay these amounts of money, I advise to conduct a study that focuses especially on this question.

With the goal to collect information about the potential target group, the analysis of the study results also aimed at finding a connection between interest in the delivery of the usage scenario items and age, and WTP

and age. The results indicate that the interest score is quite steady throughout all age groups, although the younger participants, ages 15 - 29, seem to be most interested in the delivery of the usage scenario item. The WTP differs considerably per age group. This is likely to be caused by the unequally distributed ages of participants.

6.5 VALIDATION CONCLUSIONS

In *chapter 6.1. Concept Validation* it was explained that it was decided to perform several studies that together give answer to three main research questions:

1. Do people want to use the new delivery service?
2. Are people willing to pay for the new delivery service?
3. What are the most common usage scenarios of the new delivery service?

This chapter will answer these three research questions plus provide an approximation of who the target group will be.

6.5.1. Delivery service desirability

The qualitative narrative study and the quantitative survey study both focused on the desirability of the new delivery service. The main research question of the narrative study was "Do people want to use the new delivery service?" Based upon people's ability to imagine their usage stories, the many positive reactions to the question that probed people's opinions, and the high willingness to pay for the service, it can be said that people find the service desirable.

The survey study found that the average consumer is interested in the service. An average interest score of 4,03 (on a scale from 1 to 5) was assigned by the participants. Frequent orderers even indicate that they find the new service almost 'very interesting' with a score of 4,83. These numbers indicate that consumers have the desire to use the service.

The two studies both conclude that the new delivery service is desirable to consumers.

6.5.2. Willingness to pay

All three studies have inquired for people's willingness to pay. Because the three studies approached the inquiry for WTP differently, the quantitative results from the question "How much are you willing to pay for...?" that was asked in all three studies cannot be directly compared to one another. Nevertheless, it is still possible to draw conclusions in terms of the participants' willingness to pay.

All three studies found that, on average, people are willing to pay at least what you would expect a delivery to cost (say: €1,50). The average WTP in the narrative study was €6,02, in the survey study €2,66 and in the delivery mode study €2,31. In all three studies, there were always participants who are not willing to pay for the service at all. These people should be left out of the target group of the new service. The three studies found that WTP is not influenced by age, nor by gender or domestic situation.

The order frequency does influence the WTP. Results from the survey study show that more than half of the frequent orderers (> 4 times a month) expect free delivery. They are willing to pay an average amount of €2,47 per order. Average orderers (between 2 and 3 times a month) only expect free delivery 24,1% of the time. They are willing to pay €3,09 per order. These study results need to be explored in future research to identify a target group.

In the delivery mode study participants indicated to be willing to pay the most for delivery by a private person or smaller delivery company. Participants also indicated to be most often willing to pay in the first place for delivery by this party. People are willing to pay the least for delivery by someone who is nearby the item, and people are willing to pay in the first place least often for this type of delivery. Participants are willing to pay the most for delivery by a private person or smaller deliverer: €2,55 on average.

In the narrative and delivery mode studies it was discovered that the value and size of the desired item influence the WTP: the cheaper or smaller the item, the less people are willing to pay.

6.5.3. Most common usage scenarios

The narrative study and survey study both aimed at defining the most common usage scenarios. The *whats*, *whys*, *wheres* and *whens* of the usage scenarios together represent the range of consumer needs in terms of what consumers perceive as desired deliveries. In agreement with PostNL it was decided that these three usage scenarios are used as basis for service design:

> 1. Clothing and shoes * Limited product range or stock of shop

A certain pair of shoes is not available in the local store, but a branch in the adjacent city does have the shoes in stock. The consumer doesn't want to travel to the other branch and needs the shoes before tonight.

> 2. Electronics and accessories * Distance

A consumer needs a telephone charger but thinks that the store is too far away. The telephone is almost empty. The consumer wants to have the charger as soon as possible.

> 3. Food and drinks * Ease

A consumer has a lazy day today and fancies a tasteful snack from the supermarket, but the consumer doesn't feel like going out and getting the snack himself or herself. The consumer is hungry and would like to eat the snack ASAP.

6.5.4. Target group

In *chapter 1.2. Project Approach* it was discussed that one of the three components of this thesis to determine the target group for the new service. In the narrative study, survey study and delivery mode study, demographic information was queried from the participants such as age and gender. Additionally, the narrative study inquired into how often participants receive deliveries and how often they use an app to order an item. The survey study inquired how frequently people receive deliveries and what people's domestic situation is.

The participants of the narrative study were relatively young compared to the survey and delivery mode studies: an average age of 29,9 versus 51,8 and 47,4 years old. The results of the narrative study point out that age and order frequency do not influence the WTP or opinion on the service. This could be caused by the fact that the ages of the people within the sample of the narrative study are adjacent which makes it harder to draw significant conclusions from them.

The results of the survey study indicate that *frequent orderers* have the most interest in the service by far (interest score 4,83 out of 5). *Average orderers* are willing to pay the most money and are mostly willing to pay in the first place. The frequent orderers and average orderers group would be best suited as target group. Because age group 20 - 29 is strongly under-represented in this study and assumed to be a large part of the potential target group, it is important to involve them in future studies. The domestic situation does not influence the interest in the service.

The results of the delivery mode study indicate that the usage scenario delivery interest score is quite steady throughout all age groups, although the younger participants, ages 15 - 29, seem to be most interested in the delivery of the usage scenario item. The WTP differs considerably per age group. This is likely to be caused by the unequally distributed ages of participants.

If we rely upon or common sense and logic reasoning, it can be expected that the early adopters of the service have a couple of characteristics in common:
They are frequent receivers of deliveries;
They have experience with online ordering; and
They have experience with delivery service apps, such as Uber Eats or Thuisbezorgd.

These characteristics point at digital-savvy, younger consumers. They have the ability to introduce the new service to other potential users as well - the early majority. The early majority would then be parents, acquaintances or colleagues that are a bit older, receive deliveries frequently and have experience with online ordering, but are a bit less familiar with delivery service apps. Their introduction to the service happens through the early adopters.

The expected early adopters of the service, the digital-savvy, younger consumers, are the groups of participants that were under-represented in the survey study and delivery mode study. Therefore, it is strongly recommended to perform future studies in which these age groups are explicitly included in the research sample.

KEY TAKEAWAYS
• The narrative study and survey study both indicate that the new delivery service is desirable to consumers.
• All three studies found that, on average, people are willing to pay at least what you would expect a delivery to cost. The average WTP in the narrative study was €6,02, in the survey study €2,66 and in the delivery mode study €2,31.
• The three most common usage scenarios are: 1. Clothing and shoes * Limited product range or stock of shop, 2. Electronics and accessories * Distance and 3. Food and drinks * Ease.
• The frequent orderers and average orderers group would be best suited as target group.
• The results of the three studies indicate that age, gender, domestic nor order frequency influence the WTP.
• The expected early adopters of the service, the digital-savvy, younger consumers, are the groups of participants that were under-represented in the survey study and delivery mode study. Therefore, it is strongly recommended to perform future studies in which these age groups are explicitly included in the research sample.

7.

Shift's service design

7. SHIFT'S SERVICE DESIGN

7.1. SERVICE DESIGN APPROACH

In the previous chapter, the usage scenarios, desirability and willingness to pay of the PostNalles service concept were researched. The results from these studies are used as input for the elaboration for the design of the service. But before we can dive into the elaboration of the service design, it is important to understand why the service design is presented the way it will be presented later in this chapter.

This following section will discuss the definition of and principles behind service design. Subsequently, this project's approach to the elaboration of the new delivery service is explained.

7.1.1. Service design definition and principles

Service design focuses on the creation of thoughtful experiences using a combination of intangible and tangible mediums (Stickdorn & Schneider, 2011). It is a practical approach to the creation and improvement of offerings made by organizations. Service design is a human-centered, collaborative, interdisciplinary, iterative approach which uses research, prototyping, sets of activities and visualization tools to create experiences that meet the needs of users, business and other stakeholders (Stickdorn, Hormess, Lawrence, & Schneider, 2018). Service design offers a perspective, method and set of tools that enables organizations to realize business ambitions and to deal with internal and external challenges. The main objective is to resolve customer-related challenges and balance them with business drivers and the organization's capabilities (Reason, Løvlie, & Flu, 2016).

Service design requires three fundamental questions to be asked to deal with strategic initiatives as well as operational challenges (Reason, Løvlie, & Flu, 2016):

1. What does the service do for our current and future customers?
2. How will the business be impacted?
3. Which capabilities are needed by the organization to respond to or drive the initiative?

Service design as a practice generally results in the design of processes and systems aimed at providing holistic user experiences. Thoughtfully designed services that incorporate new business models are empathetic to user needs and attempt to create new socio-economic value (Stickdorn & Schneider, 2011).

Service design is based upon six principles as derived from Stickdorn, Hormess, Lawrence & Schneider (2018):

- Human-centered: service design considers the experience of all the people affected by the service.
- Collaborative: stakeholders of various backgrounds and functions should be actively engaged in the service design process.
- Iterative: service design is an exploratory, adaptive, and experimental approach, iterating toward implementation.
- Sequential: the service should be visualized and orchestrated as a sequence of interrelated actions.
- Real: needs should be researched in reality, ideas prototyped in reality, and intangible values evidenced as physical or digital reality.
- Holistic: services should sustainably address the needs of all stakeholders through the entire service and across the business.

7.1.2. Service design process

The standard service design process does not exist. There is not one 'right' service design process that can be followed in every service design project. Moreover, the design process is never a linear process and has an adaptive and iterative nature. A plethora of different design process frameworks have been published. The framework that suits this project best is the Tisdd Service Design Framework (Stickdorn, Hormess, Lawrence, & Schneider, 2018). This framework consists of four stages:

> 1. Research
Research is used to understand people and their behavior in relation to a service or product, whether physical or digital. Design research enables a designer to empathize with users and to build up a genuine understanding of their practices and routines.

> 2. Ideation
In service design, ideas are just starting points within a bigger evolutionary process. They need to be generated systematically en masse, mixed, recombined, and evolved or parked. Their real value often lies not in the ideas themselves but in the outcome(s) that stem from them.

> 3. Prototyping
Prototyping is used to explore, evaluate, and communicate how people might experience or behave in future service situations. Prototyping enables a designer to identify important aspects of a new concept, and evaluate which features might actually work in the everyday business reality.

> 4. Implementation
Implementation describes the step beyond experimenting and testing, moving into production and rollout. Implementation can involve various fields, such as change management for organizational procedures and processes, software development for apps and software, and product development or engineering for the production of physical objects.

As the attentive reader might have noticed, this framework has many similarities with the Triple Diamond Model that was developed for this graduation project. As the attentive reader might also have noticed, a lot of attention has already been paid to the first three stages of the Tissd Framework. That is, if you perceive the stories that have been told and received in the studies of the previous chapter as prototypes.

7.1.3. Project deliverables

The subsequent sections in this *chapter 7. Shift's Service Design* focus on stage 4: implementation. A way must be found to communicate the service design and hand over the service design to PostNL. As a means of service design communication, it was decided to develop a service blueprint. This blueprint can also be used by PostNL to discuss the rollout of the service internally. Next to the service blueprint that focuses largely on internal arrangements, the interface between the service and the user, i.e. an app, is designed on a high level to give an indication of the functionality and the look and feel of the front-end of the service. Following from the service blueprint, user interface wireframes of app screens are developed.

The usage scenarios that were discovered in the previous chapter *6. PostNalles put to the Test* are used as input for the service blueprint. But before the blueprint and interface can be designed, it needs to be clear what design requirements the service must meet. Therefore, the design requirements will be drafted first.

Lastly, this chapter will conclude with a high-level strategic roadmap to give PostNL guidance in what their first steps should be concerning the further development of the service and to help them envision the future of the service. The structure of this chapter is displayed by *figure 50*.

▼ *Figure 50: structure of chapter 7*

1 — DESIGN REQUIREMENTS
2 — USAGE SCENARIOS
3 — SERVICE BLUEPRINT
4 — USER INTERFACE DESIGN
5 — ROADMAP
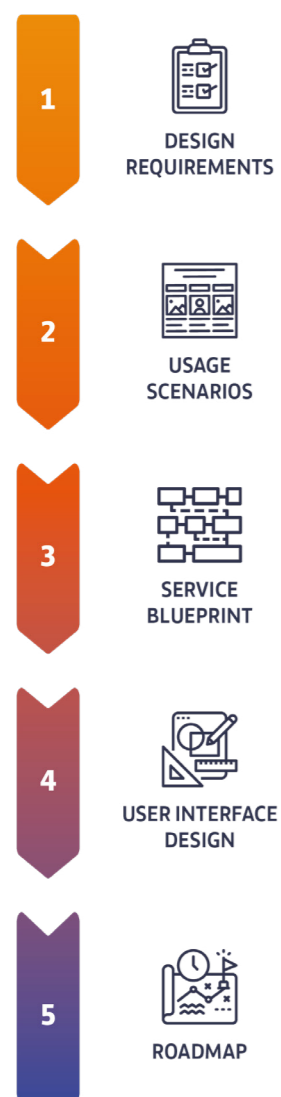
KEY TAKEAWAYS
• Service design focuses on the creation of thoughtful experiences using a combination of intangible and tangible mediums. It is a practical approach to the creation and improvement of offerings made by organizations.
• Service design as a practice generally results in the design of processes and systems aimed at providing holistic user experiences.
• Design requirements are drafted to describe which design requirements the service must meet.
• The service blueprint is delivered to communicate the service design and provide PostNL with a means to evoke and guide internal discussions. The usage scenarios that were discovered previously are used as input for the service blueprint.
• A user interface design is developed to give an indication of the functionality and the look and feel of the front-end of the service.
• A high-level strategic roadmap is developed to provide guidance to PostNL in what their first steps should be concerning the further development of the service and to help them envision the future of the service.

7.2. DESIGN REQUIREMENTS

According to Reason, Løvelie and Flu (2016) in approaching customer experience, many organizations rely on feedback from surveys and panels to listen to customers, or use methods such as Net Promoter Score to identify areas of improvements. Service design goes beyond asking customers for feedback by taking a holistic customer experience perspective: it involves learning what customers experience when they consider or use the new delivery service, when they interact with PostNL, or find an alternative solution.

7.2.1. List of Requirements

Throughout this graduation project, it has happened several times that a consumer need, demand or wish was discovered. Through carefully listing design requirements for the delivery service, I aim to design a service that excels in customer experience. Therefore, all consumer needs, demands and wishes are listed, categorized, divided into must haves and nice to haves, and ranked. This list of requirements is used to shape the service blueprint and is particularly important when designing the wireframes and UI designs of the app later on in this chapter.

▶ Must haves
1. The service needs to be easy, convenient and effortless.
2. The service needs to enable PostNL to build a sustainable direct payment relationship with the consumer.
3. The service needs to be affordable to consumers.
4. The service needs to be reliable and safe, and has to build upon PostNL's trustworthy image.
5. The service needs to put the consumer into control.
6. The service needs to be personalizable and customizable.
7. The service has to fit PostNL's oranje kompas.

Nice to haves
1. It would be nice if the service enables consumers to share resources effortlessly.
2. It would be nice if the service would enable consumers to participate in collaborative consumption.
3. It would be nice if the service would enable consumers to participate in collaborative logistics.
4. It would be nice if the service enables PostNL to effectuate sustainable business practices.
5. It would be nice if the service creates meaningful connections between people.
6. It would be nice if the service enables PostNL to become a preferred delivery partner to smaller e-tailers and to traditional brick-and-mortar retailers.
7. It would be nice if the service is accessible from multiple platforms.

MUST HAVE	TRANSLATION INTO FEATURE	DESIGN MANIFESTATION
Ease, convenience and effortlessness	Intuitive, clear use	Only essential information, visual information, unambiguous use of icons
	Service knows its user	Service is already adjusted to the user, minimum effort required to insert and adapt parameters
	Service does what is expected from it	Order is exactly delivered as user indicated
	Fun and playful	Playful colors, rounded shapes, fun (micro-)interactions
Sustainable direct payment relationship	Payment through the app	User pays PosNL (and deliverer) each time an order is placed
Affordable	Reasonable delivery costs	Costs depend upon size, distance and speed of delivery
Reliable and safe	Exploit PostNL's trustworthy image	Refer to PostNL, PostNL guarantees service quality, orange colors
	Guaranteed delivery	PostNL delivers supernumerary orders, money back guarantee
	Know who delivers	Deliverer's name and reviews are visible
Control	Faultless article ordering	Extensive article details when required, possibility to contact user
	Flexibility	Order details can be changed any time
	Trace delivery	View estimated delivery time, view deliverer's location
Personalizable and customizable	Knows user's preferences	Know most default delivery parameters (location and speed)
	Smart service	Use personal information to improve service offering
	Personal deals	Offer irresistible deals to enhance relationship
Oranje kompas	Simple	See ease, convenience and effortlessness
	Smart	Collect data to continuously improve and personalize service
	Together	Deliver together and collaborate with the entire country

▲ *Table 16: design manifestations*

7.2.2. Design translation

A list of requirements is merely a list when the translation into practical design features is not made. Requirements should be made tangible and clear before a service design can be established around them. Therefore, the design requirements are shaped into perceptible design features. These features manifest themselves in different ways: one feature refers to the visual experience that users should have when seeing the app, while another feature refers to how using the app should feel. Also the contact between the user and the deliverer, and the user and the customer service is an important aspect of the user experience.

Detailed elaboration on what the contact between the user and the service should resemble is beyond the limit of this project. Nevertheless, the design features that are drawn up can be used as guidelines for the elaboration of the contact user experience as well. Together, the look and feel of the app, the contact with the deliverer and PostNL, and the quality of the delivery determine the level of excellence of the user experience.

In *table 16* on the left, the must haves are translated into design features. The nice to haves have a more strategic nature and cannot be converted directly to design features. The nice to haves will be addressed in *chapter 7.5. Strategic roadmap*.

How the design requirements translate into a UI design is explained in *chapter 7.4 Interface Design*.

To be able to offer users an excellent customer experience, not only should the service be carefully designed, people's association with the service has to be spot-on too. This means that: the service's name should be a reflection of what the service stands for, the name should speak to people's imagination and the name should roll off the tongue smoothly.

Looking at *table 16* on the left, we find many keywords that describe the service, such as playful, fun, easy and smart. The name should also reflect what the service provides: transportation of goods from one place to another in a convenient and quick manner. After a long search, a name was found that perfectly matches the service. From now on, the PostNalles concept will be called *Shift*.

KEY TAKEAWAYS
• To design a service that excels in customer experience, design requirements are listed. The list of requirements is used to shape the service blueprint and is particularly important when designing the wireframes and UI designs of the app later on in this chapter.
• The design requirements are shaped into perceptible design features.
• The look and feel of the app, the contact with the deliverer and PostNL, and the quality of the delivery collectively determine the level of excellence of the user experience.
• From now on, the PostNalles concept will be called *Shift*.

7.3. SERVICE BLUEPRINT

7.3.1. Service blueprint construct

Designing a service for PostNL is one thing. Making sure that Shift lands within PostNL after this project is finished is a whole other story. It is important to provide PostNL with the tools to discuss and develop the service further internally. Next to a strategic roadmap, UI wireframes and UI design, a service blueprint is one of the major deliverables of this graduation project.

A service blueprint provides a visual overview of all elements that constitute a service. It helps people in different areas of the organization see the bigger picture behind the service (Reason, Løvelie, & Flu, 2016). A service blueprint is a way to specify and detail each individual aspect of a service. It involves creating a visual schematic incorporating the perspective of both the user, the service provider and other parties that might be involved such as app developers (Stickdorn & Schneider, 2011). Service blueprints can be understood as an extension of customer journey maps that are constructed to specifically connect customer experiences with both frontstage and backstage employee processes as well as support processes. It builds on the frontstage experience that is visualized by a customer journey and adds layers of depth by showing relationships and dependencies between frontstage and backstage processes. Blueprints illustrate how customer activities trigger service processes and vice versa (Stickdorn, Hormess, Lawrence, & Schneider, 2018).

Several service blueprint frameworks exist. The Shift blueprint will be constructed following the service blueprint framework rules as documented by Stickdorn, Hormess, Lawrence, and Schneider in their book This Is Service Design Doing (2018) because this framework was taught during my Master's. The service blueprint framework entails the following layers:

> Physical evidence

Physical evidences are physical objects that customers come in contact with and that can be designed. Besides tangible artifacts, messages that are delivered through non-physical channels (such as email or SMS) are included here.

> Customer actions

Customer actions describe what a customer does at each step of a customer journey. When a customer action triggers a process, they can be connected to both frontstage and backstage interactions. And vice versa: processes can result in customer actions.

> Line of interaction

The line of interaction divides customer actions and frontstage interactions. When the customer interacts with a frontline employee, the service blueprint shows a connection across the line of interaction.

> Frontstage actions

The frontstage lane shows the activities of frontline employees that are visible to the customer.

> Line of visibility

The line of visibility separates frontstage and backstage actions. When a frontstage action triggers a backstage action or vice versa, the interaction between those two crosses the line of visibility.

> Backstage actions

Backstage actions are activities by frontline employees that are not visible to the customer thus take place below the line of visibility. Backstage interactions can be connected to frontstage actions and to support processes.

> Internal line of interaction

Processes below the line of internal interactions are done by other departments and teams than the people who work directly for the service.

> Support processes

Support processes are activities executed by the rest of the organization or other parties. They can be triggered by customer actions, frontstage actions and backstage actions, and vice versa.

Normally service blueprints are produced collaboratively, as this is a great way to bring together the various departments and teams that will work together on the service. It creates shared awareness of each team's responsibilities, needs and capabilities. The co-creation of a service blueprint with various expertises also creates extra depth and knowledge, making the blueprint a more reliable schematic. Due to COVID-19- and time restrictions, I was not able to facilitate a co-creation session in which a service blueprint was created collaboratively. Therefore, the service blueprint that will be delivered must be seen as a thoughtful first draft that PostNL can build upon during additional internal elaboration.

7.3.2. Usage scenario storyboards

As was explained earlier, the customer action lane derives from a customer journey. The customer action lane is the spine of the service blueprint and should be carefully constructed. To make the service blueprint as accurate as possible, the customer journey that is used for the customer action lane should be a true representation of how a consumer will use the service. Recall that three common usage scenarios have already been described in *chapter 6. Concept Validation*. These are the three usage scenarios that we will transform into a customer journey.

First, the three usage scenarios are transformed into richer stories that encompass the before-begin-during-after phases of the service engagement. Telling stories about the consumer's context of using the service helps to understand the consumer better which allows to design better experiences and services (Reason, Løvelie, & Flu, 2016).

On the next three pages, the storyboards of the three usage scenarios are presented. In the three stories, Shift is used to deliver shoes to Claire, a charger to David and crisps to Frank. What the users require from Shift differs per story. Therefore, three sets of customer actions that the service should facilitate are derived from the storyboards. These three sets are merged into a holistic customer action lane which is then included in the service blueprint.

The customer actions start at the moment the user opens the app and stop when the user has received his or her delivery. Ofcourse, a user becomes an advocate and promoter of the service beyond this timeframe. When PostNL elaborates on the service, attention has to be paid to what happens after the consumer has received his or her delivery to provide a holistic service experience.

7.3.3. Service blueprint

On the basis of the service blueprint construction rules as presented in *chapter 7.3.1. Service blueprint construct*, the service blueprint for Shift was developed. Due to the extensiveness of the Shift blueprint, the blueprint is spread across four pages directly after the usage scenario storyboards. After these pages, the reasoning behind the service blueprint is explained.

SCENARIO 1: CLOTHING AND SHOES * LIMITED PRODUCT RANGE OR STOCK OF SHOP
Storyboard

Claire would like to buy some shoes for her birthday party tonight.

She has her eyes on a pair of cool red sneakers of her favorite brand.

Unfortunately, the shoes don't fit and the store doesn't have the right size.

Claire is determined that she wants to wear this pair of shoes to her party tonight.

The saleswoman tells Claire that her size is available in another branch.
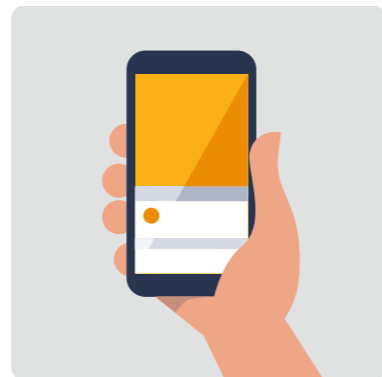
Claire thinks that the other store is too far away and orders the shoe delivery through Shift.

While Claire awaits her order, she can spend time on preparing her party.
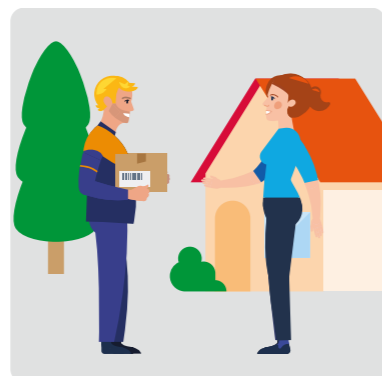
The deliverer is well on time with Claire's new shoes.

Claire can enjoy her birthday with her brand new shoes.

SCENARIO 2: ELECTRONICS AND ACCESSORIES * DISTANCE
Storyboard
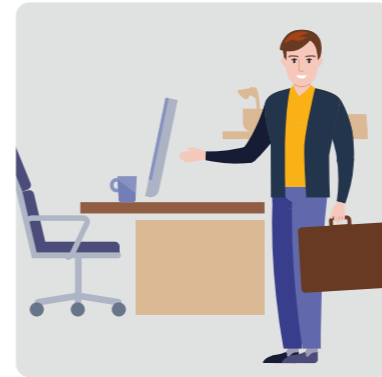
David has a busy day on the office today.
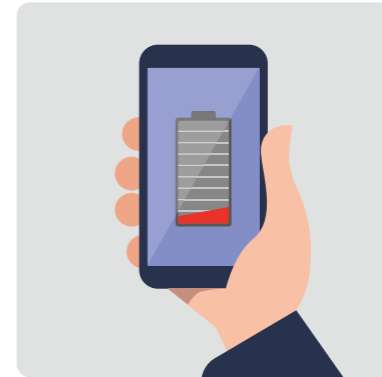
He forgot to charge his phone overnight and didn't bring a charger.

David must remain reachable today but he doesn't have the time to fetch a charger.
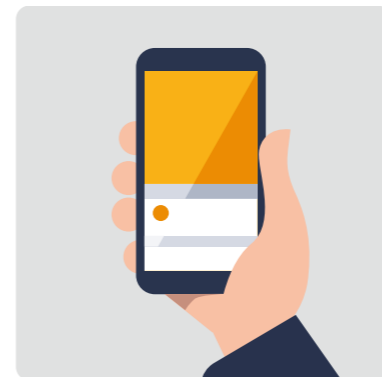
David orders the charger delivery through Shift and indicates that he needs the charger ASAP.
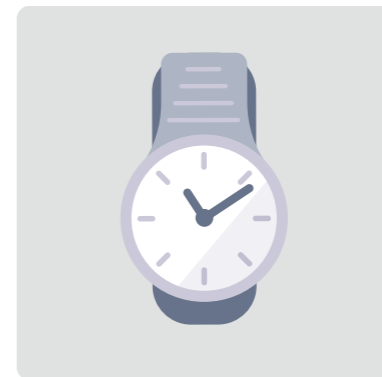
While David awaits his delivery, he continues his working day.

David indicated that the deliverer can deliver the charger at the office reception.
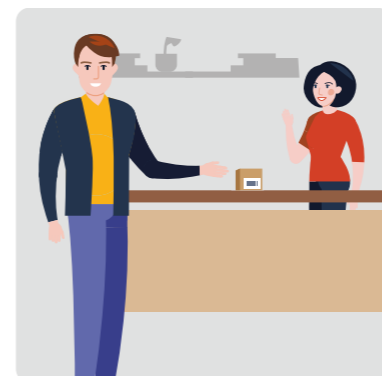
David received a notification that his order has been delivered. After his meeting he collects his delivery at the reception.
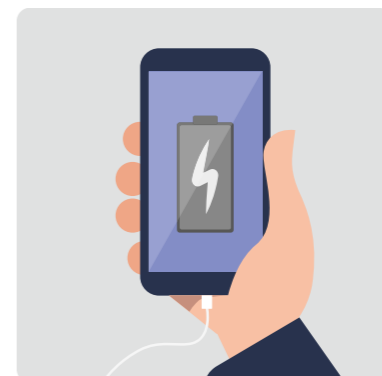
David charges his telephone right away.

David is happy to be reachable for business and family for the rest of the day.

SCENARIO 3: FOOD AND DRINKS * EASE

Storyboard

It is a rainy day and Frank would like to stay in today.

He has a bit of a hangover and doesn't want to get of the couch, although he is feeling hungry.

Frank orders his favorite bag of crisps through Shift.

He can't wait to devour his crisps so he indicated that he want to receive the crisps ASAP.

The deliver brings the crisps up to Frank's front door.

Frank jumps back onto the couch and enjoys his bag of crisps.

ACTION	CLAIRE	DAVID	FRANK	COMBINED
1	Claire opens Shift.	David opens Shift.	Frank opens Shift.	Customer opens Shift.
2	Claire starts a new delivery request.	David starts a new delivery request.	Frank starts a new delivery request.	Customer starts new delivery request.
3	Claire chooses the "clothing and shoes" category.	David chooses the "electronics and accessories" category.	Frank chooses the "food and groceries" category.	Customer chooses product category.
4	Claire indicates exactly which shoes she wants to receive.	David indicates which charger he wants to receive.	Frank indicates which crisps he wants to receive.	Customer indicates which item he or she wants to receive.
5	Claire indicates that she wants to receive the shoes at home.	David wants to receive the charger at the office's reception.	Frank indicates that he wants to receive the crisps at home.	Customer indicates where the item should be delivered.
6	Claire indicates she wants to receive the shoes before 18:00.	David indicates that he wants to receive the charger ASAP.	Frank indicates that he wants to receive the crisps ASAP.	Customer indicates when he or she wants to receive the item.
7	Claire wants the delivery to be CO2 neutral.	David doesn't care how the charger is delivered, as long as it is delivered.	Frank only wants to receive the crisps from someone nearby.	Customer indicates how the delivery should take place.
8	Claire thoroughly checks the delivery details.	David quickly scan through the overview.	Frank checks if the delivery costs are below 1 euro.	Customer views delivery overview and price indication.
9	Claire agrees to the delivery overview and price indication.	David agrees to the delivery overview and price indication.	Frank agrees to the delivery overview and price indication.	Customer confirms order.
10	Claire awaits her shoes.	David awaits the charger.	Frank awaits the crisps.	Customer awaits the delivery.
11	Claire receives her shoes.	David picks up the charger at the reception.	Frank receives the bag of crisps.	Customer receives delivery.
12	Claire leaves a positive review of the delivery.	David doesn't have time to leave a review.	Frank gives the deliverer 5 stars.	Customer leaves review of delivery.

PHYSICAL EVIDENCE

| App | App | App | App | | App | App | App | App | App |

CUSTOMER ACTIONS

- Customer opens Shift.
- Customer starts new delivery request.
- Customer chooses product category.
- Customer indicates which item he or she wants to receive.
- Customer indicates where the item should be delivered.
- Customer indicates when he or she wants to receive the item.
- Customer indicates how the delivery should take place.
- Customer views delivery overview, price indication and delivery time indication.
- Customer confirms order.

LINE OF INTERACTION

FRONTSTAGE ACTIONS

CUSTOMER APP

- App shows welcome screen.
- App shows new delivery request screen.
- App shows example categories and a search bar.
- App shows specification parameters for item.
- App shows parameters for delivery location.
- App shows parameters for delivery time.
- App shows parameters for how the delivery should take place.
- App shows the delivery overview.
- App shows a 'thank you for your order' screen.

- App shows home screen.
- The default delivery location setting is 'home'.
- The default delivery time setting is 'ASAP'.
- The default delivery mode is 'by courier' and 'regular delivery'.
- App shows a price indication and a delivery time indication.

- App asks if another item should be added to the order.

LINE OF VISIBILITY

BACKSTAGE ACTIONS

COURIERS APP

DELIVERY BY COURIER

The courier awaits a delivery order or is delivering the previous delivery order. | The courier awaits a delivery order or is delivering the previous delivery order.

DELIVERY BY NEIGHBOR

The neighbor deliverer is going about his or her day. | The neighbor deliverer is going about his or her day.

POSTNL SYSTEM

DELIVERY BY POSTNL

The PostNL driver delivers parcels as usual. The PostNL courier awaits a delivery order or is delivering the previous delivery order. | The PostNL driver delivers parcels as usual. The PostNL courier awaits a delivery order or is delivering the previous delivery order.

LINE OF INTERNAL INTERACTION

SUPPORT ACTIONS

- Per category the important specification parameters are set.
- Current location or address should be able to be indicated through Google Maps.
- Calculation of the estimated delivery time.
- Calculation of the estimated delivery costs.
- Delivery request is matched to deliverers' locations and delivery planning.

Service blueprint diagram.

Column headers: DELIVERY COLLECTION | DELIVERY | AFTER SALES

PHYSICAL EVIDENCE
- App
- App
- Deliverer
- App
- App

CUSTOMER ACTIONS
- Customer awaits delivery.
- Customer receives delivery.
- Customer leaves a review of the delivery.

LINE OF INTERACTION

FRONTSTAGE ACTIONS — CUSTOMER APP
- App has a 'trace delivery' button on the home screen.
- App sends a notification when the deliverer is on his or her way.
- Deliverer delivers delivery.
- App shows the price of the delivered item and the delivery costs.
- App shows a 'write a review' screen.
- App shows the ETA, information on the delivery and the location of the deliverer.
- The deliverer contacts the customer when he or she needs instructions.
- App credits the delivery price automatically.
- App shows a 'cancel delivery' option.
- App shows an 'objection' button.

LINE OF VISIBILITY

BACKSTAGE ACTIONS — COURIERS APP
- DELIVERY BY COURIER: Delivery request is pushed to courier deliverers.
- Deliverer accepts delivery request.
- Deliverer goes to the store.
- Deliverer buys the item.
- Deliverer travels to delivery location.
- Deliverer receives payment.
- Deliverer receives feedback.
- DELIVERY BY SOMEONE NEAR: Delivery request is pushed to people nearby.

POSTNL SYSTEM — DELIVERY BY POSTNL
- PostNL employee goes to the store.
- PostNL employee buys the item.
- PostNL employee travels to delivery location.

LINE OF INTERNAL INTERACTION

SUPPORT ACTIONS
- If request is not matched within [X] minutes, the request is sent to PostNL systems.
- Delivery request is matched with a PostNL employee.
- Automatic payment system.
- Review is processed through review system.

Service blueprint explanation

Although efforts have been made to make the blueprint as clear and self-explanatory as possible, the blueprint requires some explanation concerning the design choices that were made.

> Customer chooses product category

After the consumer starts a new delivery request, he or she needs to indicate exactly which product he or she would like to receive. The customer can indicate precisely which item he or she would like to receive in terms of brand, model, size, color, content, price, number, etc. Because there are so many parameters that can be indicated per product, it could be overwhelming to a consumer to have to deal with that many parameters. One of the design requirements for the service is that the service needs to be easy and convenient to use. Therefore, the consumer is required to choose a product category before he or she moves to the parameters. Based upon the product category, only the typical item parameters are presented to the consumer to prevent the consumer from getting inundated by information that he or she needs to enter. It is still a possibility to add more item parameters if the consumer wants to specify the item beyond the pre-set parameters.

The corresponding support action is pre-setting all item parameters per product category. The qualitative narrative study showed that food and drinks, gifts, drugstore products, sports equipment and household goods are the five most common product categories. The quantitative survey study showed that clothing and shoes, electronics and accessories, furniture, drugstore products, and pet and accessories are the five most common product categories. I advise PostNL to begin with a couple of the most common product categories and expand from there on. More about product categories in *chapter 7.5. Strategic Roadmap.*

> Calculation of the estimated delivery time

Moving on to when the customer wants to receive the item. The corresponding support action is to calculate the estimated delivery time, which is shown to the customer in the 'confirm delivery' screen. The delivery time can only be estimated when the system is aware of deliverers' current delivery location and delivery planning. Also the pick-up location of the item and the delivery location of the item have to be known. All these bits of information need to come together in an advanced software delivery system. More blueprint actions are linked to the software system, such as: 'the delivery request is matched to deliverers' location and deliverers' planning' and 'if the request is not matched within [X] minutes, the request is sent to PostNL systems'. This software system is the backbone of Shift and requires much attention. More about the software system in *chapter 7.5. Strategic Roadmap.*

> App shows parameters for how the delivery should take place

In the delivery mode study, several manifestations of how the delivery could take place were presented to the participants. Different types of deliverers were tested, as well as the influence of sustainability and price on the type of deliverer. The delivery by courier proved to be a promising way of delivery. Delivery by someone nearby the item might only be promising when a small or cheap item needs to be delivered. Therefore, it is wise to launch the service focused on courier delivery and conduct further research into delivery by someone nearby. In the future, delivery by people nearby might be added to the service, as is discussed in *chapter 7.5. Strategic Roadmap.*

Sustainability and price also have influence on the perception of the service. 'Sustainable delivery' or 'cheapest delivery' (that would probably mean that the delivery will be less fast) could be delivery modes that PostNL wants to offer its customers in the future. I advise to launch the service without the option to set the delivery mode and incorporate this option later on. The option is included in the service blueprint to give an idea of where the option fits in the blueprint.

> Delivery request is pushed to people nearby

As was just explained, having the item delivered by someone nearby the item is a delivery mode that can be incorporated into the service in a later stadium of expansion. It is included in the service blueprint to give an idea of where the option fits in the blueprint.

> Delivery request is matched with a PostNL employee

This support action requires some attention. If the delivery is not confirmed by one of the regular Shift couriers (and not by people nearby the item in a later stadium), the delivery order is forwarded to PostNL. This is because Shift has to earn and maintain consumers' trust: if their delivery request is not answered, there is a chance that they will never use Shift again. From the delivery mode study also came forth that trustworthiness is one of the two most important reasons for people to make use or not make use of a deliverers' service. Therefore, it is important that PostNL provides a safety net that catches the requests that are not accepted in time.

To forward the unanswered delivery requests to PostNL, it is required that an integration is built between the software delivery system and PostNL's internal systems. A PostNL employee takes on the delivery request and ensures the delivery of the item. That employee could be a regular PostNL driver, a PostNL postman or a part time PostNL courier; that is an interesting discussion for PostNL to have internally.

> Automatic payment system

Essentially, there are two ways to make consumers pay for the delivery: in advance or afterwards. Both ways have their pros and cons. It was decided to choose for payment after the delivery for one specific argument: to gain consumers' trust and provide the best service, consumers should only be requested to pay when they have received the correct item exactly as they wanted to receive that item. A less significant argument for post payment is that, especially in the beginning, the retail price of the desired item is not always known in advance. If the retail price is unknown, it is not possible to request payment beforehand.

Post payment poses various risks concerning fraud and cashflow. PostNL needs to have internal discussions with experts to decide if they find it worth the risk. PostNL could also look for other solutions such as asking people to pay a deposit first, or arranging automatic collection. Since PostNL is not used to having a direct payment relationship with consumers, even external experts might be invited to join the discussion.

> Review is processed through review system

It may now be clear that trust has to be one of the key drivers of Shift. A major determinant of trust is the deliverer who fulfills the delivery request and has direct contact with the customer. In fact, the deliverer is the only touchpoint between customer and Shift that is not the Shift app. The contact between deliverer and customer should be immaculate and the service quality of the delivery that is provided by the deliverer should be flawless. Review systems have proven efficient methods to intrinsically motivate freelancers to put their best foot forward in service delivery. Therefore, it is recommended that Shift also works with a courier review system.

To put even more emphasis on trust, it would be best if the customer receives information about the courier as soon as the delivery request is accepted. This way, the customer knows who to expect and is provided with a way to contact the deliverer if desired. Insight in the delivery history of the courier helps the customer to shape accurate delivery expectations which in turn improves the overall service experience.

◗ **Service blueprint discussion and recommendation**
As was explained earlier, the service blueprint serves two purposes: 1) providing a holistic yet high-level view on all the actions and processes that underlie the service based upon a customer journey and 2) providing PostNL with a communication tool that guides and evokes discussion with other teams and expert groups. The blueprint that is presented in this thesis has been thoroughly composed and is carefully thought out. However, studying this blueprint probably raises more questions than it answers questions. That is a natural and helpful phenomenon since it gives guidance to discussions that add depth and details to the service. The blueprint helps to ask focused questions to the right stakeholders to build a delivery service that makes consumers happy.

Due to the time limit of this graduation project and due to COVID-19 restrictions, it was not possible to facilitate creative sessions in which diverse experts were brought together to discuss and elaborate on the service blueprint. Conversations with experts are highly important, especially to give shape to parts of the blueprint that remain vague, such as what the specifications of the software delivery system should be. Therefore it is recommended that PostNL organizes several sessions to which experts are invited to discuss the details and the future of Shift. The service blueprint is a living document and PostNL should feel free to do whatever they please with it.

> **KEY TAKEAWAYS**
> • The service blueprint serves two purposes: 1) providing a holistic yet high-level view on all the actions and processes that underlie the service based upon a customer journey and 2) providing PostNL with a communication tool that guides and evokes discussion with other teams and expert groups.
> • A service blueprint provides a visual overview of all elements that constitute a service. It helps people in different areas of the organization see the bigger picture behind the service.
> • The service blueprint framework entails the following layers: physical evidence, customer actions, line of interaction, frontstage actions, line of visibility, backstage actions, internal line of interaction and support processes.
> • The customer action lane derives from a customer journey. The customer journey that is used for the customer action lane should be a true representation of how a consumer will use the service. The three usage scenarios that were described earlier are used as input for the customer action lane.

◗ 7.4. USER INTERFACE DESIGN

The service blueprint visually depicts the actions and processes that underlie Shift from an internal perspective through the eyes of PostNL. To provide a holistic view on the service, i.e. from the perspective of PostNL and the perspective of the consumer, attention must be paid to how consumers experience Shift. About 90% of the interaction between the consumer and Shift takes place through the app. Therefore, the customer experience is largely dependent upon how the consumer experiences the usage of the app.

If Shift is to become a success, the interaction between the consumer and Shift has to be near perfect. This graduation project delivers a service blueprint and a strategic roadmap that are both focused on the service from the perspective of PostNL. I also want to deliver insight into the consumer's perspective of using the app, what the consumer experiences when using Shift. I aim to do so by developing UI wireframes that focus on the functionalities of the app and provide a glimpse of the look and feel of the app.

In *chapter 7.2. Design Requirements* a table was presented with design manifestations that should be integrated in the service design. Some of these manifestations should translate directly into the interface design:

• Only essential information, visual information, unambiguous use of icons;
• Service is already adjusted to the user, minimum effort required to insert and adapt parameters;
• Playful colors, rounded shapes, fun (micro-)interactions;
• Deliverer's name and reviews are visible;
• Extensive article details when required, possibility to contact user;
• Order details can be changed any time;
• View estimated delivery time, view deliverer's location; and
• Know most default delivery parameters (location and speed).

Based upon the frontstage action lane in the service blueprint and the interface design manifestations, UI wireframes were designed in Adobe Xd. The most important starting point for the interface design is that it should be clear and intuitive. To evaluate if the UI wireframe design is experienced as clear and intuitive, a small user test is conducted. First, the wireframe screens are presented. Thereafter, the user test is discussed.

7.4.1. UI wireframe creation
The screens that are essential to placing a delivery order and receiving that order were developed. These are the screens that fit the actions in the frontstage actions lane of the service blueprint. This means that some non-essential wireframes were not created, such as account information and app settings. The screens are detailed to a certain degree and provide a first look and feel of the eventual design. A professional app designer can use these wireframes as directions to improve, expand and launch the Shift app.

7.4.2. UI wireframe user test

A small user test was conducted to gather some initial insights on how users perceive the wireframes. A digital prototype of the screens was made through Adobe Xd and shared with two participants. The participants were given the following assignment:

"You are going to order an undefined article from an undefined product category. You will only insert the BRAND and the SIZE. You want to have it delivered at "Statenweg 165A", ASAP and you would like the delivery to be a regular delivery.

After you have placed the delivery order, you want to see the status of your order.

Then, your order is delivered. Agree to the delivery charges.

After you completed the task, fill in the survey."

The participants were observed while clicking through the screens. The questions and answers of the participants can be found in *Appendix Q*. The UI wireframes should reflect the design manifestations that were presented earlier. The focus of the user test is to probe if the screens and the flow through the screens are clear. A first design iteration on the wireframes is made based upon the test results.

> Home screen
The participants clicked the product category block immediately.

> Product specification screens
The participants liked the overall look of the screen, but the list-view of specifications isn't really working for them.

> Delivery specification screen
The delivery location button was clear and pretty standard. One participant noticed that it might be nice to see where the product is coming from.

One of the participants found it confusing that you can choose a delivery time and a delivery mode because it seems as if the delivery time 'ASAP' is contradicted by the delivery mode 'regular'. It is unclear to the participants what the delivery mode option entails: what does it do to delivery time and what does sustainable delivery mean? More attention has to be paid to the delivery mode option.

> Delivery overview screen
One of the participants would rather like to see his address instead of 'home' just to be sure.

> Thank you screen
-

> Order overview screen
One of the participants suggested to only show the delivery location and time, and to move the price and delivery mode to the order detail screen to put more focus on the most important information per delivery.

> Order detail screen
Clear.

> Delivery notification screen
Clear. One participant wonders if you would only receive this pop-up when you are in the app, or that it also shows on your telephone's home screen.

> After delivery screen
One participant wonders what the value is of being able to review a courier and view his or her ratings because it isn't possible to choose a courier.

> Overall: how did you experience the app?
Both participants find the app good, clear and nice. One participant notices that the flow of adding another product to an order could be optimized a little.

7.4.3. UI wireframe redesign
The responses of the participants were used to redesign the wireframes. The final wireframes are presented on the next pages.

◀ Welcome screen
The welcome screen is vibrant and colorful, yet minimal and clean in information. It is immediately clear that Shift is powered by PostNL.

Home screen ▶
The home screen facilitates the most important feature of the app: here, delivery requests can be created. Users can either create a request by typing the category themselves, or by selecting a product category from the inspirational product category blocks. The footer contains a home button, order button and account button that will be available on all other regular screens.
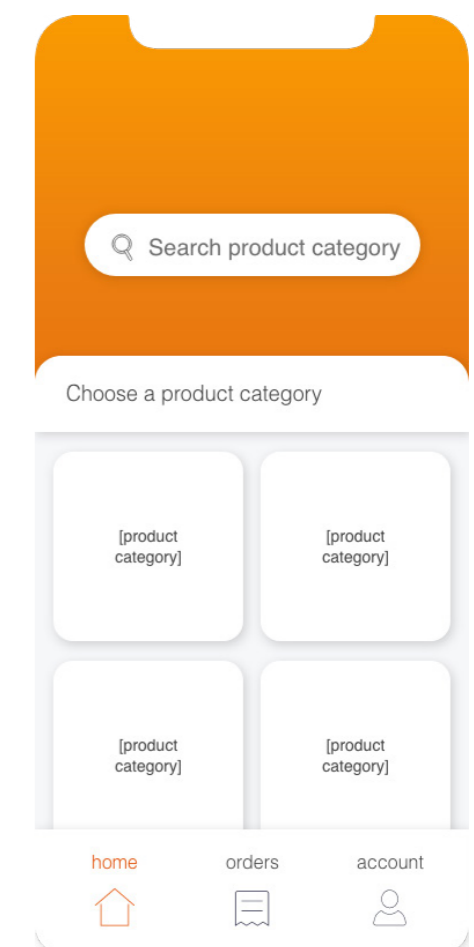
Product specification screens ▶

As soon as the product category is entered, the required product specification parameters are displayed. The consumer can choose which parameters to enter. Once all desired parameters are entered, the user clicks 'confirm'.
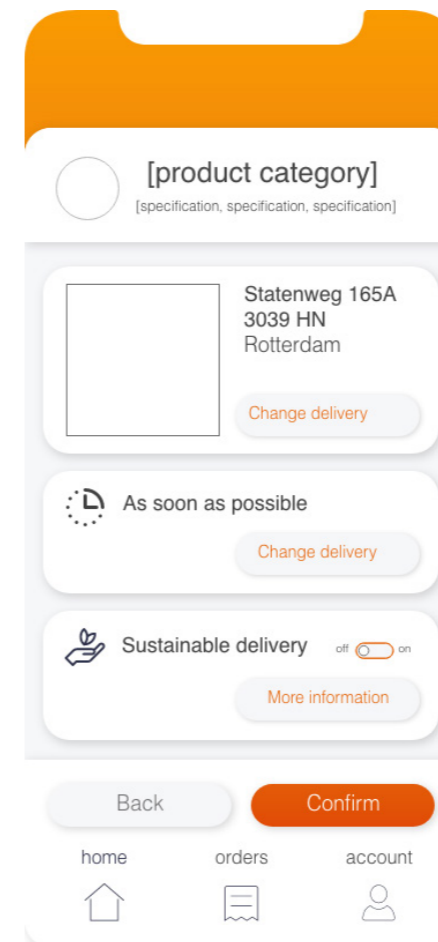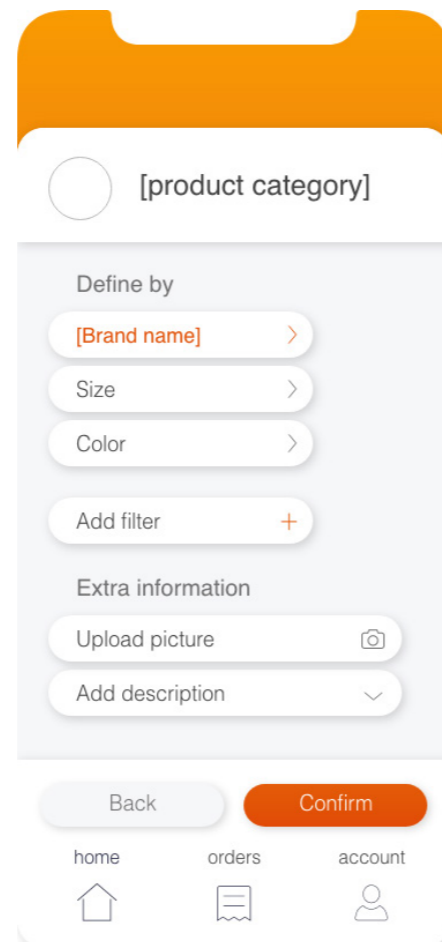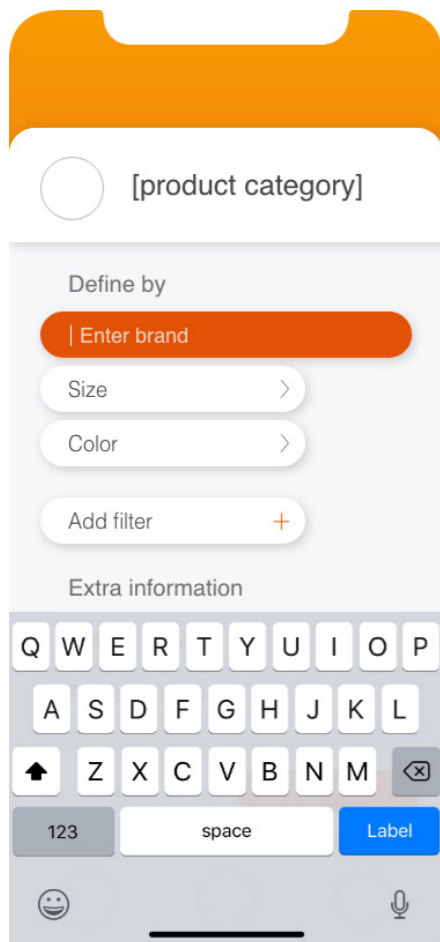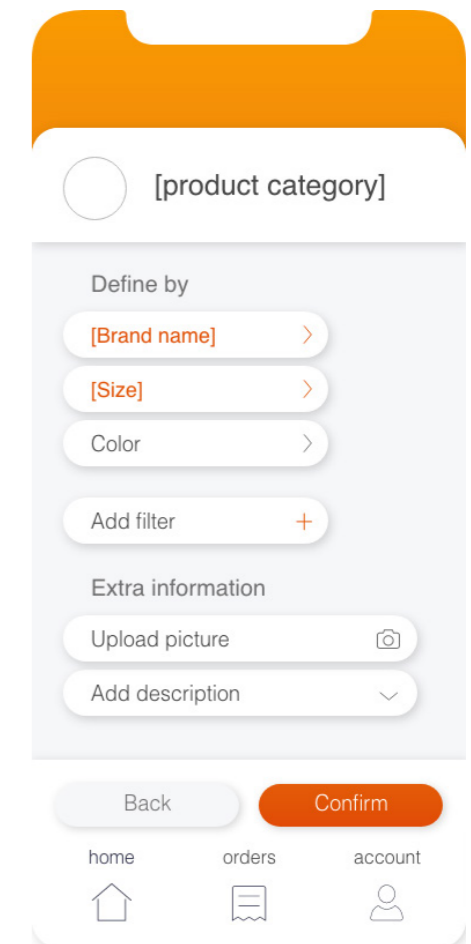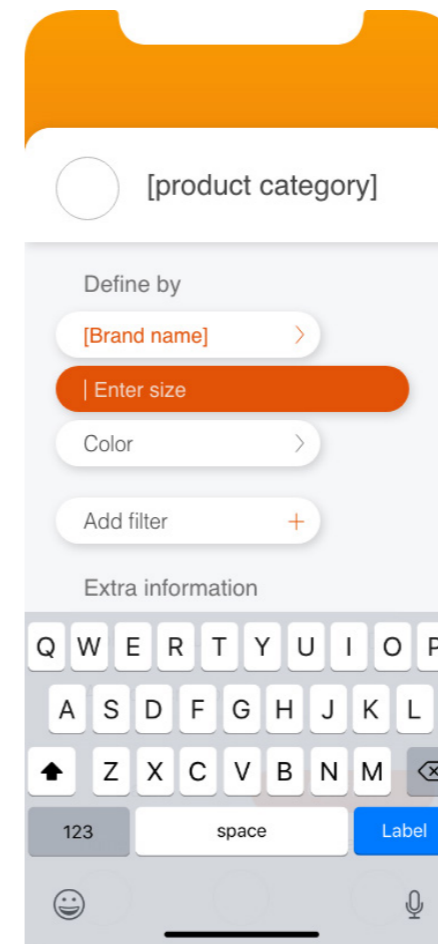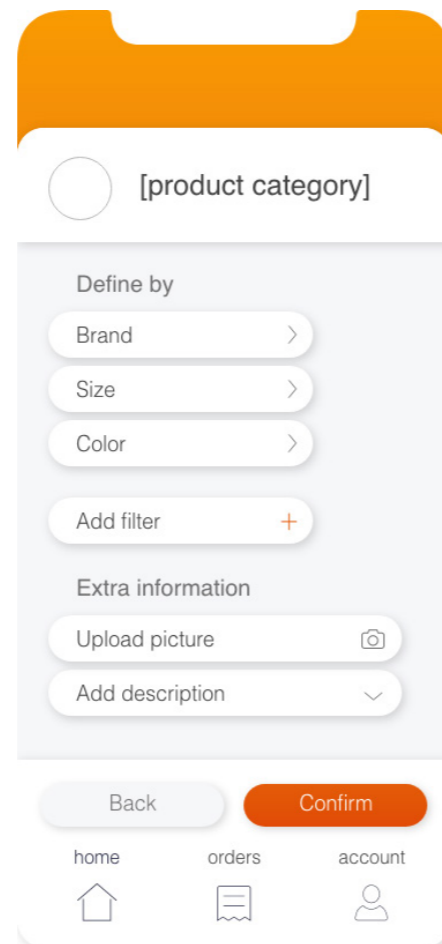
◀ Delivery specification screen

The delivery location, delivery time and delivery mode can be chosen. The delivery location is the user's home address by default and can be easily changed through a Google Maps integration. The delivery time is ASAP by default and can be changed to a certain point in time, before a certain time or between two points in time. The delivery mode offers the possibility to choose for a regular delivery (quick and cheap) or for a sustainable delivery (by an electric or man-powered vehicle, combinable with other people's deliveries, not per se the quickest or cheapest).

Delivery overview screen ▶
All delivery details are shown here, including the estimated delivery time and delivery costs. If all settings are right, the user presses the 'place delivery order' button.

[product category]
[specification, specification, specification]

Delivery overview
- Statenweg 165A, Rotterdam
- as soon as possible
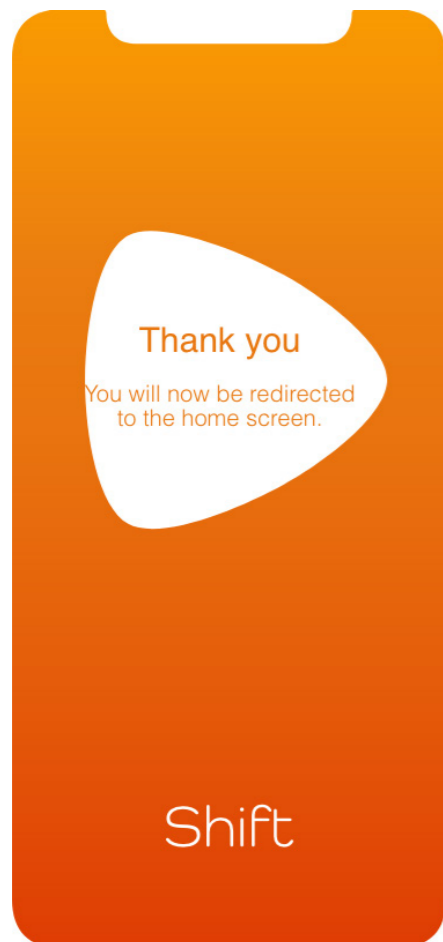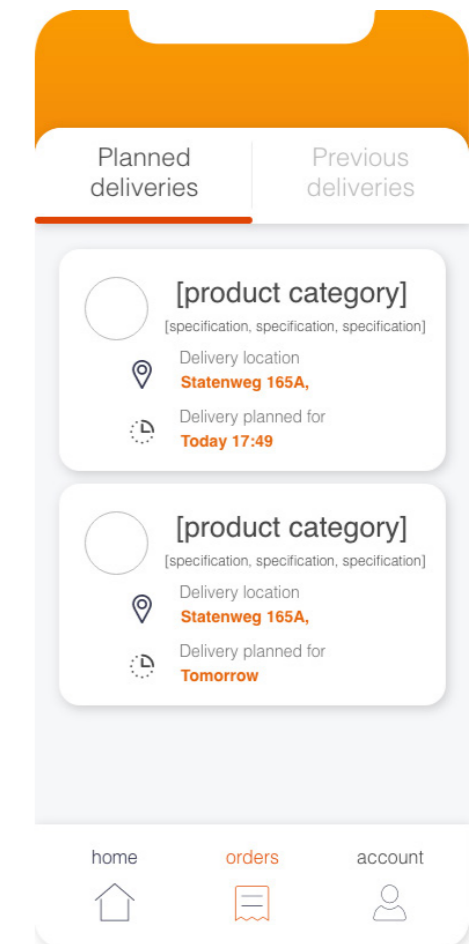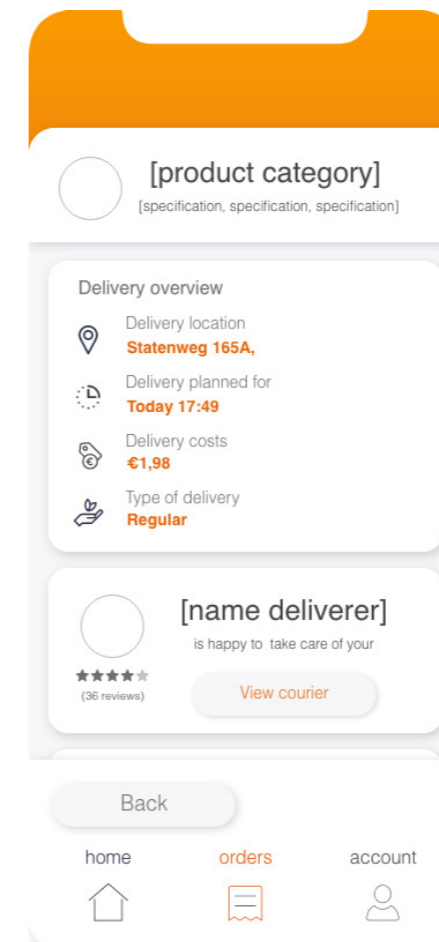- regular delivery

Estimated time of arrival
17:45
Estimated delivery costs
€1,98
The estimated delivery costs do not include the article price. The article price depends upon current retail prices.

Place delivery order

Back

home   orders   account

Order overview screens ▶
The user has the possibility to view his or her planned deliveries and previous deliveries. A planned delivery can be clicked to view the order details.

Planned deliveries   Previous deliveries

[product category]
[specification, specification, specification]
Delivery location
Statenweg 165A,
Delivery planned for
Today 17:49

[product category]
[specification, specification, specification]
Delivery location
Statenweg 165A,
Delivery planned for
Tomorrow

home   orders   account

Thank you
You will now be redirected to the home screen.

Shift

◀ **Thank you screen**
The user views a 'thank you for your order' screen.

[product category]
[specification, specification, specification]

Delivery overview
- Delivery location
  Statenweg 165A,
- Delivery planned for
  Today 17:49
- Delivery costs
  €1,98
- Type of delivery
  Regular

[name deliverer]
is happy to take care of your
★★★★☆
(36 reviews)   View courier

Back

home   orders   account

◀ **Order detail screen**
When the user clicks on a planned delivery, order details are shown: couriers' information, the planned delivery time, the location of the deliverer, the delivery progress and the possibility to contact the courier are displayed.
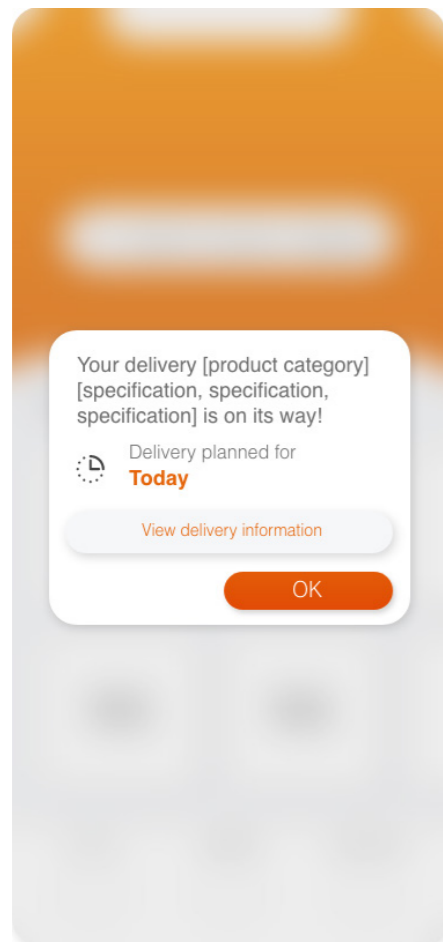
◀ Delivery notification screen

As soon as the courier carries out the delivery order, the user will receive a pop-up that informs the user. The user has the possibility to view delivery information and make changes to the delivery by clicking the 'view delivery information' button.

▶ After delivery screen ▶

As soon as the delivery has been delivered, the user sees the delivery charges which are composed of the article price and delivery costs. If the user scrolls down, he or she has the possibility to object to the delivery charges. The user can also leave a review of the courier.

7.4.4. UI design discussion and recommendations

The UI wireframes provide guidance to PostNL when envisioning the experience consumers have when using Shift. The wireframes give an indication of what is possible - the eventual app design can still take many shapes. I would advise PostNL to invite an app designer to discuss the functionalities of the app and what the consumer must experience when using the app. The table of design manifestations and the UI wireframes are a good starting point for discussion.

The user tests that were conducted to test the clarity of the UI wireframes were performed with a minimum number of participants. Although the overall opinion of the participants was that the screens and the flow through the screens is clear, I strongly advise to perform more user tests. Again, it might be wise to involve an expert in the elaboration of the app. He or she has more experience with the development of apps and user tests accordingly.

An aspect of the app that was not mentioned before are the marketing possibilities that the app offers. Current delivery services use all sorts of marketing tricks to acquire new customers and maintain existing customer relationships. They offer discounts and promotions through their app, award customers who introduce new customers and offer loyalty programs. Marketeers should develop a marketing strategy to build and maintain customer relationships through the app.

Figure 51 shows how the Shift app looks like on a smartphone.
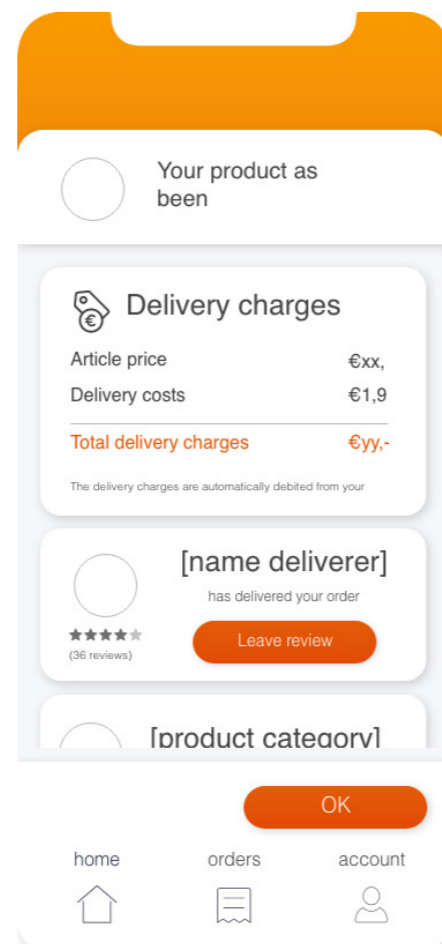
▼ *Figure 51: Shift welcome screen*

KEY TAKEAWAYS
• If Shift is to become a success, the interaction between the consumer and Shift has to be near perfect. To provide a holistic view on the service, i.e. from the perspective of PostNL and the perspective of the consumer, attention must be paid to how consumers experience Shift.
• UI wireframes are designed that focus on the functionalities of the app and provide a glimpse of the look and feel of the app. The screens that are essential to placing a delivery order and receiving that order were developed.
• The most important starting point for the interface design is that it should be clear and intuitive.
• A small user test was conducted to gather some initial insights on how users perceive the wireframes. The responses of the participants were used to redesign the wireframes.
• Marketeers should develop a marketing strategy to build and maintain customer relationships through the app.

7.5. STRATEGIC ROADMAP

When Shift was only a concept called PostNalles, it was already clear that the concept entailed several levels of complexity that were mostly dependent upon time. Throughout the development of Shift, it occurred at several instances that a feature of the service could be explained as: "In the early days of the Shift, only X is possible. In a couple of years, Shift should be able to do Y." Shift's service blueprint as presented earlier in this chapter focuses on Shift in its launching days. I would like to take the service delivery of Shift one step further by also providing PostNL with a vision on how the future of Shift could look like by means of a strategic roadmap.

A roadmap is a visual portrayal of design innovation elements plotted on a timeline. It supports the innovation strategy of an organization, or product or service, and provides decision making support. A strategic roadmap provides a visual means of strategic communication and direction of the service innovation program. It is stable enough to enable coordination across various disciplines of innovation practice and flexible enough to adjust to different strategic scenarios of design innovation (Simonse, 2017).

A roadmap that is deployed to visually support innovation strategies has three basic characters: it is 1) a visual portrait for the service's future innovations, 2) outlined by market development, service characteristics and technology elements 3) plotted on a timeline. The timeline allows for discussion and interaction between the various innovation professionals that are involved in the service development (Simonse, 2017).

In line with the three roadmap characters, a strategic roadmap was developed for Shift (see the next pages). Horizontally, the roadmap is divided into market developments, delivery offer, technology and social responsibility. Vertically, the roadmap is divided into three horizons that represent a timespan and description that fits that timespan. These sections will be further explained in the following text.

7.5.1. Market developments

The first horizontal section of the roadmap entails market developments. From a strategic perspective, Shift does not only need to be prepared for various market developments, Shift should be ready to accommodate those market developments even before they occur. For that reason, the development and concurrent innovation of Shift is largely affected by predicted market developments, in other words: trends.

According to Simonse (2017), the purpose of trend scouting is to ensure an organization does not miss out on early signals of possible changes in the environment. As you might recall, an extensive trend analysis has already been performed in *chapter 3.4. The Future of the Postal Sector*. The trends that are expected to influence the future of Shift mostly are included in the market development section. For a description of the included trends, please see *chapter 3.4. The Future of the Postal Sector.*

7.5.2. Delivery offer

A key characteristic of Shift is that the consumer has access to any product that he or she would like to receive. This means that Shift should be able to deliver an extensive range of products, but that is not as easy as it might seem. Shift is not, and will not become, a webshop or sales platform. Shift does not have a fixed product offer that people can choose from. Rather, Shift allows consumers to specify what products they would like to receive and Shift couriers take care of those deliveries. Meanwhile, the delivery specification can cause issues when consumers do not sufficiently specify the item they want to receive. To provide a convenient customer experience, you do not want to bother consumers with extensive specification questions, but at the same time, you have to ask for clear specifications otherwise the delivery could be different from what the consumer expected. Therefore, it is key to find a way to make ordering as easy and quick as possible for the consumer, while collecting sufficient item specifications for the courier.

In the launching phase of Shift, delivery requests start with selecting a product category. As was explained in *chapter 7.3.3. Service blueprint*, when a product category is chosen, the most common specification parameters for that product category are shown to make ordering as easy as possible. In this launching phase, consumers have to insert relatively much information on the desired item manually. Ideally, the consumer would have access to a database in which all the products of surrounding stores are included. That way the consumer only has to browse items instead of inserting information himself or herself. This saves consumer effort and improves delivery quality. The roadmap gradually pursues this ideal situation.

The delivery offer lane has collaborations as the main theme. Through collaborations with various parties, Shift's delivery offer improves in terms of convenience and quality. The first step is to collaborate with local night stores to live up to the promise that Shift can deliver everything at any time. Further into the future, Shift will partner up with local stores (first with retail chains that are present all over the Netherlands and later on with smaller retailers). Larger retail chains are expected to have an online database of their assortment, followed by smaller retailers. These databases will be connected to Shift so that consumers can easily browse through deliverable items.

Eventually, Shift will not only collaborate with stores, but also with other delivery and courier services. Whenever Shift is experiencing peak demand, couriers from other platforms can jump in and vice versa. Or, whenever an Uber driver would like to make some extra money, he could take care of deliveries. Boundaries between service providers will blur to guarantee ultimate customer experience.

7.5.3. Technology

The technology behind Shift is not new, but it is complex. The technology lane is divided into the themes software systems and new technologies. Software systems concerns all the IT infrastructures that are needed to make Shift operational. New technologies represent the innovations that will stir the market and have their influence on Shift.

In the starting phase of Shift, the digital infrastructure has to bring together: the touchpoint with the customer (the app), data processing systems that calculate delivery times, prices, routes, etc., and a link to PostNL systems whenever a safetynet is required. Further into the future there will be more possibilities in terms of big data, AI and smart systems. Real-time delivery route planning will be optimized. Consumer behaviour will be easier to predict and delivery demand will be more accurately responded to.

At the end of the second horizon, there will be an integration between PostNL's regular parcel delivery operations and Shift. Consumers can request the delivery of a parcel that is processed by PostNL via Shift to make regular parcel deliveries super flexible and fast whenever that is desired by the consumer. This requires the redesign of operational processes, which will be quite an undertaking. But it will be worth it since this integration holds a strong competitive advantage: no other courier delivery service will be able to offer such an all-encompassing delivery service.

At the third horizon, we find that personal consumer networks and delivery network systems are the predicted statuses of play. Personal consumer networks are small partnerships between friends and family

Shift

	+2 yrs	+5 yrs	+10 yrs
	1ST HORIZON	**2ND HORIZON**	**3RD HORIZON**
	Access to everything, anytime and anywhere	Uncompromised service delivery	Limitless service experience

MARKET DEVELOPMENTS

- Increased collaboration between posts, couriers and retailers
- Advanced analytics and connectivity through big data
- Optimized fleet utilization through sharing assets
- Expanding service with more pick-up-, drop-off- and fulfilment centers
- Last-mile innovations
- Zero-emission transportation and e-mobility regulations
- Consumer movement towards environment and sustainability
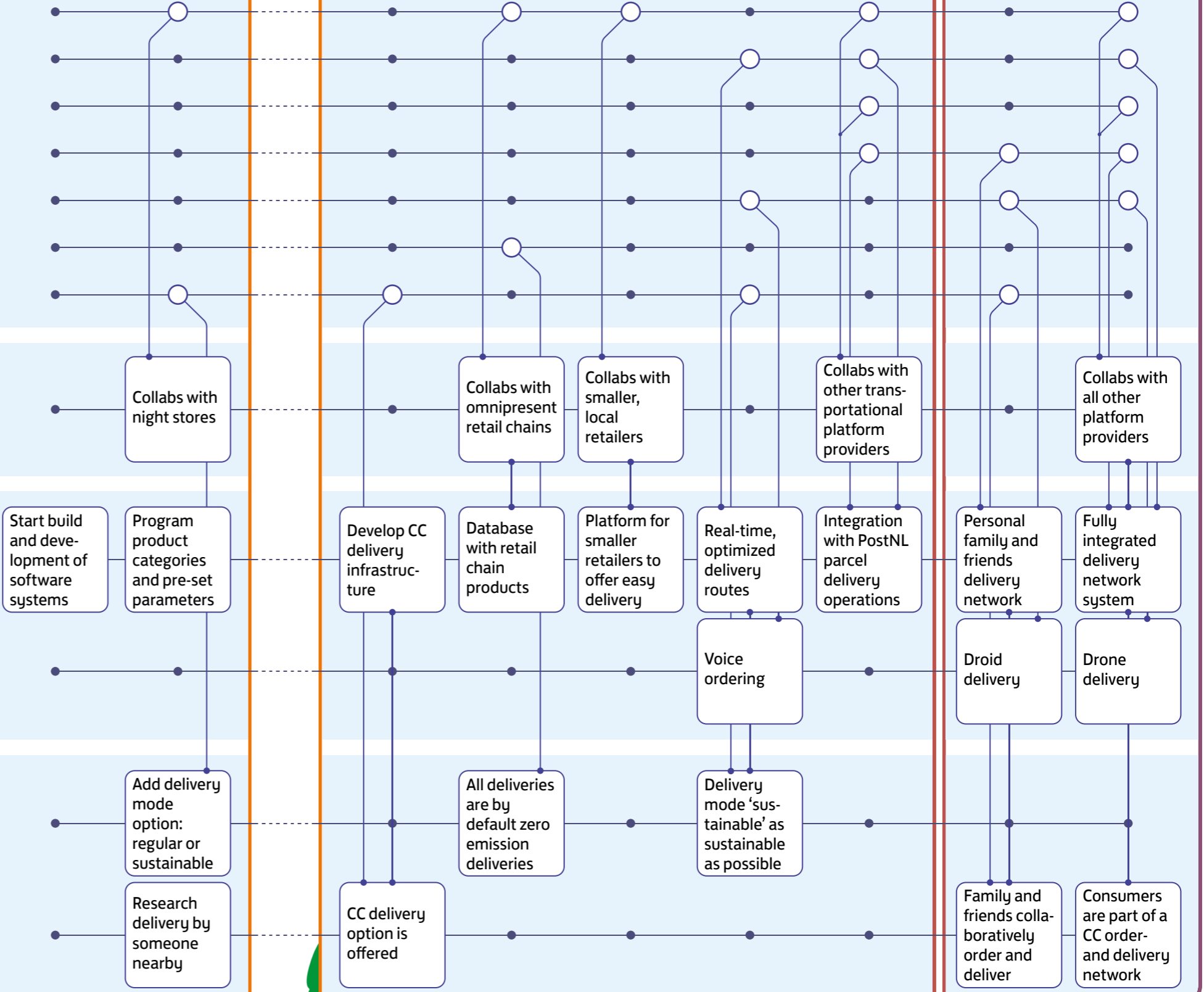
DELIVERY OFFER

COLLABORATIONS

- Collabs with night stores
- Collabs with omnipresent retail chains
- Collabs with smaller, local retailers
- Collabs with other transportational platform providers
- Collabs with all other platform providers

TECHNOLOGY

SOFTWARE SYSTEMS

- Start build and development of software systems
- Program product categories and pre-set parameters
- Develop CC delivery infrastructure
- Database with retail chain products
- Platform for smaller retailers to offer easy delivery
- Real-time, optimized delivery routes
- Integration with PostNL parcel delivery operations
- Personal family and friends delivery network
- Fully integrated delivery network system

NEW TECHNOLOGIES

- Voice ordering
- Droid delivery
- Drone delivery

SOCIAL RESPONSIBILITY

SUSTAINABILITY

- Add delivery mode option: regular or sustainable
- All deliveries are by default zero emission deliveries
- Delivery mode 'sustainable' as sustainable as possible

COLLABORATIVE CONSUMPTION

- Research delivery by someone nearby
- CC delivery option is offered
- Family and friends collaboratively order and deliver
- Consumers are part of a CC order- and delivery network

in which people know the whereabouts of each other's parcels and desired products. A roommate's parcel can be brought along by another roommate who passes the pick-up point. A mother can bring along a pack of IKEA napkins for her studying son. Requesting an item (demand) and accepting the request (supply) will be super fast and is highly dependent upon algorithms that combine people's digital agendas, their locations and the products' locations. Interconnectivity - between people, between businesses, between networks - will be the key driver of Shift. PostNL already has decades of experience with connecting people. Shift will expand this fair advantage to an era in which not only individuals but also networks are connected inseparably.

The new technology lane consists of external last-mile or retail innovations that will affect Shift. IT-related technologies are left out of this lane because they are included in the software systems lane. The most impactful trends from the technology trend analysis in *chapter 3.4.5. Technological trends* are included in this lane. Voice ordering will be the standard in a couple of years and Shift needs to be ready to accommodate for the concurring consumer expectation. Droid and drone delivery have been frequently named to become the new last-mile delivery standard. However, due to strict Dutch regulations and dense population, I do not expect these technologies to integrate in the Dutch delivery system before horizon three. But when they do, PostNL and Shift need to be prepared.

7.5.4. Social responsibility
As an ex-state-owned company that has had every Dutch inhabitant as a customer for decades, people are critical of PostNL's business operations. People expect PostNL to take their social responsibility and trust that PostNL complies to social and environmental standards. Consumers are becoming more aware of the environment and social norms themselves, too. PostNL's Finnish colleague Posti (see *3.3.4. Lessons learned from the case competitors*) is a good example of a post that highly values social and environmental

business operations and Shift is advised to follow their lead. Actually, it would be best if all of PostNL would follow their lead, but Shift could be a first major initiative.

The social responsibility lane is divided into sustainability and collaborative consumption. The sustainability lane mostly concerns the future of sustainable delivery. Transport used to be, and still is, a pollutinating undertaking because of the trucks and vans that emit CO2. Nowadays, more and more delivery companies deploy electric vehicles to reduce their environmental impact. In the early days, Shift will offer the possibility to choose for a sustainable delivery that is carried out by an electric or man-powered vehicle.

In the future, it is expected that delivery companies will (have to) perform CO2-neutral or zero-emission deliveries only. Shift will comply and even offer deliveries that are 'as sustainably as possible': optimized route planning, minimized traffic congestion, electric or man-powered delivery and 'environment before speed' are elements of this sustainable delivery option.

In line with the shared economy movement, Shift has the opportunity to become a vessel for collaborative consumption. Throughout this project the growing importance and the possibilities of collaborative consumption were emphasized - Shift was originally derived from the principles behind collaborative consumption. The studies within this project have proven that consumers prefer to take part in CC over regular consumption behavior if that provides financial or environmental benefits. In the early days of Shift, additional research is required in terms of how the principles and benefits of collaborative consumption should be made available to the consumer. By the time Shift has arrived at the third horizon, collaborative consumption will be a major driver behind Shift. The family and friends network helps to create a familiar and safe environment in which the principles behind CC are integrated. The next step is to integrate CC into all delivery networks to make the benefits of CC accessible to anyone in any situation.

7.5.5. Roadmap discussion and recommendations
The strategic roadmap of Shift supports the innovation strategy of Shift and provides decision making support. Together with the service blueprint, the roadmap serves as a means to holistically comprehend Shift as a service, including its features and future development. As applies to the service blueprint, the roadmap is a living document that is used for discussion and can be adjusted accordingly. It is important that all involved stakeholders are aware of the innovation strategy so that everyone is aware of what decisions need to be made today, and what decisions will have to be made in the future.

Some elements of the roadmap require some extra attention. For instance, the roadmap was constructed from the perspective of the consumer, from the demand point of view. The couriers, the supplier point of view, are not included in the roadmap. The acquisition of couriers and human relation management that has to support the couriers require thoughtful attention. Currently, platform-economy service providers experience great debate on collective courier agreements and regulations. Shift should account for new courier regulations and vouch for proper working conditions for its couriers in line with the social responsibility strategy that Shift is ought to take.

Another point of attention are the first steps that have to be taken to realize Shift. The roadmap communicates to start with the build and development of software systems. Although this is the appropriate first step to take, a lot of discussion and consideration happen before the actual software systems are built. First, there needs to be decided if management sees salvation in Shift. The business model has to be built, the expected investment has to be determined and the expected revenues have to be thoroughly calculated. When Shift gets the green light, a multidisciplinary team has to be formed that is concerned with the development of Shift. The team members should have various expertises (e.g. design, IT, marketing, HR, data

analytics, etc.) that will prosper the progressive discussion on Shift. Then, it should be decided who will take responsibility for the build of Shift. Will PostNL hire an external party to build and maintain Shift, or will they acquire developers that will build Shift in-house? All these events have to take place before the first element of the roadmap.

The roadmap is carefully constructed on the basis of current information on the future. As Shift is progressing through time, the elements of the roadmap need to be revised and adjust accordingly. The Shift team has the responsibility to organize sessions in which the strategic roadmap is revised and adjusted to guarantee future relevance. Only in this way, Shift will not only be a success tomorrow, but also in 10 years time.

KEY TAKEAWAYS
• The service delivery of Shift is taken one step further by also providing PostNL with a vision on how the future of Shift could look like by means of a strategic roadmap.
• A roadmap is a visual portrayal of design innovation elements plotted on a timeline. It supports the innovation strategy of an organization, or product or service, and provides decision making support.
• Horizontally, the roadmap is divided into market developments, delivery offer, technology and social responsibility. Vertically, the roadmap is divided into three horizons that represent a timespan and description that fits that timespan.
• The roadmap is carefully constructed on the basis of current information on the future. As Shift is progressing through time, the elements of the roadmap need to be revised and adjust accordingly.

8.
conclusion

8. CONCLUSION

8.1. DISCUSSION & RECOMMENDATIONS

Target group

The first point of discussion is Shift's target group. It was aimed to define a target group based upon the results of three studies. Unfortunately, the study results did not provide a decisive answer on who the target group should be - merely the outlines of the target group were defined. A few possible explanations are discussed.

First, the samples of two of the three studies were not clearly defined. Because the survey study and delivery mode study were posted on PostNL's track and trace web page, it was not possible to predefine a sample. From the respondents that filled out the surveys, the respondents with ages 20 - 30 approximately were under-represented. We can only guess why people from this age group did not participate in the study: they do not visit the track and trace page in general, they were not triggered by the titles of the surveys, they thought that taking the survey took too long or perhaps they do not fill out surveys in general.

I advise to conduct at least one study that probes for the desirability of Shift and the WTP that focuses specifically on respondents with ages 20 - 30. These study results can then be compared to the study results of this graduation project to see if there are any differences or similarities between the responses of age groups. On the basis of that analysis, target group research can be performed that goes beyond people's age.

Another reason why only the outlines of the target group are defined is that the target group definition was subordinate to researching if Shift is desirable and what people are willing to pay. The reasoning behind this is that it had to be proven first that Shift is desirable. If Shift proved to be desirable, it also had to be confirmed that people are willing to pay for the service. Only then it made sense to probe for a potential target group.

Due to the time constraints of this graduation project, I chose to pay most research attention to the desirability of and WTP for Shift because I felt that these two aspects determine the viability of Shift. The viability of the service is more important than the determination of the target group. Now that I have been able to verify the viability of Shift, I am confident that PostNL will be able to define Shift's target group.

Business model and investment

This graduation project has delivered a service blueprint, a user interface design and a strategic roadmap. The next step is to conduct the business model and to do the math. To make an educated estimation of what Shift will yield financially over the coming years, the investment that is needed to realize Shift needs to be decided. Additionally, the maintenance and operating costs need to be determined. Next, it has to be calculated what the expected revenue is over the coming years. Lastly, the return (on investment) can be calculated which will ultimately determine whether or not Shift will become reality.

It would have been very informative and interesting to perform this financial analysis myself. Unfortunately, the time constraints posed by this graduation project made it impossible to do so. I am confident that PostNL's Business Development department has all the required knowledge and skills to conduct the business model and to calculate Shift's expected returns.

Innovation mindset

As is often the case with large companies, I experienced that radical out-of-the-box ideas do not get the opportunity to land. "This will never get passed management" was mentioned several times as a reason not to pursue an idea. I can imagine that also Shift will be experienced as a radical idea by some of PostNL's employees.

To make sure that the service development is not prematurely killed, it takes a strong mind to advocate for Shift and to convince PostNL colleagues of Shift's value. Shift's protagonist is armed with several weapons:

- The service blueprint, user interface design and strategic roadmap provide the means to communicate the essence, the purpose and the possibilities of Shift. The deliverables can be deployed as instruments to shape and guide discussions about the value of Shift.

- Colleagues can be convin of the value of Shift by means of three strong arguments why PostNL should launch Shift:

    1. Shift enables PostNL to establish a direct payment relationship with consumers;

    2. Shift enables PostNL to become the undisputed favorite deliverer of the Netherlands; and

    3. Sooner or later a competitor will launch a similar-to-Shift service. Does PostNL want to watch how a competitor taps into new streams of revenue, or does PostNL want to play ball?

- Provided that the financial calculations turn out in favor of Shift, these numbers can be used as powerful ammunition to convince even the most conservative opponent of Shift's value.

COVID-19 constraints

COVID-19 has turned the whole world upside down. Two months after the start of this graduation project, mid-March 2020, the TU and PostNL shut down. This has had a couple of consequences for this graduation project.

It was not possible to facilitate physical creative sessions. Although everything has been done to preserve the group dynamics digitally, digital creative sessions are different from physical creative sessions where people can build upon each other's energy. I do not know how the digital sessions have influenced the quality and quantity of the ideas, nevertheless I am content with the ideas that were developed during these sessions.

Another restriction posed by COVID-19 was the inability to quickly walk up to someone and have a chat about an idea, concept, notion, approach, etc. This goes for employees at PostNL and for fellow graduates at the TU. Quick fact-checking or quickly discussing a complication was not possible. Therefore I had to figure out almost everything on my own.

A positive side effect of COVID-19 was that I was able to fully focus on this graduation assignment without distraction from social gatherings, parties and work. Travelling to Amsterdan, The Hague or Delft was not longer possible and saved me approximately 6 hours travelling time per week.

Travelling the world will not be an option after I graduate from the TU Delft on September 11th 2020. I hope that COVID-19 will be eradicated soon and that it will not get in the way of my first career steps.

8.2. CONCLUSION

The assignment for this graduation project that was given by PostNL was: "Design a delivery service from the perspective of a specified target group that PostNL can ask money for. The willingness to pay (WTP) for this service needs to be researched." This assignment was split into three components:
1. Design a 'reception-style' delivery service;
2. Determine a target group, and
3. Make sure people are willing to pay for the service.

A new reception-style delivery service was designed, named Shift. Shift allows the consumer to have access to everything, at any time, anywhere. Shift taps into the principles behind collaborative consumption and allows crowdsourced deliverers to take over (a part of) deliveries. Shift was born from ultimate convenience and control, and responds to the most sudden and intense consumer needs. Shift enables PostNL to establish a direct payment relationship with consumers.

A good service design answers three fundamental questions to deal with strategic initiatives as well as operational challenges:
1. What does the service do for PostNL's current and future customers?
2. How will the business be impacted?
3. Which capabilities are needed by PostNL to respond to or drive the initiative?

Shift provides ultimate convenience and control to consumers. Shift can be consumers' saviour when time is scarce and consumers' pamperer when time is rather spent elseway. A service blueprint was designed to provide insight into what Shift does for current customers and how Shift will impact the organization in the short term.

Additionally, a strategic roadmap was designed to portray the future of Shift in terms of what Shift will do for future customers and how PostNL is ought to respond to future events. To approach the design of Shift also from the consumer's perspective, a user interface design was developed. The blueprint, roadmap and UI design combined provide a holistic view on the essence, the purpose and the possibilities of Shift.

Focusing on the target group, it was found that frequent orderers and average orderers have to be included in the target group. It is expected that the early adopters of the service are digital-savvy, younger consumers who have experience with ordering through an app. Additional research has to be performed to further specify the target group.

It also has been validated that people are willing to pay for the service. Three studies were conducted that inquired for people's willingness to pay. Participants indicated an average amount of €6,02 (study 1), €2,66 (study 2) and €2,31 (study 3), dependent upon the value and size of the desired delivery item. Shift was positively received by the participants of a qualitative narrative study (n = 47) and was assigned with an interest score of 4,03 (out of 5) by the participants of a quantitative survey study (n = 176).

Before Shift can be realized, its business model should be conducted and its returns should be thoroughly calculated. Shift also needs a protagonist that will advocate for the service and who will convince colleagues of Shift's value. If PostNL manages to take these next steps, I am convinced that Shift enables PostNL to become the undisputed favorite deliverer of the Netherlands.

8.3. PERSONAL REFLECTION

At the kick-off meeting I was asked what I want to get out of this graduation project. I answered 1 that I wanted to learn what you can mean to a large company as a designer and 2) that I wanted to be super proud of how I finished my studies. I achieved both goals.

During my studies, I have worked with start-ups, SMEs and ministries. To find out where I see myself working after I graduate, I wanted to experience the corporate culture to complete the picture. There are a lot of prejudices about corporates: bureaucratic, unwieldy and conservative are adjectives that are frequently associated with corporates. I wanted to learn if a designer could change the status quo and help a company in its innovation goals.

There were many times that I had to fight for the beliefs of a designer. Right after the start it became apparent that other things were expected of me than I had planned to do myself. It even came to a conflict. I had to find a delicate balance between living up to the expectations of PostNL whilst staying true to the strategic product designer in me. I really pushed myself and PostNL to make the most out of our collaboration.

I had to earn PostNL's trust before I was afforded scope for approaching things differently. That has led to positive results: I developed a delivery service that allows PostNL to build a direct payment relationship with the consumer. But I was able to achieve much more: Shift is demonstrably desirable, responds to real market developments and gives PostNL a head start on the competition. I went beyond the initial deliverable - the service blueprint - and also developed a user interface design and strategic roadmap.

I have shown myself and PostNL what a designer can accomplish. I have experienced that I have learned more during my years as a design student than I imagined. I learned that I may be more confident about my design skills and that I may be more persuasive about my own beliefs.

There are a few things that I wish I had done differently. I think that I could have accomplished more during the ideation phase if I would have been better prepared on some of the hurdles that I encountered during that phase. For instance: I could have presented my ideas more vividly and make better use of creative facilitation techniques. I still have to learn how to protect authentic newness.

COVID-19 prohibited the spontaneous moments you can have with fellow students or people at PostNL to discuss an idea, thought or problem. I worked almost completely independently and I wonder what I would have done differently if COVID-19 did not throw a spanner in the works.

I gave it my all. I am proud.

9.
references

9. REFERENCES

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