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What makes users circulate stuff?

User incentives and barriers in circular consumption

Master's thesis in Industrial Design Engineering

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Cover: Illustration by Sandra Sköld, the project duo using the toolkit Circulate it!

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ABSTRACT

Responsible consumption and production is one of the UN Sustainable development goals. It is an important area and an inspiration for working with circular consumption. The project aimed to investigate the three phases of circular consumption; Obtainment, Use, and Clearance. It also aimed to gain knowledge about, and understand user incentives and barriers regarding consumption. The project further aimed to analyze the found data to make it valuable for a designer or other agent. The analysis was the foundation of creating a toolkit that supports the development of circular solutions.

The project was divided into three parts, starting with a literature review, which aimed to investigate consumption behavior and how to influence behavior. The findings from the literature review was analyzed to identify both incentives, barriers, and potential knowledge gaps.

The second part of the project covered a user study, which aimed to gain knowledge regarding circular consumption and complement the potential gap discovered in the literature review. The user study also aimed to strengthen the literature information and to create a deeper understanding of consumption.

The first result from the first two parts of the project was that all factors that affect circular consumption could be grouped into three themes; *the consumer*, *the offer* and *external influence*. The literature review also indicated that clearance had not been as thoroughly researched as obtainment and use. Therefore, the user study and the third part of the project had a clearance focus.

Lastly, the final part of the project included converting the findings to support a designer or other agent. The four areas to consider while designing for clearance are; *circular consumer characteristics*, *activities*, *product state*, and *clearance options*. The four areas were the foundation of creating a toolkit that aims to aid designers and other agents while developing circular products and services. The toolkit helps to explore the target group and learn about characteristics that form consumption choices. It educates about the term '*product states*' and is about understanding the product's journey towards clearance. Finally, it helps to identify and overcome obstacles in circular consumption and develop new business ideas and perspectives.

Keywords: circular consumption, circular design toolkit, circular economy, clearance, consumption model, product development, sustainable development

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Gothenburg, June 2021



Sandra Sköld



Elin Ljungberg

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TERMINOLOGY

CIRCULAR CONSUMPTION

Obtain	The first part of consumption, the part where a user obtains a product. Obtainment includes need recognition, evaluation of alternatives, and accessing the product from the consumption process
Use	The second part of consumption, involves the usage of the obtained product
Clearance	The final part of consumption, when a consumer gets rid of a product

WAYS TO CONSUME

Second hand	To purchase something pre-used
Collaborative consumption	To own collaboratively within a community
Product service systems	Sharing products from services
Refurbished	Purchasing products that has been maintained, upgraded, or repaired by a third part
Linear consumption	The traditional way of purchasing newly produced products

CONSUMPTION PROCESS

Consumption phase	The phases involved during consumption, from the need recognition, search, evaluation of alternatives, access, use, evaluate to clearance.
Consumption path	The different paths a consumer can obtain a product in, such as second hand, collaborative consumption, refurbished, product service system and linear consumption.
Aspect	Aspects are connected to the phases and includes attitudes, characteristics, demographics, memories experience, etc. Used to summarize and sort the information from the literature.
Factors	All of the findings from the literature was sorted by the aspects, the findings are called factors, which are specific elements that effect consumers' decision.

SHARING

Private sharing	Sharing products spontaneously with familiars. Both close familiars such as family and friends but also familiars with some kind of connection, such as a friend of a friend.
Sharing service	Sharing products through a service or with an agreement. The sharer do not know anything about the borrower, but trusts the service.
Sharing	Both of the earlier mentioned sharing possibilities combined.

INTRODUCTION

The first chapter introduces the project with a background, project aim, and the objective. The research questions are also presented followed by demarcations and information regarding ethical concerns. The chapter ends with a project layout, where the parts of the project are described.

1

1.1 Background

In today's industries, there is a large focus on consumption and production (United Nations, n.d.-b). More companies start to produce products suited for circulation and they are also taking back their old products to circulate them (Fleming, 2020). Even though some companies have started to consider circular solutions, further improvements are still needed.

In 2015, the United Nation created 17 sustainable development goals, these aim to guide countries in sustainable development (United Nations, n.d.-a). This project has a focus on goal number 12, which considers responsible consumption and production. The goal is about using existing resources efficiently, and promoting a sustainable consumption, production, and lifestyle (United Nations, n.d.-b). Developing the circular economy would efficiently use resources, and reusing products is a key factor for creating a circular economy (Maitre-Ekern & Dalhammar, 2019). Multiple users are involved in a circular economy, their attitudes and motivation are crucial and determine how successful it will be. Therefore, it is important to consider users' attitudes and how they will act since a circular economy is about exchanging, lending products, and purchasing them pre-used and aims to reduce the demand for newly produced products (Maitre-Ekern & Dalhammar, 2019).

The project Use2Use from Chalmers University of Technology has been an inspiration for the thesis project and for understanding how important it is to involve the users' perspective. A circular consumption process is e.g. obtaining a pre-used product, using it, and then passing it on to someone else, whilst a linear process is to buy a newly produced product, use it, and at last dispose of it as trash (Selvefors & Rexfelt, 2019). Selvefors et al. (2019) created a circular consumption model which highlights the importance of the user's perspective. It involves three phases of the consumption process; obtainment, use, and clearance. Obtainment includes gathering information and considering alternatives, it further includes the user accessing the product. The use phase, in circular consumption, often involves more demanding activities. To prepare, clean, or install the product might be harder. Eventually, the user gets rid of the product either temporarily or permanently. Permanent circular disposal involves selling or trading, while a temporary option is to lend. These circular options for clearance require activities, such as cleaning, pricing, and finding a receiver, which makes circular consumption more complex and demanding.

Thus, circular processes can be challenging and time-consuming. Renting, borrowing or trading products can require more effort and planning compare to linear consumption. Research on user attitudes to circular consumption, the importance of the users' perspective, and the usage of existing resources presents the user as the determining party to successful circular consumption. Without concerning the user's perspective there is a risk of an absence of successful circular solutions in the future. This creates a need for answering the research questions of this thesis.

1.2 Aim & objectives

The general purpose of this project is to contribute with knowledge regarding users in circular consumption that will promote the UN Sustainable Development Goal number 12 - *Responsible consumption and production* (United Nations, n.d.-b). More specifically the targets:

12.5 - By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.

12.6 - Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.

The promotion of the UN sustainability goal number 12 will be done through contributing to the consumption research and educate about responsible consumption through the created toolkit.

This project consists of 60 credits and had two aims. The first aim of the project was to define user incentives and barriers in circular consumption and if these differ from linear consumption. To determine peoples' motives to chose circular options will contribute to the understanding of why some reject circular options and others do not. The project second and final aim was to identify a potential knowledge gap in the literature regarding circular consumption. The second aim was to create a toolkit to support designers and other agents to learn about user incentives and barriers in circular consumption. The toolkit aims to help companies, or individuals, develop and learn about products, services, and business ideas suitable for circular consumption.

The project's objective was to investigate circular consumption and the three phases obtainment, use, clearance, and to gain knowledge about the users' reasons and thoughts that steer decisions and actions in the three phases. To explore such incentives and barriers, adequate literature was reviewed. Also, to complement the literature findings a user study was constructed and executed. Further, the project aimed to determine if the existing descriptions of consumption solely suits linear consumption or if the defined factors could be applied to circular consumption as well. Throughout the project, the gathered information results in a toolkit that will support designers and other agents while developing circular products.

1.3 Research questions

1. How are user incentives and barriers in circular consumption described in the literature?

1.1 What are the differences between linear and circular consumption?

1.2 What are the knowledge gaps in the literature?

2. How are incentives and barriers to act within circular consumption described by users themselves?

2.1 Are the users' descriptions different from the descriptions found in literature?

3. How can the knowledge about user incentives and barriers be utilised for developing design tools that aid designers or other agents to develop circular products and services?

1.4 Demarcations

This project will search for adequate literature and previously performed projects to get an overview of what is researched and discovered. International papers were included in the literature but the user study was limited and only involved participants from Sweden. The delivery of a toolkit is supposed to be used by designers or other agents who possess knowledge regarding the design process. The toolkit will be used as a compliment rather than an independent tool. Testing and evaluation will be executed on the final result, yet a continuation of evaluation and similar activities are possible.

1.5 Ethical considerations

Ethical considerations needs to be considered when people are affected by the process of the project or the result (Axelsson, 2018). The result of this project affects people by involving them in the transition from linear to circular consumption. One consideration is the uncertainty users can feel while acting within circular consumption, it includes the additional activities that might require more time and planning. Despite that, there are several positive psychological effects such as feeling great for choosing a sustainable option, creating communities, and being trendy. Additionally, it can start chain reactions if users are satisfied with their new way of approaching consumption.

Ethical considerations apply to the process as well as the result, which was taken into consideration during the project. During the process, a user study with various methods was performed. When collecting data from the participants, an agreement had to be signed before involvement. The agreement concerned General Data Protection Regulation (GDPR) and included information as; who is gathering the data and where it is stored, what is the purpose of data collection, and how the result will be presented. GDPR has the purpose of protecting individuals' fundamental rights, particularly their right of protection of personal

data (Integritets myndigheten, n.d.). Asking or observing people about their consumption habits can feel offensive, so the participants were asked if they wanted to share details about their consumption before they participated in the study.

1.6 Project layout

This project was completed during one year and included three parts, it was carried out by the two authors that are referred to as the project duo in the thesis. *Part 1 - Literature review* covered collection and conversion of data to provide academic background and perception on potential literature gaps. *Part 2 - User study* aimed to complement the literature and the potential gaps. Lastly, *part 3 - Final delivery* creates an understanding of incentives and barriers in circular consumption through a toolkit for designers and other agents.

Part 1 - Literature review

The literature review covered one fourth of the project period. It was carried out to investigate consumption behavior and how to influence behavior. Further, the data was analyzed and compared to identify potential knowledge gaps and to create an understanding regarding the differences between circular and linear consumption motives.

Part 2 - User study

The user study covered another fourth of the project period and was carried out to complement the potential literature gaps. The study's intention was not solely to complement the literature gaps but to strengthen the arguments found and thereby give the project duo a greater understanding of consumption.

Part 3 - Final delivery

Lastly, the final part of the project covered the closing half. This part of the project included converting the findings from previous parts and presenting them in an understandable and user-friendly way. Also, to develop a toolkit provided to designers and other agents. It was an iterative process with evaluation and testing performed both internally and externally.

METHOD & PROCESS OF LITERATURE REVIEW

The following chapter contains the methodology and the process of the literature review. The purpose of the study is to get an overview of the subject. Also, to define a possible literature gap. The study will contribute to a comparison between different ways to consume and the different motives for circular and linear consumption.

2

2.1 Bottom-up approach

A literature review is performed to contribute to an overview of a subject. The selection of papers was done through a bottom-up approach, which is an effective and recommended approach while researching an unfamiliar subject (Paper Masters, n.d.). It starts with listing index terms, that are used for the search process. Choosing the papers starts with reading the title. The next step is to read the abstracts and table of contents of the chosen articles. This will enable a selection of which articles can be included in the study (Paper Masters, n.d.). To choose the articles for the review, the following search engines were used; Chalmers lib, Google Scholar, Chalmers Open Digital Repository, and the Centre for Consumption Research at University of Gothenburg. Also, conference proceedings were studied. The selection was based on their title and the abstract, the chosen papers were read and summarized.

2.2 Literature review

A literature review can involve information gathered from books, articles, thesis works, dissertations, and research papers. The chosen literature is studied and analyzed to define important theories, methodologies, and gaps (McCombes, 2019). A review usually consists of a summary with a synthesis, which includes an organization of the findings. After analyzing the material it should be revised to ensure all findings have been considered (UNC-Chapel Hill, n.d.). The result of the review enables the researchers to define gaps and motivate further research and discussion. Further, the review permits the creation of frameworks and indicates the researcher's knowledge regarding the subject (McCombes, 2019).

The project's literature review aimed to define the behaviors that exist regarding consumption and the psychological reasons for users' decision-making. The research brought an understanding of the choices users make in consumption and what emotions they triggers. Both linear and circular consumption has been studied to determine differences and similarities. The review was divided into three steps, for the first two steps the project duo selected suitable papers and project reports. The third step aimed to find information regarding the possible knowledge gap in the literature. The strategy of the three steps of the literature review is presented in figure 2.1 and the keywords used are presented in figure 2.2.

Step I

The selection of literature in step I, resulted in 17 papers and project reports, which were divided into six topics; consumption behavior, psychology and behavior, acceptance in circular economy, linear models, business models, and circular production.

Step II

Additional literature was received from the supervisors of the project, collected at different conferences, and from the Centre for Consumption Research at University of Gothenburg. The conference proceedings was retrieved from SCORAI (Sustainable Consumption Research and Action Initiative) and through Design Research Society, IASDR (International Association

of Societies of Design Research). The papers found at the Centre for Consumption Research were selected through a screening of their publications between 2006-2020. When conducting the information it was categorized in the same previous topics, and two new topics; transferring from linear to circular economy and circular consumption.

Step III

Step III of the research aimed to identify the knowledge gap in the literature, as mentioned in research question 1.2. During the first two steps of the review, the result indicated that clearance was not as thoroughly researched compared with the other consumption phases. Few articles mentioned how clearance affects the psychology of the consumers and what they go through while getting rid of a product or service. The clearing decision originates from the consumer characteristic and their experience with the product or service. For step III of the review, existing literature was researched once again with a clearance perspective. Additionally, new literature was found through previously used search engines.

Figure 2.2: Keywords literature review.

STEP I	Keywords 1 Circular consumption behavior, circular consumption, consumption patterns, patterns in circular consumption, commercial user consumption, user consumption patterns / consumption patterns, shopping behavior, bias consumption,, ways to buy, psychology consumption, psychology circular consumption, patterns in circular consumption, teory of planned behavior, reasoned action, user consumption patterns, enable (product) reuse, barriers in circular consumption, linear model of consumption
STEP II	Keywords 2 Sustainable consumption, circular consumption, circular economy, consumption, behavior, consumer behavior
STEP III	Keywords 3 Clearance, riddance, get rid of, circular disposal, clearance options, riddance options

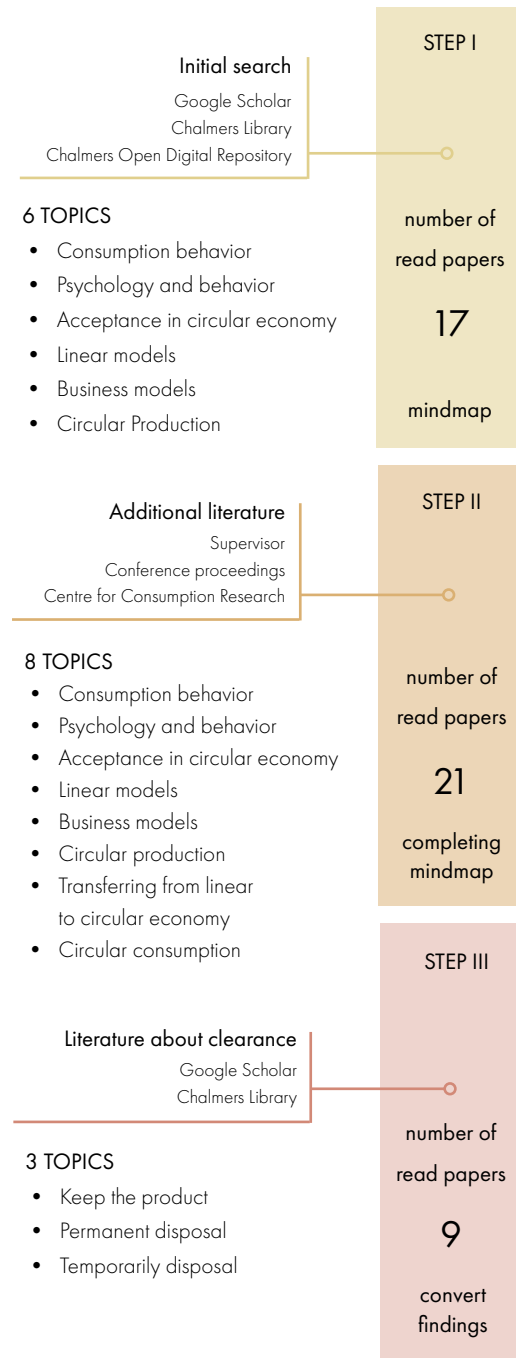


Figure 2.1: Literature review strategy.

2.3 Mind map

A mind map sorts information in a creative and effective process with visual mapping. Starting with the main subject in the middle, text, and images can be arranged in different themes and connected with branches to other themes. The mind map can contribute with new ideas and multiple arrangements and connections within different themes. The main purpose is to present an overview that others can understand without difficulties (Cunnah, 2020). Google's web application coogle, a mind mapping program, was used for the creation of the map. Designing it online enables an adjustable size without limitations. The topics and summarizations from the literature review were compiled and added to the mind map, the topics of the mind map helped structured the data and presented further information to search for. The topics in the mind map changed during the three steps, but eventually, all valuable data from the parts could be summarized in five final topics: consumption behavior, psychology and behavior, circular consumption, circular economy, and production. These are visible in figure 2.3.

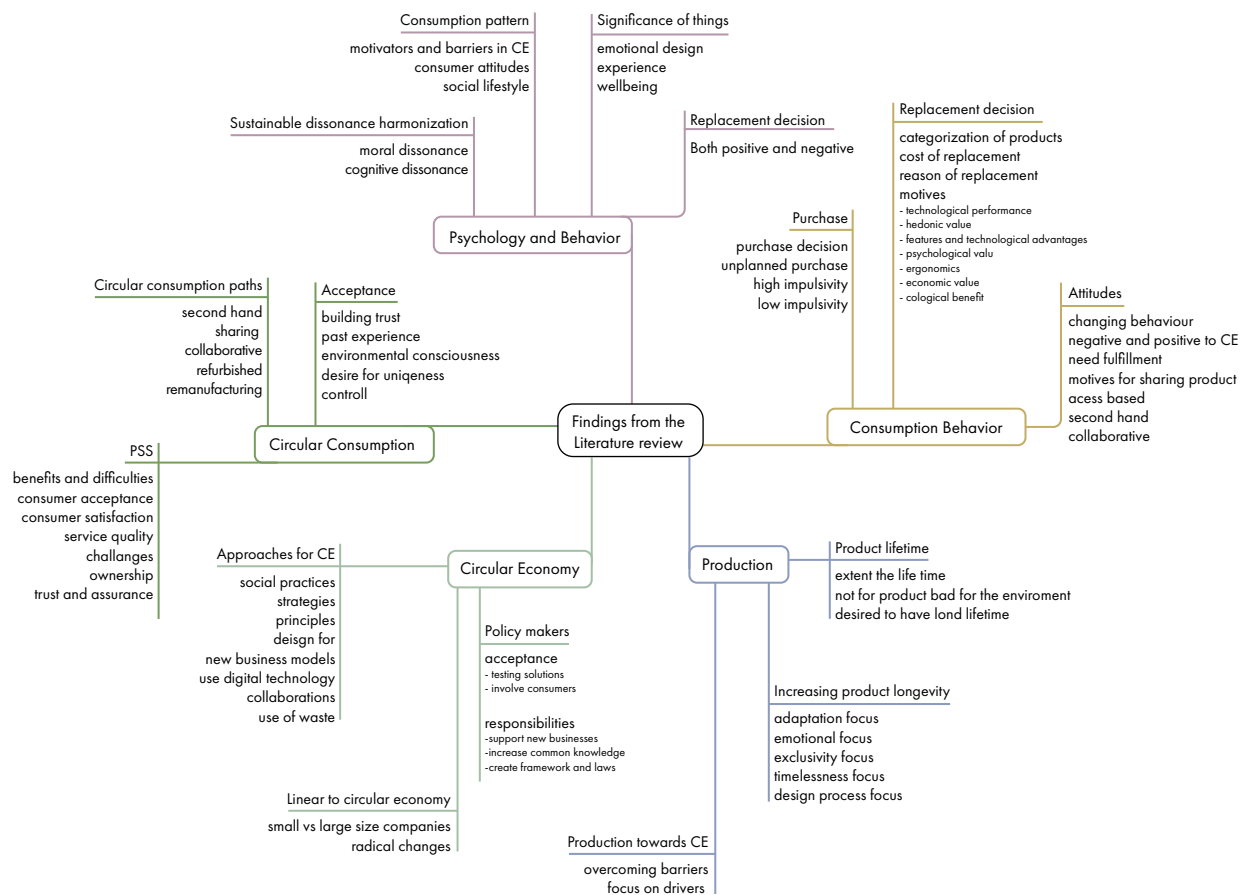


Figure 2.3: The final five topics in the mind map.

2.4 Consumption model

To continue the research a consumption model was created to ease the process of finding, sorting, and comparing incentives and barriers. A new model was required to enable a distinctive comparison between linear and circular consumption processes. The model was simplified compared to the existing ones, to ease the sorting of the data. The new consumption model is a reduced version of the traditional consumption process and it was desirable to include both clearance and path selection, different from the inspirational models. The consumption model is based on a traditional linear consumption model (Blackwell et al., 2015), but modified with inspiration from Poppelaars et al. (2018) to suit circular consumption.

The first step of path selection was added where the user can either choose a circular or linear obtainment option. The categories and aspects connected to each phase are also sorted to suit both linear and circular consumption. Additionally, it was important to include the clearance phase to highlight what happens after use and that it could be either circular or non-circular.

The next step was to define consumption paths from the literature review and to insert the data from each consumption path into the consumption model. The reviewed data covered five consumption paths; *second hand*, *collaborative consumption*, *product service systems (PSS)*, *refurbished*, and *linear consumption*. The paths, with accompanying incentives and barriers, were compared and the result is presented in the next chapter.

RESULT OF LITERATURE REVIEW

To present the result from the literature review a consumption model has been created by the project duo. The model arranges information through different consumption paths and carries all findings from step I and step II of the literature review. The result of step III presents the gathered data on clearance.

3

3.1 Consumption model

The consumption model defines the different eight phases a consumer goes through in a consumption process, starting with the choice of a *path* followed by; *need recognition*, *search*, *evaluation of alternatives*, *access*, *use*, *evaluation*, and *clearance*. The path selection is what kind of obtainment or purchase selection the user does, either second hand, collaborative consumption, refurbished product service system, and linear consumption. The consumption model applies to all paths and is presented in figure 3.1. This consumption model was created to reduce the complexity of the existing consumption processes. It aimed to support the process of finding, sorting, and comparing incentives and barriers from both linear and circular consumption.

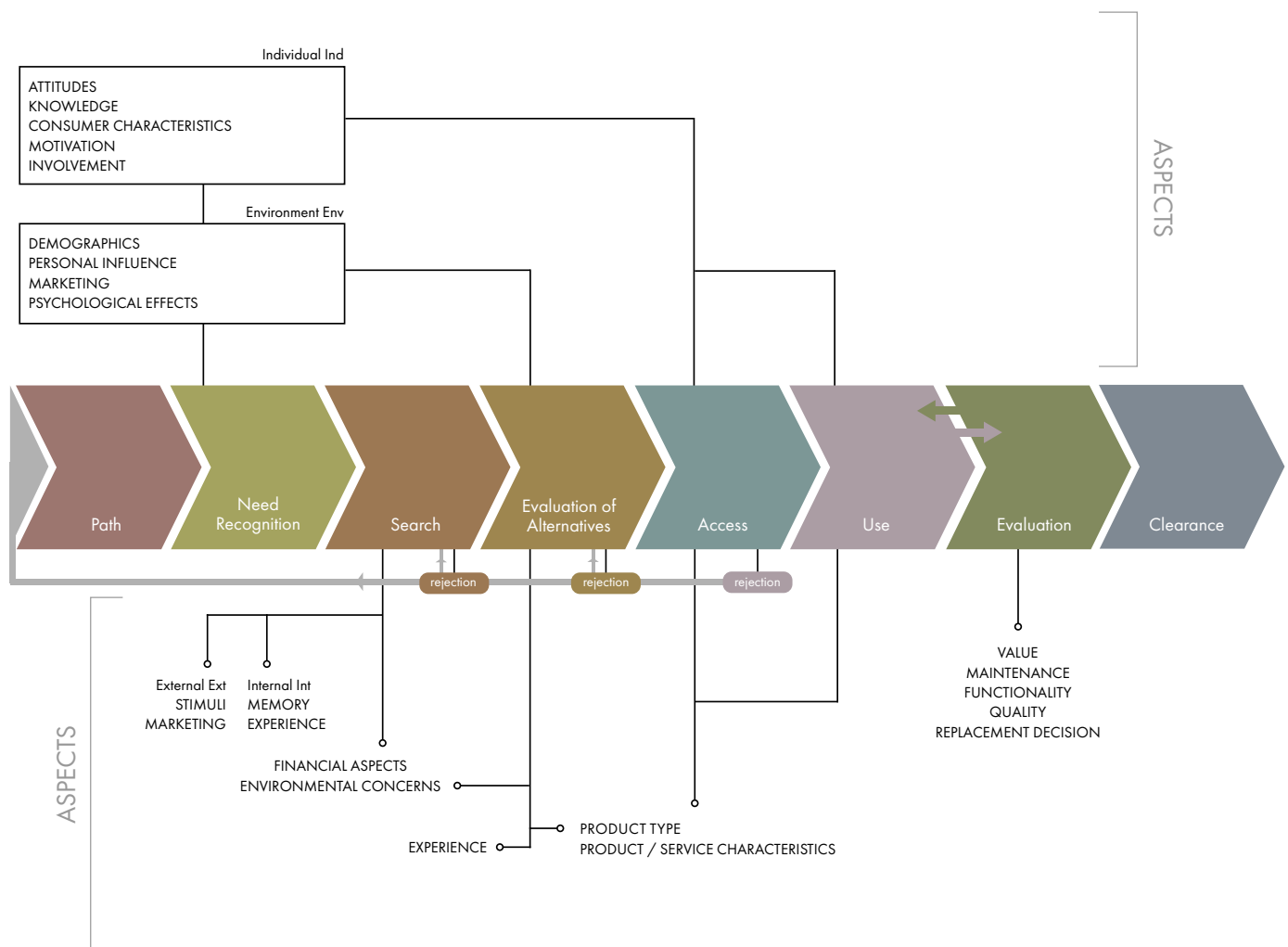


Figure 3.1: Consumption model created by the authors.

The figure also presents the aspects which affect the choices the consumer makes and it were used to sort the information from the literature review. The data will be sorted under the aspects and within the correct path and be referred to as factors. This enables a comparison between the different paths and the result from the user study.

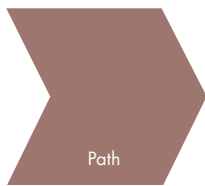
The consumption model is explained through the following scenario.

Annie is consuming both pre-used and newly produced products and she has decided to obtain some new clothing. She needed a new jacket and thought that she could obtain one through a second hand shop. So her path selection came after the need recognition and was affected by multiple factors, such as her knowledge regarding second hand and the available shops. Her motivation to find a jacket is what encourages her to proceed with the obtainment. She began the process by looking and searching in different shops, she considered the financial aspects and tried to find a jacket in her price range. She eventually found one jacket she was interested in, but after evaluating the jacket by trying it on, she noticed that the jacket was too small and made a rejection going back to searching other shops. In the next shop, she found two jackets she liked. She tried both jackets and evaluated them based on previous experience. She decided to move on with a jeans jacket, which she accesses by purchase in the second hand shop. She starts to use her jacket the same day and her friend is quick to ask where she bought it since she wants a similar one, this makes Annie reflect on how she appreciates the social status she gets through this jacket. She likes the way it suits her and that it is unique. During usage, she evaluates the jackets after each use, even if this occurs subconsciously. She considered the value and functionality of the jacket and decided to keep it. She will not clear this jacket until she gets tired of it and replaces it with a new one.

SCENARIO

3.2 Consumption phases

The eight phases from the consumption model represented below.



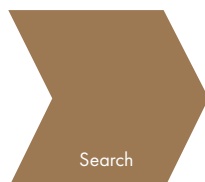
The chosen path

The first part of the model is the choice of path. The path selection is placed at the beginning of the process to illustrate that the user can begin the consumption with a path choice. Although the path selection could occur later in the process, from the start until the access. An example of the path phase is when a consumer initiates the consumption process through contemplating were to obtain a newly produced or pre-used product.



Need recognition

This phase treats the factors that evoke the consumers' needs. It includes what they desire in physical performance to enable need fulfillment, how the product or service will harmonize with attitude and consumer characteristics, and what that product expresses in social- and cultural contexts. When a consumer experiences a need for a product they are in this phase, the need recognition. The choice of the path could occur after the need recognition or before. For example, if the consumer wants to obtain only pre-used products their choice often occurs before the need recognition. But consumers could also discover the need, before choosing how to obtain the product.



Search

Search, evaluation of alternatives, and access are steps that together form a phase, referred to as obtainment. Which involves everything that influences the consumer in the process from search to access the product. The search phase is about the factors considered in the search for the requested product. These are factors like external stimuli that the consumer is reached by, previous experiences, or financial and environmental aspects. The risk of potential rejection is included in the process and each path. It applies under the three steps of obtainment, and if the personal and situational reasons are predominant negative factors, rejection will occur. If rejection occurs the consumer either starts the process again and returns to need recognition to reflect over the initial need. The consumer could also return one or two steps in the process to realize what triggered the rejection and try another alternative.



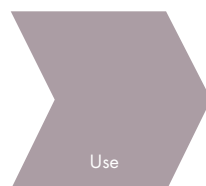
Evaluation of alternatives

This phase holds factors that affect what option the user will continue with into the access phase and are crucial when alternatives are evaluated and the consumer is getting prepared for a purchase decision. Likewise, in the search phase, the risk of rejection is present in this phase.



Access

This phase is closely related to the previous one since the evaluation of alternatives shapes the obtain decision. To put it another way, the factors in this phase are those considered when deciding to obtain. There is still a possible rejection before making the final decision, which is influenced by the aspects of this phase. At this point, when the user is obtaining a new product, available and suitable options have been researched. The consumer has also evaluated alternatives and perhaps accessed the product. The user might have reached rejection during the process, which could have changed path choice, source, or alternative.



Use

As defined in the basic model, figure 3.1, the influencing aspects of the use phase are the individuals' aspects and those concerning the product type and the product and/or service characteristics. These aspects and factors will determine whether the consumer will consider evaluating the need fulfillment of the usage or satisfactorily keep using the product or service.



Evaluation

The second evaluation aims to list factors that affect the user's decision regarding continuous use. The listed factors will state how pleased the consumer is with the product.

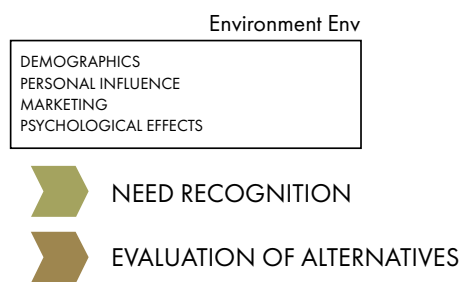


Clearance

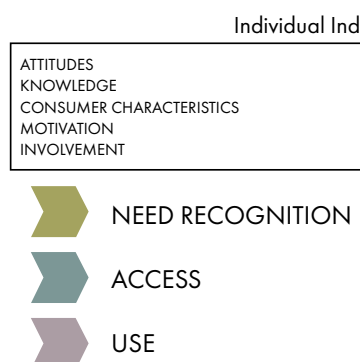
The clearance phase is about how people get rid of belongings or end service subscriptions. Also, what emotions such decisions arouse. The clearance phase is typically independent of the obtainment path. The clearing decision does not typically depend on the first path decision, but on the consumers' experience with the product or service and the personal characteristics. Though there are still exceptions, e.g. when renting something it is settled that the clearance option is to return it.

3.3 Aspects explanations

In the following section, all of the aspects are explained and presented together with the phases they affect. After each aspect, descriptions of relevant factors are presented in the following way, *aspect; factor, factor...* The aspects were included to enable sorting of the data and are such that suit both linear and circular consumption. They were included with inspiration from the consumption processes Blackwell et al. (2015) and Poppelaars et al. (2018) presents.



The phases *need recognition* and *evaluation of alternatives* are both affected by the environmental aspects, which includes factors from the surrounding environment. Following environmental aspects are considered: demographics; locations, gender, living areas. Personal Influence; influence from other people. Marketing; the effects of marketing. Finally, psychological effects; offerings that motivate consumers to purchase.



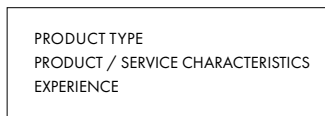
The individual aspects affect the *need recognition*, *access*, and the *use* phase. All of these aspects depend on the consumer and their experiences. The following individual aspects are considered: Attitudes; social context, desires, responsibilities. Knowledge; the consumer's knowledge. Consumer characteristics; the characteristics, environmental concerns, habits. Motivation; offerings, quality, accessibility. Finally, involvement; to be a part of a community, create contacts.



The *search* phase is divided into internal and external aspects. The internal aspects consist of the consumers existing memories and experience, such as previous experiences with suppliers, brands, and habits. The external aspects are, stimuli and marketing, which the consumer has been exposed to through advertisement and impressions from other users.



The *search* phase is further affected by financial aspects and environmental concerns. These are factors such as economics, profits, ecological impact, and environmental benefits. These aspects and factors also affect the next phase *evaluation of alternatives*.



EVALUATION OF ALTERNATIVES

Besides financial and environmental aspects, the phase *evaluation of alternatives* is affected by experience, product and service characteristics, and the product type. Factors within these aspects are; previous experiences, the characteristics of the offering, and what kind of product or service that is evaluated.

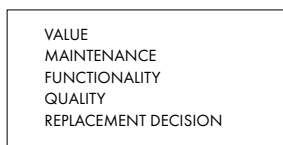


ACCESS



USE

The product type and product and service characteristics also affects the *access* and *use* phases. Examples of factors considered in these phases are exchange opportunities, insurance choices, utilitarian and hedonic value. Hedonic value is the emotion that a certain, in this case, product or service arouses and how desirable and pleasurable it is. In contrast, utilitarian value is the motive of purchasing something for its practical use and to fulfill the consumer's needs (Carman, 1978; Camacho-Otero, 2020; van Weelden et al., 2016).



EVALUATION

One of the final phases *evaluation*, are affected by aspects such as value; brand loyalty and emotional bonds. Maintenance; technology performance, and longevity. Functionality; product and service function, and benefits. Quality; quality expectations, and insurance. Replacement decision; costs, emotions, and surroundings. The factors for the evaluation phase are determining whether the consumer chooses to keep the product or service offering or to get rid of them in the clearance phase.

3.4 Result step I & II

The result from the literature review step I and II presents consumption paths including descriptions of the most important findings and what drives consumers to chose different paths. All findings from the literature review can be found in appendix A. The most important factors mentioned in the literature review are both the ones the papers stated as most important and the ones mentioned by several references. All the information for each of the paths has also been arranged as factors in the consumption model. These are presented in appendix B.1.1-B.1.5

Buying second hand

The motive for obtaining products through second hand is the familiarity with the path, which creates trust and accessibility. The major motivator is the financial benefit (Gullstrand Edbring et al., 2016). Some consumers also find it a suitable path for reducing waste, combined with

the consideration of being trendy, being unique and the feasibility of Do It Yourself-crafts (Gullstrand Edbring et al., 2016; Mont & Heiskanen, 2015). Even though it is a way of reducing waste, the environmental concerns are not a major incentive for the second hand path (Guiot & Roux, 2010; Gullstrand Edbring et al., 2016). The two major barriers are hygiene and functional performance (Catulli, 2012; Gullstrand Edbring et al., 2016). Other barriers within second hand are hygiene and that soft products are not accepted in the same way as other products (Catulli, 2012; Gullstrand Edbring et al., 2016).

Collaborative Consumption

As in second hand, the major motivator for collaborative consumption is the financial benefits. In collaborative consumption, the financial factor is expressed as a benefit for seldom used and more expensive products (Catulli, 2012). The path enables people to share products with others. Through private sharing, the cost will be reduced, which enables the consumer to access a larger variety of products. According to Jackson (2005) it is a driver that consumers get access to a new community. It is not only an incentive to get access to a new community but to involve in new systems or contexts (Gullstrand Edbring et al., 2016; Mont, 2013; Mont & Heiskanen, 2015). Gullstrand Edbring et al. (2016) agreed with Jackson (2005), but added that consumers engage in collaborative consumption to support sustainability. The factors that hinder the consumer from engaging in collaborative consumption are lack of trust, unfamiliarity (Catulli, 2012; Gullstrand Edbring et al., 2016; Schor et al., 2016), and if the context and product are not suitable in the purchaser's life (Camacho-Otero, 2020). Additionally, consumers can have attitudes and thinking that products that are not personally owned are more riskful to use, because of the fear of breaking it during usage (Gullstrand Edbring et al., 2016).

Buying refurbished

The refurbished path is mainly about technology assets and that is why the drivers in this path mostly regard quality, performance, and features (van Weelden et al., 2016). The consumers of refurbished products are aware that the quality is controlled and that the performance is higher compared to buying from private users as in second hand (Catulli, 2012; van Weelden et al., 2016). Further, the need for older features or software upgrades can be fulfilled within the refurbished path. People are using refurbished products because of the financial and environmental benefits and to suit the image of sustainability. Safety is provided through warranty and insurances. On the other hand, this concept is not as well-known as the others and people do not recognize it, therefore they also have a lack of knowledge about it. The lack of knowledge does not help to break habits that prevent refurbishment. At last, people are uncertain about the availability of refurbished products, they have an attitude that the desired product will not be available in the refurbished path (van Weelden et al., 2016).

Product Service System

Product service system (PSS) are systems of products and services consisting of supporting networks. PSS includes both one-time rentals and long-time rentals through subscriptions. Products in PSS is designed to be competitive, satisfy user needs, and lower environmental impact (Catulli, 2012).

The PSS path has similar motivators as collaborative consumption, with the financial benefit as the major driver (Camacho-Otero, 2020). Further, PSS also gives consumers the opportunity for social benefits such as new social connections and social status (Camacho-Otero, 2020; Jackson, 2005). Other benefits of PSS are the reduction of waste and the environmental benefit (Gullstrand Edbring et al., 2016), that the provider has the greatest responsibility (Catulli, 2012) and the possibility to upgrade (Guiltinan, 2010). Consumers find the concept unfamiliar and find it hard to accept non-owning. Also, mistrust towards providers, including reliability, reputation, and values (Camacho-Otero, 2020; Catulli, 2012; Kuah & Wang, 2020). The hardest barrier to deal with might be the desire to own since it opposes the entire concept (Catulli, 2012). The difficulty with not personally owned products is the fear of breakage during usage (Gullstrand Edbring et al., 2016).

Linear consumption

The linear consumption process is the “traditional” and most commonly accepted path (Catulli, 2012). It is mostly driven by habitual behavior (Jager, 2003), the accessibility in supply and number of sources (Mukhopadhyay & Setaputra, 2011; Srivastava & Culén, 2019; van Weelden et al., 2016), and by unplanned purchases (Suher & Hoyer, 2020). The linear consumption is further driven by the emotional value consumption gives the consumer, people consume to feel better (Jackson, 2005). Of course, some more tangible and concrete values support this path, for instance, that the quality is guaranteed (Camacho-Otero et al., 2018; Kim et al., 2002) and that there are warranty and insurances (Catulli, 2012; Kuah & Wang, 2020), and that linear consumption is driven by brand loyalty (Kim et al., 2002) and image (Weder et al., 2020; Confente et al., 2020). Also, newly produced products are exchangeable a given period of time after purchase. The barriers are few, however cognitive dissonances and anxiety may occur as hinders, though as possible barriers for all of the paths (Mukhopadhyay & Setaputra, 2011).

3.5 Literature gap

The final step of the literature review aimed to identify the potential knowledge gap in the literature. The result of the first two steps indicated that clearance was not as thoroughly researched compared to the other consumption phases. The literature presents what clearance options are available for both owned products and products from services (Hanson, 1980; Selvefors et al., 2019). The available data also considers a number of factors that affect that decision, and those are further described in section 3.6.5. At large, those factors acknowledge that there are tendencies that affect the decision, e.g. the emotional bond to a product which will increase the risk of storage (Jager, 2003). In contrast, there is not as much in-depth information about how clearance affects the psychology of the consumers' decision-making. Neither what they go through while getting rid of a product or service. The clearing decision originates from the consumer characteristic and their experience with the product or service, but in-depth factors would generate a larger understanding that would benefit the promotion of circular consumption.

Although the in-depth factors were lacking in the literature, there was still information regarding different clearance options (Hanson (1980), Selvefors et al. (2019)). A total of twelve options were discovered and these are presented in figure 3.2. The twelve found options from the literature are those where the users make the decision themselves. The options are categorized into owned products and products from services, further with two mid-options; to dispose of it temporarily or to dispose of it permanently.

Table 3.1: Twelve clearance options.

OWNED PRODUCT		PRODUCT FROM SERVICE	
PERMANENT DISPOSAL	TEMPORARILY DISPOSAL	PERMANENT DISPOSAL	TEMPORARILY DISPOSAL
Throw it	Loan it	End contract	Pause contract
Give it	Rent it	Give items up	
Sell it		Return product	
Trade it		Finish co-using agreement	
		Trade back	

3.5.1 Clearance factors

Following factors are found in the clearance literature and are such that affect the decision for clearance, the clearance option, and the emotions those actions arouse. Less usage is an effect of decreased value and will promote disposal (Camacho-Otero, 2020). Further, factors that vary depending on the individual are present in the decision for clearance and the clearance option. These factors are demographics (Hanson, 1980), intention (Srivastava & Culén, 2019), characteristics (Jacoby et al., 1977), and situational factors (Hanson, 1980). It is common to feel bad and get anxiety after clearance (Jager, 2003). The product's characteristics (Hanson, 1980) and to have the skills and knowledge to act in a certain way will affect the actions in clearance (Hoque, 2013). Also, the social connections that are possible in the circular options (Hetherington, 2004).

Products can be cleared out through selling (Selvefors et al., 2019). To sell products are dependent on; the available channels for selling (Jager, 2003), the financial benefit (Evans, 2019), the encouragement to participate in the system, and the new role that the consumer gets (Mont & Heiskanen, 2015). Throwing products is affected by habitual behavior and will save cognitive effort (Jager, 2003). The experience with the product service system will determine the decision for clearance (Evans, 2019). Factors that prevent clearance; emotional bond (Jacoby et al., 1977), functionally (Hanson, 1980), and the mood of feeling bad for throwing a product in good condition (Gullstrand Edbring et al., 2016). Whether a product is kept or not is further dependent on the amount of storage (Hanson, 1980), habits, and cognitive effort (Jager, 2003).

3.6 Conclusion of Literature Review

The following section regards the conclusion of the literature review. All of the results have been summarised into three themes; *the consumer*, *the offer*, and *external influence*. The section is introduced with the transfer from the analysis to the conclusion, followed by the conclusion of the literature gap, clearance.

3.6.1 Transfer from analysis to conclusion

All the aspects were structured and arranged into groups with other similar ones to understand what the literature presents. The grouping was necessary to give an overview of the findings and since the gathered data, with the previous sectioning, was too complex to describe what affects consumption.

The grouping of the aspects resulted into three groups, which are presented as three themes: *The consumer*, *the offer* and *external influence*. All three areas have an impact on the consumer's consumption choices. *The consumer* includes factors that regard the user. Such as their characteristics, their attitudes towards circular consumption, habits, fears, and self-esteem. *The offer* consists of factors regarding the product included in the process of consumption or the process itself. Factor as product properties, insurance, quality, functionality, and the financial perspective are included. Lastly, *external influence* holds factors that affect *the consumer*

externally. These factors are accessibility, marketing, stimuli, social context, group acceptance, and peer pressure.

Since the literature study included additional searches on clearance, this information was treated differently. The factors regarding clearance could be categorized in the same three themes but were distinguished to easier present the result of the literature gap. Highlighting the gap of clearance also eased the construction of the user study, to gather empirical data that could fill the knowledge gap.

3.6.2 The consumer

For the consumer, the major factors are their attitudes and characteristics. Attitudes can vary between circular and linear consumption and sometimes be applied to both consumption processes. To understand consumption choices it is important to understand the consumers' attitudes for both linear and circular consumption processes. Even though different attitudes can be defined for different types of consumers, there are still characteristics that should be taken into consideration. It will affect consumer choices, both through receiving inner harmony and through habitual behaviors. Most habits are hard to change, therefore there are difficulties in changing people's consumption behavior. Even if consumers would change their habits and act more sustainable there is a risk of rebound effects where compensation for the new behavior occurs. Consumers want products and services to suit their context and lifestyle and want to be able to be given the opportunity of creating new social connections. Also, the fear of breaking norms is dependent on how they will act. All of these factors affect the consumer's individual decision.

3.6.3 The offer

The second theme from the analysis is *the offer*. *The offer* in the form of a product or service needs to have good properties and characteristics. Both insurance and quality are mentioned in the analysis, insurance when other people or stakeholders are involved. The quality factor is more important for linear consumption, than for PSS, refurbished, collaborative consumption, second hand. Both quality and insurance are factors consumers find important when obtaining and using products. Another factor, product functionality, is also crucial for usage. If the product or service stops functioning and the value decreases, it is most likely a reason for replacement or clearance. Value is also discussed from a financial perspective, if the product is not worth the payment the consumer might reject the offering or obtain it with higher risk of soon clearing it out. Financial benefits motivate purchases in the circular paths and special offerings can be a motivator in linear consumption.

3.6.4 External influence

The third theme of the analysis is the *external influence* that affects the consumers' consumption actions. Accessibility is an external factor that influences people's perception of both linear and circular patterns. Circular paths focus on *external influences* that create trust and reliability,

which is what the user demands from a circular option. In contrast, the linear process's main influence is with the purpose to increase sales. Other influences in linear consumption, is those who create the urge to buy. This has to be retained but changed to suit the circular process. The urge to buy can thereby be transferred to an urge for upgrade or product variety, which can motivate circular consumption. Similarly, the satisfaction for purchase and the emotional value consumption bring need to be retained. Social media has platforms where both linear and circular consumption patterns reach most people with stimuli and marketing. Other *external influences* that affect the consumer are those within the social context. This includes group acceptance and peer pressure, still, the social surrounding could act as both incentives and barriers to circular consumption.

3.6.5 The literature gap - Clearance

The factors affecting clearance from the literature are divided between the twelve clearance options. Some of the factors are relevant for all of the options, both the owned products and the products from services. Factors such as less usage, which is an effect of decreased value and will promote disposal. Further, factors that vary depending on the individual are also present for all of the options. This could be factors like demographics, intention, characteristics, and situational factors. Additional factors that affect all of the options are post disposal feelings, which are bad feelings that create anxiety after disposal, and that people have tendencies to declassify the value and quality of the product which disadvantages circular options. Further relevant for all options are to have the skills and knowledge to act in a certain way and the product's characteristics. Also, the social connections that are possible in the circular options.

The owned products can be cleared out through selling. The factors that influence the behavior of selling are the; available channels for selling, the financial benefit, the encouragement to participate in the system, and the new role that the consumer gets. The last two mentioned also apply for three options; trade it, loan it and rent it. When people throw their products it can be due to their habitual behavior or to save cognitive effort. When it comes to products from services, some factors can both start a clearance process, or trigger the user to continue and use the product. Such as the encouragement to participate in the system, and the new roles the user gets from using the product. If the user has a good experience with the system they can continue using them otherwise they might end the contract. Other factors that can prevent the user from clearing out products are; emotional bond, functionally, and the mood of feeling bad for throwing a product in good condition. Additionally, habits, cognitive effort, and the amount of storage will affect the choice of clearance.

METHOD & PROCESS OF USER STUDY

The following chapter contains the methodology and the process of the user study. A total of 100 people participated in either interviews or a diary study combined with a focus group. The user study will contribute with additional information and complement both the literature review and complement the knowledge gap of clearance.

4

4.1 Interview

An interview is a qualitative data gathering method where questions about a certain topic are asked orally to a chosen participant, and the responses are registered (Johannesson et al., 2013).

The 100 participants signed up to participate in either one interview, in the diary study, or both. 40 of the participants that agreed on doing an interview were recruited and interviewed. Since the interview was conducted online, it enabled a spread across the nation. The purpose of the interviews was to get insights in the interviewee's consumption actions and decisions. Each interview lasted for about 40 minutes and involved three people, the interviewee, the interviewer, and the notetaker.

The interview started with a shorter section about the participant, with personal questions regarding age, education, and living situation. Later, the interviewee was challenged to show a space in their household that they considered being full of products. This was done through the camera and challenged them to describe products that are *not frequently used but desirable to be kept*. Further, the interviews included questions about attitudes towards buying second hand, selling products, clearing out, and sharing products.

4.2 Diary study

A diary study is self-reporting of personal details, actions, and reasoning (Hanington & Martin, 2012). It could be either paper and pen-based or digital, and either event-based or not. The guidance of the diary can vary, more guidance makes the book more of a questionnaire.

The diary study was an effective way to gather users' consumption patterns for a longer period. The diary was sent to 60 participants and lasted for four weeks, from mid-December to mid-January. When the study ended, the participants were invited to focus groups to discuss the experience of both consumption and the study.

The diary was designed with variation in guidance, some of the pages were guided, like questionnaires, while others were less guided and more dependent on the user. It was paper and pen-based and both event-based and not. The participants were sent a physical book to fill whenever they obtained or cleared a product and they answered questions regarding consumption. They also filled in emotions that aroused when they cleared out products. The diary consisted of ten pages which are presented in appendix C.

The diary consisted of an event-based activity which was constructed with a table where the participants made a cross for every executed activity each of the four weeks. The activities included were; getting rid of a product, purchase of a newly produced product, purchase of a pre-used product, borrowing a product, lending a product, renting a product through service, and obtaining a product as a gift. Further, the participants were supposed to rank what product groups were most difficult to clear out. They marked from 1-5 how difficult it is to clear out expensive products, products that are suitable for future use, pretty products, products with sentimental value, gifts, and products that act as a label of status. Another page had the purpose

of examining if the participants would have cleared out larger amounts of products if obstacles such as creating ad, transportation, and social contact were removed. This page was described as "the black hole" where products disappear without consequences. The participants were asked to fill in five products to send into the black hole together with a motivation to each of them. Also, they were asked if they wanted to send in more than five products if they were allowed. Another example of an included page regarded what clearance option the participants would choose for five given products. An armchair, a cellphone, a bicycle, a pot, and a book.

4.3 Sensitizing

Sensitizing is done to prepare the user for a group session. The purpose of the preparations is to trigger the participants to reflect and think about the topic in relation to their own context, time, and environment (Visser et al., 2005). Sensitizing is smaller activities or actions that the user is asked to perform, typically during one or more weeks. A sensitizing activity can be to fill a workbook, such as a diary, which content could be analyzed as quantitative data as well as it sensitizes a group session. Therefore the diary was used as a sensitizing workbook for the participants who were involved in both the diary and the focus group. All of the participants performed the diary and had time to reflect regarding their consumption choices and their opinions on circular consumption. The diary also inspired the participants to do activities and write about them, all of the activities helped the participants to prepare subjects they wanted to discuss in the focus group. The sensitizing diary increased the value of the conversations in the focus group.

4.4 Focus group

A focus group involves several users who discuss regarding a certain topic (Johannesson et al., 2013). The focus group has a neutral moderator that ensures that every participant is allowed to speak and is not steering with distinct questions, rather letting the participants discuss freely.

A total of 18 users participated in the focus group, all of them had completed the diary study. Each group was moderated by one from the project duo while the other one took notes from the discussion. The focus group included discussions regarding the pages in the diary and the users' reflections and general insights and thoughts regarding circular consumption. The pages involved in the discussion were; *the table of events*, *the ranking of product groups*, and *the black hole*. For the table of events, the participants were asked if the result was as expected. They were also questioned about the ranking of products and which ones were most desirable to keep. The ranking resulted in a discussion of the differences in reasoning. The page including the black hole was also discussed, where the participants were asked:

- What do you believe the products sent into the black hole end up?
- Did you appreciate the black hole?
- What is the reason for keeping products that anyhow were sent into the black hole?
- When and how do you decide to clear out a product?
- What is most demanding with the clearance process?

4.5 Affinity diagram

The analysis of the user study was done through affinity diagrams including the interview and diary result. The focus group result was discussed within the project duo with the support of the recorded material from the focus groups. The discussion specified factors and motives within circular consumption. The affinity diagram includes a process of organizing and sorting data into categories with similar themes. The result is an overview of all the gathered information, which eases the analyzing process by finding connections or patterns (Holtzblatt & Beyer, 2016). It can bring the team together and give the same perspective of the information.

An affinity diagram was created based on the interview responses. The interview consisted of eight questions, besides the personal questions for identifying the interviewee. Five questions were included in the affinity diagram. The chosen questions for the affinity diagram either involved consumption, circularity, or emotions regarding the subject. The three excluded questions regarded questions and challenges that were meant to introduce and inspire the interviewee to the subject and the following discussion and therefore not relevant to include in the affinity diagram. The five included questions are presented below.

- Are you familiar with selling products?
- What matter when buying pre-used products? What thoughts and feelings are involved?
- How often do you clean and clear out items?
- How do you feel regarding sharing products with other people?
- What do you feel about lending you products to other people?

All of the answers were printed and cut into pieces which were divided into different categories. The categorization eventually turned into four groups after patterns of the answers had been identified. The four categories of the affinity diagram are presented in the next chapter. The diary study result was analyzed through a variation of an affinity diagram. It was not done traditionally by printing transcripts, but compiled online after highlighting the important findings from each diary. All diaries were inspected and the topics;

- How it feels to possess a large number of things
- The barriers of getting rid of items
- General reflections on circular consumption

The answers regarding the selected topics were highlighted, discussed, color-coded, and collected in a summary document. Additionally, all participants from the diary study were categorized within three groups based on their attitude towards circular consumption. This was based on all of their answers and their general attitude throughout the diary. The three groups were; *engaged in circular consumption*, *partly engaged in circular consumption*, and *unmotivated to circular consumption*.

RESULT OF USER STUDY

This chapter presents the result from the user study and a conclusion on the findings. The purpose of the study was to fill the literature gap regarding clearance, gather information regarding users' consumption choices, and to later compare these with the result of the literature study.

5

5.1 Interviews

The first outtake from the affinity diagram resulted in ten different categories. These categories combined with underlying groups are visible in figure 5.1. The size of the boxes represents the amount of information that was received from the interviewees.

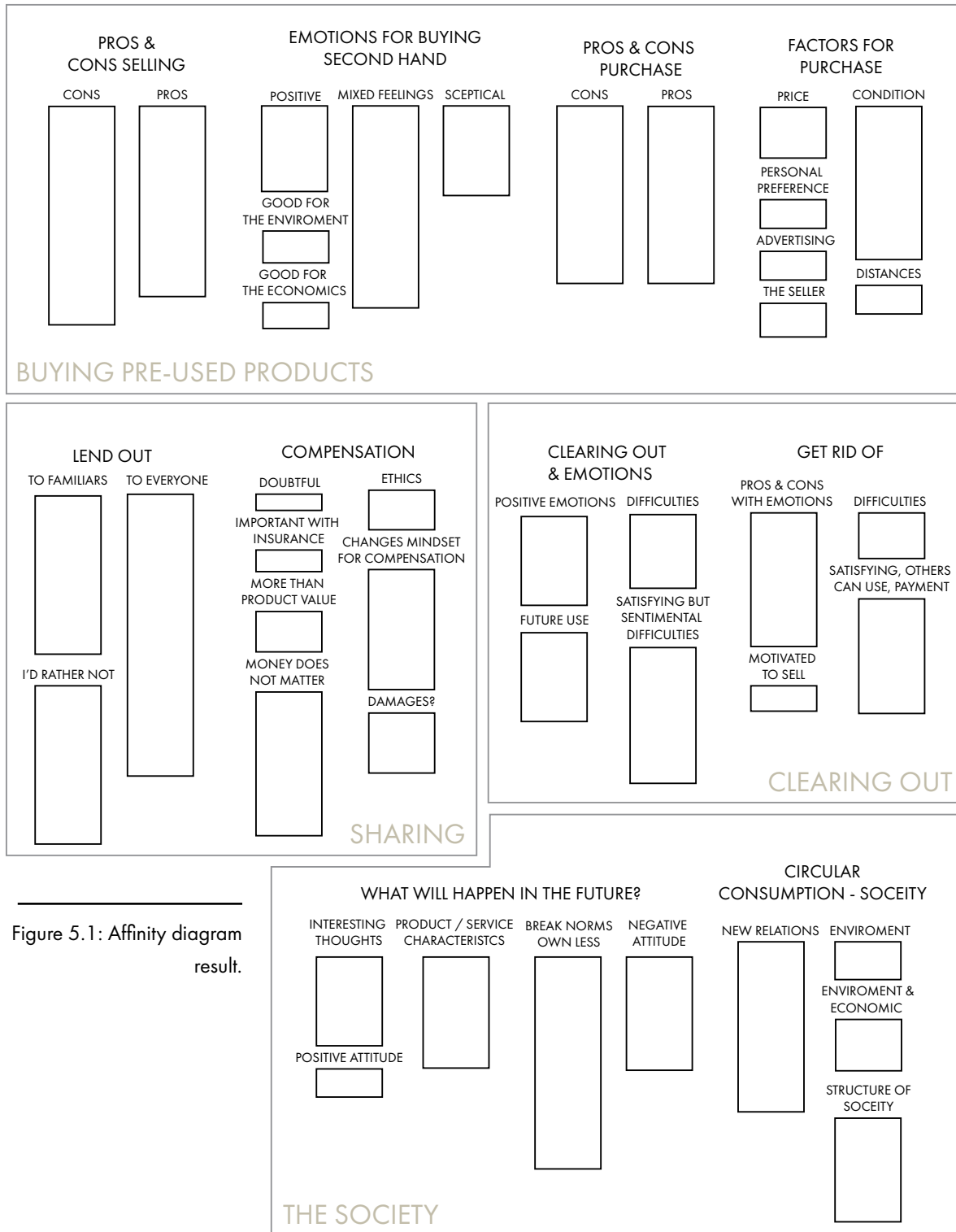


Figure 5.1: Affinity diagram result.

A final categorization that united some of the groups was made to find the most recurring subjects. The categorization was made into four final groups; *buying pre-used products*, *sharing*, *clearing out*, and *the society*. The division of the ten categories into the four final groups are presented in the figure 5.1. The insights from each category are presented below.

Buying pre-used products

The most mentioned advantages of buying pre-used products are the financial benefits and the positive feeling the consumption entails. It is both cheaper to purchase pre-used products and favors the environment. The product can have a sentimental value or bring a history with the product. The interviewees also discussed disadvantages, skeptical feelings, and eventual worse quality. Further, the lack of guarantees and the risk of deceit are great. There is also a risk of products not being clean and with a bad scent together with the feeling of disgust. The feeling of disgust regards fabrics and clothes, objects not made of textile materials are more accepted. The most frequently mentioned factors were price and state of the product, but distance, personal preference, the ad, and the seller were considered while purchasing pre-used products. When discussing clothes with one interviewee she described the pre-used clothing market as the only one with decent clothes. Meaning the chain store brands only produce boring and similar clothes. Even though this is an extreme answer the content presents that it is not always desirable to purchase newly produced clothes and to wear what the majority would do.

"All brands produce similar clothes, everything look the same, and I do not want to dress like everybody else"

Sharing

Trust is one crucial factor to ensure successful sharing, if the user lacks trust the risk for rejection is big. In private sharing trust can be created to the others in the context or group, if the experience is positive, while trust in service sharing regards both the other user and the providers.

There are mixed opinions regarding private sharing, as in lending and renting. The result indicated that the majority of the participants were positive about private sharing, either to anyone or to someone with a connection. The factors mentioned for successful private sharing were good communication, pleasant attitude, suitable renter, and return agreements. It can further enable access to otherwise unaffordable products. Some of the participants were still not willing to share, they preferred to use and wear their products by themselves. They want to buy their products and own them to avoid borrowing, questionable responsibility, damage, and they claimed that quality products will last for them to use a lifetime and will therefore not have a bad impact on the environment. The participants were asked what they thought of getting compensation for renting their belongings. Some of them thought it was a requirement for lending, and others thought of it as a bonus or something that makes them braver and more risk-taking. Compensation depends on the product, sometimes insurance is more important.

The sentimental value, eventual damage, and insecurity were reasons for not lending belongings to others. One participant mentioned the insecurity of lending older sentimental products that are irreplaceable.

"It is harder to share products that I highly value. Products that I got from someone I care about and old products that can not be purchased today if they break"

Cars were brought up several times and the majority agreed on sharing with familiars feels safe but not with unfamiliar without a third party and an agreement. Regarding services for sharing the participants have had positive experiences from renting tools and cars. Though, skepticism occurred regarding bringing their products into a service. One participant explained that she did not want her tools to be rented through a service. She discussed the risk of someone using them for the wrong purpose, which could be for illegal activity. The participants could positively share products from services if the products are provided by a company or other individuals.

Clearing out

Clearing products includes selling, donating, or discarding. The result indicates that products with sentimental value are hard to clear out, such as products with memories connected to special occasions. The fear of losing these memories prevents people from getting rid of them.

"My parents' old belongings are difficult. Especially clothes my mother and grandmother have sewed"

However, clearing products can also bring people pleasure through relief and receiving additional space. Dealing with different purchasers is also time-consuming and complicated, both with communication, meeting up, and dealing with requirements and complaints. Time-consumption was mentioned repeatedly, both for dealing with buyers and for deciding what to keep and donate when clearing products out. One of the motivators that still encourage people to sell products is the financial benefit. Selling favors both the seller and the buyer who can purchase the product for a lower price. Some of the interviewees mention they feel joy when their products can make someone happy. Specific products that was brought up as problematic to clear out were clothes for special occasions and tools. The motive was that they could be useful in the future and therefore difficult to get rid of.

The society

As mentioned, sharing could contribute to more trust in others, when people are forced to create new contacts and expand their trust into unfamiliar. Some of the interviewees presumed that people will feel better when engaging in circular consumption and that a change in people's

mindsets is needed. Some of the interviewees stated that a change of the societal structure is necessary to enable circular consumption to a greater extent. They mention that all groups of the society have to be reached through campaigns and advertising and that it is possible to live an enriched life without owning as many products. Others claimed that society is built on economics, production, and consumption and believed that economics would be affected negatively. It was mentioned that circularity could result in companies producing better quality since durable products are desired when multiple users are involved. Regarding the negative effect on the economy one response was that many corporations would reach bankruptcy and the movement in stocks would decrease together with the aspiration of earning money. Further, she stated that the calculations have to cover the production decrease circular consumption will bring and to ensure the quality of life remains.

5.2 Diary study

The diary analysis consist of three topics; *how it feels to possess a large number of things*, *the barriers of getting rid of items*, and finally *general insights and opinions on circular consumption*. These topics is the foundation of the diary analysis.

Regarding the feelings of owning numerous products, most of the participants agreed on it being stressful, difficult, irritating, or messy. A smaller group of the respondents argued both for and against it, they mentioned that it feels good, safe, and more personal to own a lot of products but together with the negative attitudes including stress and irritation. Lastly, a minor group solely agreed that it feels calm, safe, and fun to own many products. One participant from the first mentioned group, the ones who does not like to own many products, described it as exhausting to handle when moving or cleaning, and also did not like the messy impression it gives. Another participant agreed that it was stressful and unnecessary to own many products, but she also suggests that it is good to be prepared for different situations.

"It is hard to own a lot of products, especially when you have to take it into consideration while cleaning or moving they also leave a messy impression."

"It is good to be prepared for different possible situations"

The answers regarding the barriers of clearance are divided into three larger categories and additionally scattering responses. The three categories are; *products with sentimental value or potential future use* being harder to get rid of, practical work and lack of a car, and the time and effort required. Lastly, the scattered answers concern storing spaces not being full, the need for repair, or the will of changing the purpose of the product, e.g. making rugs or tote bags out of old clothes. One of the respondees wanted to decrease the amount of decoration products and porcelain in her home but meant that the sentimental value hinders her. Another described the major barrier as having to borrow a car from friends to be able to transport products to the second hand store.

The general discussion regarding circular consumption covers several ideas of systems where services pick up the cleared out items, which tells that the transportation from the home to either a second hand store or to a new owner is burdening. It is highly appreciated that the products get further life, the new user gets use of the item, and it is mentioned as a barrier to clear out products that could be used in the future.

"I want products to be used, which is simplified by giving away products in a trustworthy way. But I rather sell products I know other people desire to own."

Further examples of lowering the effort in the clearance phase are, gather all selling to one platform with the ability to be anonymous, pressing a button to sell an item and receiving the payment instantly, and putting the items in a time capsule to make them disappear until you need them again. This explains the barriers of knowledge and social connection, the lack of time and effort to execute the process of selling, the difficulties of separating from a product, and a desire of earning money on cleared out items. Further, the amount of storage will affect the amount of owned products, also not wanting to get rid of and later having to spend money on the same product again. Lastly, it is mentioned that guidance is required, they have got the will but the knowledge is lacking.

"A magical pawnshop where I can store products during six months and if I do not need them after the six months it is time to say goodbye. I believe people are afraid of the irreversible and to make mistakes."

5.3 Focus groups

Four focus groups were held with participants from the diary study. All participants were given pseudonyms and all 40 from the diary study were named on D. Their names were kept in the focus groups and are included in table 5.1. The table further presents age, gender, and engagement. The focus group conclusion covers three topics; *share*, *sell*, and *to clear out items*. Also, some factors that affect the whole theme of circular consumption.

Share

The most mentioned factor in sharing was a relation, which was considered important. It was mentioned that individuals do not like to disturb others by asking to borrow something. They also mentioned the inconvenience of contacting strangers and the fear of getting a no from someone you do not know. Further, it is mentioned that users will act less carefully if the product owner is a stranger. Though, it is stated that people are more careful when renting compared to borrowing regardless of relationship.

Other barriers for private sharing are distance, the asking frequency, and the uncertainty in who carries the responsibility. When the asking frequency was brought up from one of the

Table 5.1: Participants in focus groups. Presents pseudonym, age, gender, and engagement

GROUP 1			
NAME	AGE	GENDER	CIRCULAR CONSUMPTION ENGAGEMENT
Deleine	25	Female	Unmotivated
Darin	27	Male	Unmotivated
Deborah	29	Female	Partly engaged
Danny	25	Male	Would rather keep products
GROUP 2			
NAME	AGE	GENDER	CIRCULAR CONSUMPTION ENGAGEMENT
Dagmar	40	Female	Engaged
Dina	46	Female	Engaged
Denise	25	Female	Engaged
Daisy	38	Female	Engaged
GROUP 3			
NAME	AGE	GENDER	CIRCULAR CONSUMPTION ENGAGEMENT
Doris	24	Female	Engaged
Disa	30	Female	Engaged
Daniel	29	Male	Engaged
Dorothea	31	Female	Unmotivated
GROUP 4			
NAME	AGE	GENDER	CIRCULAR CONSUMPTION ENGAGEMENT
Desirée	23	Female	Partly engaged
Dragana	43	Female	Engaged
Desideria	40	Female	Engaged
Danessa	26	Female	Unmotivated
Daphne	47	Female	Engaged
Donia	45	Female	Engaged

participants he explained that it does not feel right to ask too frequently. The moderator asked to define too frequent, and he answered that two times a week is too frequent but two times a year is not when the family is involved. Regarding friends, the line is drawn when the same product is required for the fifth time regardless of time span.

"Asking to borrow a product from the same person two times a year feels okay, but two times a week is too frequent"

Sell

Considering selling, the factors were similar to, it is problematic to deal with people. The focus groups mean that buyers often bargain, need more information than given and that they expect to come and pick up the product at any time of the day. Moreover, the selling process could be time-consuming and problematic to engage in if the online selling site is not user-friendly. One example that was discussed was when one participant aimed to sell a camera and several different potential buyers asked specific technical questions that she could not answer. This forced her to spend time on finding the answers online and the entire experience got unpleasant and required more time and effort than expected.

Clear out

Several aspects were brought up as incentives and barriers for clearing out things. Once again, the sentimental value acts as a barrier to getting rid of products. It was stated that these products are difficult since they might be old and inherited and therefore not replaceable. Also, those sentimental products are hard to price, and knowing what others are willing to pay them. Not only sentimentally valued products seem hard to price. One participant wished for a service where you could leave whatever to get it priced and sold, he means this would help him to clear out products. Further, Sellpy (an online selling site for pre-used products) is mentioned by several participants as an appreciated service since they price, transport, creates an ad, and sell consumers pre-used products.

A motivator to clear products out is to make others happy and give the product a further life. Another incentive to get rid of products is the fast consumption society, that people usually get tired of products in a great speed and therefore replacing them with new. Unfortunately some users have a non-circular mindset and often discard their products.

When it comes to the financial value the participants had scattered answers, some say that the spent money will not be refunded and that it does not matter, others see this as a barrier. With the argument of much money being spent when purchasing and for this reason not getting rid of the product. Hence, the largest barrier to getting rid of products is the sentimental value together with future use. The focus group participants mentioned that they made up future scenarios with the product to feel good about keeping it. Also, time and effort act as barriers together with the physical difficulties in clearing out items which makes some of the participants avoid clearing. Despite this, it is a distinct majority that believes owning much is stressful, difficult,

irritating, and messy. Finally, it is stated that the more space the user got available the more products will be stored.

“I do not clear out products since our attic is not full yet”

5.4 Conclusion of User Study

This section presents the conclusion of the result from the user study and is categorized with the same groups that was found from the literature review; *the consumer*, *the offer*, and *external influence*. This section is structured in the same way as the literature review conclusion, with the three themes followed by a section with the factors connected to clearance. This was done to enable a comparison analysis between the literature and the empirical data (Chapter 7).

The consumer includes factors that regard the user. Such as their characteristics, their attitudes towards circular consumption, habits, fears, and self-esteem. *The offer* consists of factors regarding the product included in the process of consumption or the process itself. Factors as product properties, insurance, quality, functionality, and the financial perspective are included. Lastly, *external influence* holds factors that affect *the consumer* externally. These factors are accessibility, marketing, stimuli, social context, group acceptance, and peer pressure.

5.4.1 The consumer

The majority of the participants from the user study mean they engage in circular consumption to favor the environment, they mention improving their self-image as a part of that. Another incentive for *the consumer* is to create new relations. Also, for second hand (purchasing and selling) specifically, the financial benefit acts as a driver. When it comes to privately sharing products the participants appreciate the possibility of accessing new communities, though solely when the sharing deal is successful. Yet, they mean that those communities do not exist and that is a great barrier for private sharing. Other barriers to all sharing are the fear of breakage during use, the desire to own, and the fear of being fooled. The empirical data present the need of breaking norms to enable a transfer from linear to circular consumption and a will to engage in circularity. The participants discussed that consumer's attitudes are influenced by their previous experiences, perhaps from their childhood.

5.4.2 The offer

The participants mentioned that it is more suitable to share products with familiars. If sharing occurs with unfamiliar or through an agency it is important to have good communication and return agreements. Further barriers in private sharing are the inconvenience of meeting people, the fear of getting one's product damaged, and the need of having proof of that the lender is responsible. It is stated that trust is required in sharing, sharing could also create trust if it is successful. Hygiene was not presented as a huge barrier from the empirical data, though it is

important when it concerns textiles. On the other hand, they mean textiles can easily be cleaned. The participants are willing to do minor fixes after purchasing pre-used products. They also discuss that quality is often better for older products, assuming they are not mass-produced. For online shopping, they want the ads to be accurate and fair.

Circular consumption favors both purchasers and providers financially. In private sharing, the participants state that they get braver when they get compensation for renting their products. Though, there are users that are not driven by money and would lend their products without compensation. A motivator for engaging in service sharing is the possibility to access products they can not afford to purchase. Despite this, the empirical data shows uncertainty of the availability of the desired product at the requested time. Though, if the user does not understand the online system the offer might be rejected. Once again, another barrier to private sharing is to meet up with the lender or renter. The accessibility of second hand stores is an incentive for buying pre-used products. However, the participants state that the accessibility can be negative and contribute to over-consumption, even though it is pre-used products it is not beneficial in the long run. The users also mentions they are driven by selling or giving their belongings to a new owner to give the product a further life.

5.4.3 External influence

This is the least discussed theme from the user study. The participants bring up thoughts about norms and the construction of the society, and that those have to change to enable engagement in circular consumption. It is further stated that a certain mindset is necessary to be willing to participate in circular consumption and that if that mindset is to avoid over-consumption the users mean that marketing does not affect them. It is stated that the users' social context will affect their actions. A result mentioned by a smaller group of the participants was that people act on other's expectations and that that affects the involvement in circularity, for the better or worse. At last, it is stated that changes in norms and mindsets probably will affect consumers to generally act more sustainable.

5.4.4 Clearance

The most important barriers that are mentioned are sentimental value and future use. The participants find it hard to get rid of products with sentimental connections and products with potential future use. Other major barriers to clearing out products are the time required and the disgrace of getting rid of gifts. Regarding owning much, the participants claimed that that increases with the accessible storage space. Also, the majority agreed on owning much being stressful and messy. When clearing out products through selling the participants encounter barriers such as keeping contact with buyers, creating ads, and transportation, at the same time they appreciate letting someone else happily use the product and foremost to earn money from the affair. When using the clearance option of giving or donating the participants enjoy the feeling of giving the product a further life and, again, making someone else happy.

PROCESS OF COMPARISON

This chapter presents the process of the comparison analysis between the literature review and the user study. It contains the methodology of comparing the two studies through specific found factors. All three themes, *the consumer*, *the offer*, and *external influence*, are compared in chapter 7 and concerns the entire consumption process and what incentives and barriers that exist. The comparison is based on the similarities and differences between the literature review and the user study, the incentives and barriers from the literature review is presented in 3.6, and from the user study in 5.4.

6

6.1 Extracting specific factors

The comparison process included extracting the specific factors within the themes; *the consumer*, *the offer*, and *external influence* from the conclusions of the literature review and the user study. With the specific factors extracted it was possible to identify the similarities and differences and to analyze the content of each study. Later, specific scenarios on how the studies describe the consumption process were analyzed and compared. This generated an extensive written comparison analysis for each of the themes; *the consumer*, *the offer*, and *external influence*. The specific factors from the analysis are presented as tables within each theme and gives an overview of the contributing factors within each topic and presents the analysis with a concise approach. The comparison of the clearance topic was executed and presented in the same way as the three earlier themes.

6.2 Analysis of the comparison

A conclusion with an interrelation analysis between the three themes; *the consumer*, *the offer*, and *external influence*, motives for the varying answers, and conclusions are included in the comparison. The interrelation enlighten how each of the three themes relates to each other. This information will give greater comprehension of the three themes. Once again, the clearance section is separate to structure the data and enable answering the research questions.

COMPARISON

This chapter contains the comparison of the literature review and the user study within the three themes *the consumer*, *the offer* and *external influence*. They presents the most evident similarities and difference. It is followed by a section that presents the interrelation of the three topics and a comparison of the data on clearance.



7.1 The consumer

The consumer includes factors that regard the user. Such as their characteristics, their attitudes towards circular consumption, habits, fears, and self-esteem. The tables cover the factors with largest impact on the circular consumption process within each area. To the right in the tables it is marked whether the factor is described in the literature review (LR), user study (US), or in both.

The literature describes that people are afraid of breaking norms and losing belonging in different contexts. This is not mentioned in the empirical data, they rather argue for the need of breaking norms to be able to transfer to circularity. The empirical data present the need for communities to make circular consumption successful, and a will to involve in such communities. Generally, users depend on norms and are affected by their social context and what norms occur there.

There are few similarities in the comparison between the second hand literature and the empirical data. For second hand, the factor that is mentioned by both is the suitability for Do It Yourself-crafts. The most remarkable difference is the perception of the environmental aspect, the literature means that few choose the second hand path due to the environmental impact. From the user study, it was proven that the environmental aspect is a driver for purchasing second hand products. Further, the literature includes five factors regarding second hand. Familiarity, trust, social status, being trendy, and cool. In contrast, the user data included factors such as feeling like a better person, the history of the products, and new relations were mentioned. Feeling cool and trendy and feeling like a better person correlates partly, but the empirical data rather presents it as feeling like a better person for acting sustainably.

Regarding the factors that affect the consumer's perception of sharing both sources of information agree on is the possibility to create new social contacts and access new communities in private sharing. The empirical data indicated this is only possible if sharing is successful. The participants agree and mention the lack of communities is the

Table 7.1: Comparison the consumer.

THE CONSUMER		
FACTOR	US	LR
OVERALL		
Desire for upgrade	X	X
Demographics	X	X
Willing to break norms	X	
Desire to be a better person	X	
Desire to be cool & trendy		X
SHARING		
Environmental concerns		X
Want to engage in new communities	X	X
Questionable trust in sharing	X	X
Mistrust in service providers	X	X
Trust in service providers		X
SECOND HAND		
Environmental concerns	X	
DIY crafts	X	X

greatest barrier to private sharing. Further, they agree on the trust being questionable. The literature indicates that consumers feel scattered regarding who carries the responsibility, both that it feels safe to have the provider carry the responsibility and that there is mistrust to the providers. The respondents from the user study are solely having questionable trust to the providers.

The literature presents the environmental benefit as a driver for participating in collaborative consumption and PSS. The participants from the user study did rather share products due to the practical benefits. Both the literature and the empirical data present the fear of breakage during use, when lending, and the desire to own, while the fear of being fooled is only mentioned in the empirical data.

The empirical data mentions products are torn and replaced frequently in today's society. The participants claimed that consumption is an effect of peoples' increased wealth and that people get tired of their old products at an extreme speed. This topic is presented as the desire for upgrade or the satisfaction from new assets in the literature. Lastly, the user data describes the general perception of circular consumption and the consumers' attitudes as dependent on age and childhood. While the literature presents demographics as a factor in every path, which makes this topic covered in both empirical data and literature.

Table 7.2: Comparison the offer.

THE OFFER		
FACTOR	US	LR
OVERALL		
Quality	X	X
Insurance	X	X
Financial benefits	X	X
Access to unaffordable assets	X	X
Suitability is decisive	X	X
SECOND HAND		
Functional performance	X	X
Hygiene	X	X
Pre-used can have better quality	X	

7.2 The offer

The offer consists of factors regarding the product included in the process of consumption or the process itself. Factors as product properties, insurance, quality, functionality, and the financial perspective are included.

For the product and services, there were both similarities and differences between the literature review and the user study. Both mention quality and insurance. The literature indicated the importance of insurance when people are using each other's products. In the interviews, a majority of the participants were positive to share their product with anyone or someone they had a connection to. Insurance was not mentioned in all of the cases but the users explained their requirements of good communication, pleasant attitudes, and return agreements. Following requirements creates trust and ensures the owner of retrieval, which agrees to the statement from the literature of insurance while using other's products. Some

of them also mentioned that they only lent products to people they had a connection to. A smaller group from the interviews were not positive towards private sharing, they wanted to use products by themselves, they claimed good quality products will last longer if they are the only ones to use them.

The focus groups result is similar to the interviews, the participants were mostly willing to share their products with people whom they had a connection to. They did not want unknown people to schedule meetings with them and they did not want their products to break. They needed to feel that the lender was responsible, and that they would care for their product.

When it comes to quality, the studies have both similarities and differences. Quality varies for second hand products. Barriers mentioned in the literature, such as hygiene and functional performance, were not as problematic in the user study. The participants agreed that hygiene is important for textile products, but at the same time they found that textiles are possible to clean and refresh. The literature also mentions most people buy newly produced products due to the guaranteed quality, insurances, warranty, and new condition of the products. There were participants that agreed, they liked the comfort of purchasing new products and the delivery system. However, some of the participants did not agree and claimed that older products often have better quality compared to mass produced products in the current stores. If circular consumption would become more regular in the future, the participants believed people would take better care of products to maintain the quality. They also thought the new production would decrease and companies would have to produce good quality and durable products. Participants also mentioned that they wanted to be able to know about the product's conditions if they were to purchase it. Buying things online could be hard unless they were carefully described and presented with good photos or videos.

The financial benefits were mentioned for all the paths in the literature. This was also one of the most mentioned motivators for purchasing second hand products from the empirical data. According to the participants, the financial benefits favor both the users and the sellers. Since, the buyer can pay less for products and that sellers can earn money.

In the literature, the accessibility and variety of products in second hand shops were mentioned as a motivator. It motivates people since it can give them access to otherwise unaffordable products, the participants from the user study agreed. For linear consumption, the literature mentioned that users thought it was beneficial with accessibility to different products and the amount of supply. Purchasing in circular consumption can be more difficult since the supplies can be limited. Though, sharing products enable people to use products they might not afford. This was mentioned in both studies, but the participants also discussed eventual difficulties, such as products being unavailable during the requested time. Private sharing could also be difficult for people who do not want to contact others, the participants mention fear of not retrieving their products and the fear of contact. Also, to disturb others while meeting up with them and taking their time.

7.3 External influence

External influence holds factors that affect *the consumer* externally. These factors are accessibility, marketing, stimuli, social context, group acceptance, and peer pressure.

The literature presents the *external influence* as choices that are dependent on social life and social status, together with creating new social connections and the impact from marketing and stimuli. This topic is not discussed as profoundly as in the empiric study, it is mentioned that norms and the construction of the society have to change. People have to change their mindset and get used to not owning as much. It is also described that most actions are based on people's expectations and the fear of being judged, this answers to the literature's description of social status and connections. Further, the empirical data present that involvement in circular consumption might result in more sustainable choices. Regarding marketing and stimuli, the empirical data explains how individuals can decide whether to be receptive to marketing or not. They mentioned that they experience marketing as possible to be exposed to without being affected.

Table 7.3: Comparison external influence.

EXTERNAL INFLUENCE		
FACTOR	US	LR
OVERALL		
Creates new social connections	X	X
Marketing		X
Stimuli		X
Others' expectations	X	
Social status		X

7.4 The three themes in relation to clearance

Since the project found a literature gap regarding clearance it became a focus in the user study and necessary to include in the comparison. Below follows a comparison of the data regarding clearance, but still concerning the three themes since they affect the entire consumption process.

The consumer

Clearing out and getting rid of products comes with attitudes and emotions. The most frequent barrier for clearance from the empirical data is that the consumers find it hard to get rid of products with sentimental value and products with potential future use. The problem of clearing products with sentimental value is stated in literature as well. Clearance of products can be a reason for anxiety, stated in both literature and empirical data. The literature mentioned it as post disposal anxiety while the respondents from the user study explained it as regret or anxiety for impossible future use. The type of anxiety is similar but what differs is that the users with post disposal anxiety, as the literature mentions, still clear out the products.

The literature also describes the feeling of guilt when discarding a product in good condition. Further, the participants from the user study mentioned barriers like lack of knowledge regarding selling services and having to connect and interact with people. It is mentioned in both studies that there is a will to participate in new systems and to get a new role when selling an item. The major incentive, that also makes up for the barriers in many cases, is the desire to earn money by selling. This is mentioned as a major motivator in the literature as well. To sell or donate products gives pleasure by imagining that someone else will access and appreciate the product and that the product gets further life.

Most of the participants from the empirical study did agree that owning many products is stressful, difficult, irritating, and messy. Though, some mentioned that it could feel good and safe. Given that the majority believe storing products is stressful this is interpreted as an incentive for clearance. Negative effects of possessing large number of products is not described in the literature. Hence, it is stated in the literature that discarding products is due to habitual behavior which saves cognitive effort. The empirical data does not cover much about discarding products since the majority of the participants did not mention discarding as a clearance option.

The offer

The empirical data present that the clearance can include demanding activities that require time and effort. The data from the user study presents the effort in this context as having to keep contact with a buyer, to transport the product to a second hand store, or accessing a car to enable transportation of larger items. The channels and instructions for sales can be unclear which makes the seller hesitate. Also, it can be difficult to create understandable advertisements for sales. Further, it is stated that there are barriers as lack of knowledge for different systems. The literature presents *the offer* as the formation and availability of the channels for selling and the quality of the product or service. Also, that users are driven by the financial aspect in all consumption paths, and if the product is not worth the payment the consumer might obtain it with a higher risk of soon letting it get unused.

Table 7.4: Comparison clearance.

CLEARANCE		
FACTOR	US	LR
INCENTIVES		
Social connection	X	X
Earn money from selling	X	X
Letting others happily access product	X	X
Overwhelming to own much	X	
BARRIERS		
Sentimental value	X	
Potential future use	X	
Anxiety		X
Guilt		X
Lack of knowledge	X	
Interactions	X	
Habits		X
Time & effort	X	
Transportation	X	
Much storing space	X	X

External influence

The only identified factor that regards *external influence* within clearance is the motive for storing products. It is the amount of storage space and is mentioned in both literature and empirical data. The more storage space one has the more stuff will fill it and this will affect the user to avoid clearance.

7.5 Conclusion

The three themes; *the consumer*, *the offer*, and *external influence* are dependent on, and influence each other. *External influence* consist of factors affecting *the consumer* externally, these factors could be the same factors contributing to the social context for the consumer. *The offer* and the belonging aspects will affect *the consumer* and its attitudes towards different consumption paths through previous experience of the product or service in *the offer*. And lastly, *the offer* will be dependent and affected by external influences such as advertisement or social context, which makes all of the themes connected.

The literature captures a more realistic view since a larger number of users has participated in the research. Many of the participants from the user study are environmentally engaged. This resulted in a thorough understanding of the engaged individuals compared to what is presented in the literature. To compare the two studies, the literature review is more of an overview with a wider range of involved people and the user study is more thorough but with a narrower target group. The precision in the empirical data covers more specific factors that affect the users in certain situations.

The comparison analysis includes empirical data that complements the acknowledged literature gap regarding clearance. Circular clearance is essential to enable circularity and with the knowledge of the existing gap and a large amount of complementary empirical data, the project proceeded with a clearance focus. Few factors from the three other themes; *the consumer*, *the offer*, and *external influence*, were excluded since the entire process of consumption is important for successful circular consumption.

Gaining knowledge about the differences and similarities between the literature review and the user study enabled the project duo to continue the project and is the foundation of the result in chapter 9.

METHOD & PROCESS OF FINAL DELIVERY

Part 1 and 2 from the project indicated that the empirical data complements the acknowledged literature gap of clearance. Therefore, the rest of the project will have a deeper focus on clearance. Also to create a tool that aids the designer to develop circular products adapted for clearance. Chapter 8 & 9 explains how the result from the previous parts of the project has been used to determine the most affecting areas while designing circular products and services. The following chapter includes the methodology and the process of developing the models and tools. The purpose is to use the result and develop a tool. Which aims to ease the process of designing circular products and services.

8

8.1 Brainstorming & -writing

Brainstorming is an ideation activity for groups where it is important for everyone to participate in discussions. It is also beneficial if the participants possess different knowledge and experiences. The method creates ideas which can be further developed later on (Österlin, 2016). Brainwriting is similar to brainstorming, the difference is that brainwriting is performed individually in silence. This method is beneficial to not be limited from the other participants (Österlin, 2016).

The insights from the previous parts implied that *circular consumer characteristics* and the available *clearance options* affect clearance. To investigate if more factors affect the clearance decision another brainstorming was performed and the result is presented below. The process began with brainstorming and brainwriting of what is included in the clearance process, with the gained knowledge from both the literature review and empirical data. This was needed in order to create an understanding of what affects clearance and to convert it to a support for a designer. It resulted in seven steps that a user goes through; *ambition, evaluation, processing, clearance option, change of option, clearance, and keep*. These were also inspired by the consumption model from the literature review. Later, new brainstorming sessions were held with the previous insights and the focus ended up on the *keep* step in the process. This step seemed to be the hardest to interpret since it covered a variety of underlying motives. This was the foundation of creating a journey or process for the product as well as for the user.

The literature review and the user study indicated that products the user highly value is kept. In the user study the products with sentimental value was often kept. The importance of value supported new brainstorming sessions to discover what states a product can be present in during its life. This resulted in eight states in a hierarchical order from use to no use. When ideating about the *product states* the product duo focused on what would trigger the transfers between the states. The empirical data was researched to focus on what actions the users performed regarding product care and product lifetime. Several activities, both from the empirical data and the brainstorming activity, were listed, which concerns the activities that could trigger the transfers. The *product states* and *activities* will also affect the clearance process, together with the *circular consumer characteristics*, the *clearance options*, and the clearance process. When the *product states* and *activities* were added to what affects clearance the project duo realized that the clearance process was redundant and did not contribute to understanding what affects clearance. At this point, it was obvious that the *product states*, *the activities*, *circular consumer characteristics*, and the *clearance options* affected how consumers clear products.

These four areas are also affected by each other, to find the correlation between the areas the project duo performed another brainstorming session. The result indicated that they will affect clearance in the following order; *circular consumer characteristics, activities, product states, and clearance options* in a combination of the same hierarchical order. This insight was based on the participants from the user study. Lastly, brainwriting was performed to visualize the hierarchy of the four affecting areas.

8.2 Persona & scenario

A persona with an accompanying scenario is created to represent different types of users within the target group (Johannesson et al., 2013). The purpose of a persona and scenario is to visualize possible users and their context and situation. It also helps to estimate goals, needs, wishes, possibilities, and limitations. Personas were used to define and portrait the characteristics of the user study result. Four groups of characteristics were developed in order to create profiles that would ease the process of understanding the users. A total of four characteristics was created to illustrate different attitudes, behaviors, and prerequisites in circular consumption.

8.3 Conceptualization

This is a process that includes creating concise definitions for the solution. When searching for the solution to the identified problem, the focus needs to be remained on solving the problem and having a creative mind. In that case, the abstract state can transfer to a concrete state with a product that solves the problem (Egiri & Wuritka, 2016). After ideation, there were several functions and requirements defined and these were gathered in mind maps regarding the concerned subject. The conceptualization phase ran several iterations to both *visualization* and *evaluation and testing*. The final concept with content and visuals are presented in chapter 9.

8.4 Visualization

Tableau (n.d.) describe visualization as the creation of something that grabs interest and keeps our eyes on the message. Humans are drawn to and can easily differ colors and patterns. The visualization phase is in correlation with conceptualization and evaluation & testing through iterations. Each version of the concept was prepared for evaluation. Later, the visual material, and the content, was improved with the evaluation feedback. Each concept was evaluated four times and improved after each session.

8.5 Evaluation & testing

Evaluating existing solutions is important to define areas of improvement and the value of the solution. It enables a prediction of the best functions, performance, and determining what should be eliminated. However, there can be difficulties regarding the definition of value, functions, and given information, during evaluation. The insights from the evaluation can be taken into consideration in further development and improvement (Johannesson et al., 2013, p. 179). The evaluation with the conceptual toolkit aimed to test the applicability and to see if the received information is valuable. It was divided into four steps where the first part was an internal evaluation conducted by the project duo and the supervisors, with four different cases. After the first two evaluations, the toolkit was improved according to the feedback and insights from working with the cases. The second part involved four industrial design engineering master's students, they tested the same cases as the project duo, which enabled the results to

be compared. The final part of the evaluation was another one performed by the project duo. A deeper test was performed more carefully and thoroughly where the aim was to study the content and the outcome.

Internal evaluation

The project duo evaluated the toolkit to get an overall impression. The language was checked and the visual material was improved. This evaluation was done with two cases, a stand mixer from KitchenAid and a sofa from IKEA. The supervisors evaluated the toolkit with two other cases. Their input regarded the general purpose and output of each tool. Also, whether the toolkit should be steering or rather guide the user.

External evaluation

In the external evaluation, four well experienced industrial design engineering master's students participated in pairs of two. Before they started the evaluation, they received information about the project and the cases. This evaluation aimed to test the toolkit, both the structure, time consumption, and the relevancy of the content. They were not given instructions on how to use the toolkit in order to test the usability.

Final evaluation

Finally, one last evaluation was performed by the project duo. The feedback from the external evaluations was implemented, then a new case involving a mountain bike was performed by the project duo.

RESULT OF FINAL DELIVERY

The literature review presented a knowledge gap regarding clearance, which became a focus in the user study. The comparison analysis indicated that the gap was complemented with the empirical data. Both studies were compared through the themes; *the consumer*, *the offer*, *external influence*, and *clearance*. As one of the focus areas was to communicate valuable information to a designer or other agent, the gathered information was concluded in a model and a toolkit. With the gathered knowledge from both the literature review and the user study, the project duo investigated which areas the clearance process involves. All the data were analyzed through the themes; *the consumer*, *the offer*, *external influence*, and *clearance* but these themes held too much information to support designers or other agents in circularity. The themes were narrowed to highlight how users make choices in the process towards clearance. At this point, it was determined that new areas had to be presented. The new areas indicate what is possible to affect when it comes to designing for clearance.

Chapter 9 presents the final results, it is introduced with an overview model, which presents what affect clearance. The model indicates the most important areas to work with while designing for clearance. The areas of the overview model have been taken into consideration while developing a tool that aims to aid designers and other agents while developing circular products and services.



9.1 Overview model; effect on clearance

This project aimed to support the development of circular solutions. The themes presented in the project were the foundation of ideating the four areas affecting clearance. Based on the findings, it was determined that a model was required to create a comprehension of the different affecting areas of clearance. The new areas are; *circular consumer characteristics*, *activities*, *product states*, and *clearance options*, which together created the overview model, presented in figure 9.1.

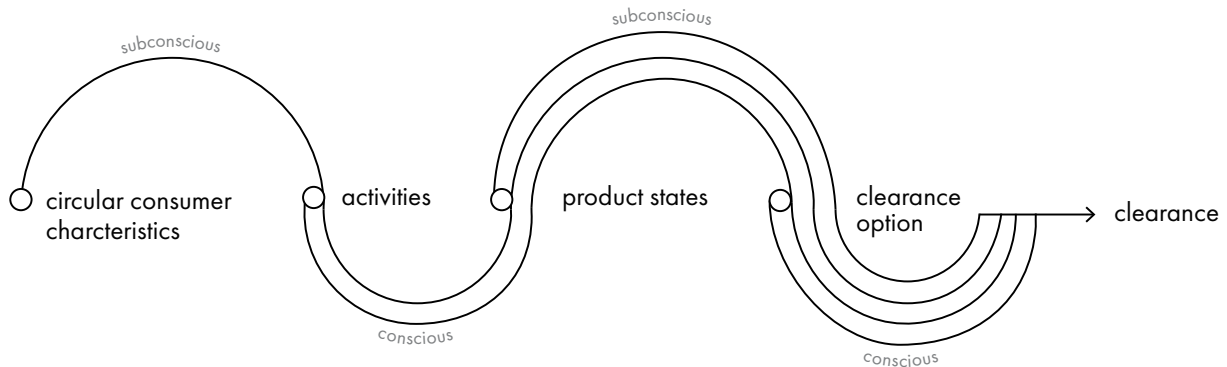


Figure 9.1: Overview model - order on areas affecting each other and clearance.

What the areas represents in the model:

Circular consumer characteristics: Presents different traits, knowledge, attitudes, and prerequisites to circular consumption.

Activities: Conscious actions where the user is aware of what is taking place.

Product states: Product states present how valuable the product is to the user and how far away it is from getting cleared out.

Clearance options: Represents what options the user has while clearing products.

The overview model is explained through the following scenario.

Annie, who was described earlier, obtained a jacket in the previous scenario and now it is time for her to go through her stuff. Annie has *characteristic* traits from both yellow and green, which means that sometimes she encounters obstacles and her products do not get circulated. But this time she made up her mind to go through her closet and sell some of her clothes. She looked inside her closet and noticed she had a lot of jackets. She decided to go through all of them to determine which ones she needs and not needs. She validates all of her jackets and decides to clear two of them. She notices one of them is missing a button and decides to improve the jacket by adding a new button. Annie is actively making choices and *activities*, she is the one deciding what to do and these choices are all conscious and influenced by her characteristics.

Going through these *activities* made the products transfer in *states*. The first jacket was a jacket she only used part time. This jacket went from in use: low value to no use: to be cleared out. The second jacket has not been used for a long time, it had been stored as a backup in no use, but when Annie discovered it being broken the jacket transferred to no use: to be fixed. When the jacket had been fixed, it transferred once again to the state to be cleared out. She made the choice to improve her jacket in the activity area and does not reflect on the *product state* transfers since these occur subconsciously. When the products have ended up in to be cleared out it is time for Annie to decide which *clearance option* she is going to make. Since her *characteristics* were yellow and green and she initiated the *clearance* process intending to sell her products, she chose to sell the jackets through an online service. Eventually, she gets contacted by a buyer and ships them to the new owner and in this way, they have been cleared out.

SCENARIO

All four areas affect clearance in a hierarchical and chronological order. The hierarchy and chronology follow the same order, from left to right in figure 9.1. The areas each has a dot which guides them through the other areas and finishes in clearance. The hierarchy presents that one area affects the following ones towards clearance and the chronology indicates in what order the areas have an impact towards clearance. It was further discovered that the four areas vary in consciousness. *Activities* and *clearance options* have higher consciousness and those are actions determined by the user, while *circular consumer characteristics* and *product states* occur subconsciously and are harder to affect.

The overview model contributes to an understanding of how users clear out products. The model is a typical process for clearing a product, but not a definitive one. Clearance can be affected by other factors as well, such as a product breaking or a request from an interested buyer. These scenarios will not occur in the same process as the overview model presents. However, both of the scenarios will be affected by the user and its characteristics. The overview model presents four areas that affects clearance. All of the areas are depending on the consumers' choices, which is why they have been involved in the overview model. The designer needs to understand the consumer and how to affect their choice through learning about the areas. Therefore, understanding how the areas affect the journey towards clearance will support a designer to design for circular consumption. This is important since circulation can not be successful without circular clearance.

The overview model is further important since it presents which area is the highest affecting ones through the hierarchy. Additionally, the model presents the consciousness of each area which creates a greater understanding of the user and its clearance process. The four areas do not solely teach the reader about the user's perspective on circular clearance but guided the development of the tool that supports designers and other agents to develop circular solutions. Sections 9.1.1 - 9.1.4 presents information regarding each of the areas. Followed by two models presenting combined areas structured with empirical data. The first combination regards circular consumer characteristics together with *clearance options*. The second one regards *activities* combined with *product states*. The models have the same purpose as the overview model, to teach the reader about specific data and to ease the development of the toolkit.

9.1.1 Circular consumer characteristics

The first part of the overview model is the *circular consumer characteristics*. These are characteristics traits individuals can possess. Although one individual can have traits from more than one characteristic, depending on the product and situation. The area is the highest affecting area and consists of four different characteristics; green, yellow, orange, and red. They are a scale from being very involved in sustainability and circularity (green) to not being involved at all (red), though with other including factors that affect the ability to be engaged in circularity.

The *circular consumer characteristics* will affect the three other areas; *activities*, *product state*, and *clearance options*. It was determined from the literature review and the user study that the user's circular consumption traits have the greatest impact on how the user acts, and affects all other areas when it comes to clearance. The most profound evidence on the *circular consumer characteristics* affection was established in the empirical data. This was due to the character categorization of every participant which enabled comparison of individual answers and a more thorough analysis of the user study.

The characteristics were created to present different traits, knowledge, attitudes, and prerequisites to circular consumption. The included factors were presented in both the literature review and the user study. Hence, both demographics and economy were additional factors that the literature review presented as important in circular consumption. When the analysis of the user study was complete those factors could be excluded. This was because the empirical data indicated that attitudes and knowledge conquer demographics and economy on many occasions in circular decisions. In conclusion, the gathered data from both studies determined what factors should be included in the *circular consumer characteristics*. The characteristics do not represent four types of consumers but different traits consumers can have in various situations with products. Meaning one individual can assimilate characteristics from all four groups depending on the situation and product.

Red

The red characters are not interested in circularity. They would rather purchase newly produced products and dispose of them after use. They do not like the idea of people using their stuff. The red will not fix broken products, since they have no interest in repairments. What hinders them in circular consumption are time and the convenience of buying newly produced products, their attitude, and their habitual consumption behavior. They most likely have access to cars which means transportation and distances are not a barrier. Also, the red is driven by the excitement of obtaining new products. The red consumers are generally early adopters and put prestige in owning the newest products. This group needs to be pushed into doing circular acts, which could be done by convincing them with solutions suited for their personality and characteristics.

Orange

Orange characters often feel exhausted while engaging in circularity and their major barrier is motivation. Common for both red and orange is that they need a spark for circulating products. This character is not money-driven but a smaller compensation or other promotion could spark their motivation. The orange is easier affected by peer pressure compared to the red. So there is a possibility of influencing the orange into acting more circular.

Yellow

The yellow characters act circular but still encounter obstacles. These obstacles could be transportation problems or lack of knowledge. The yellow is money-driven and would choose to sell their old products as the first option of clearance. Though, they appreciate the help from

a middle-man. The yellow could conquer obstacles of the clearance process if they know the intention of the product's life.

Green

The green characters are driven and engaged in circular consumption. They only need to be enlightened about opportunities. The green puts a lot of its time into creating circular opportunities and sees it as a lifestyle. These characters like to see their product get a further life, which makes them inspired to know when a new buyer has got a hold of their product. Green consumers are not money-driven and value life with fewer products. A green user likes social contact and contexts where new bonds could be created.

9.1.2 Activity

The second part of the overview model regards *activities*. The *activities* are conscious actions the user makes that affects the state of the product. The four *activities* the consumer can go through are to *obtain*, *replace*, *validate*, and *improve*. They were established from the empirical data and originates from the explanations the participants provided. Those explanations regarded their typical *activities* for product care and thoughts regarding product lifetime.

Obtain

Obtain is an activity that generally presents what happens with products that are obtained. It also indicates what scenarios a new product can go through in a new home.

Replace

Replace is a common activity, it represents when older products are replaced with new versions. Consumers can be tempted by new technology or be inspired to try something new. In these cases, the replaced product will most likely downgrade in state if the newer product is considered better.

Validate

To validate is to determine what belongings should be kept. This can be done by; *clearing out products*, *going through storage*, and *validating* the existing products. This contributes to knowledge of what one owns and helps the user to start using the exiting products or clearing them out. It is possible for products to physically downgrade but it is not until the user validates the product and gets aware of the physical condition it might decrease in state.

Improve

The improve activity has the purpose of improving and making exiting products upgrade in state. It could be to upgrade, repair, or reconfigure the product. Generally, obtain and replace decreases the value of other products. While validating and improving can make a product more valuable.

9.1.3 Product states

Product states is the third part of the overview model and consist of seven categories. The states present how valuable the product is to the user and how far away it is from getting cleared out. The area *product states* was established early in the project when the majority of the reviewed literature explained value as a major factor for circular consumption. Value in the literature was presented during the entire consumption process and was explained with several factors, such as financial benefit, decreased value over time, and desire for newness. Additionally, the empirical data presented insights about storage space. It was explained that users do not entirely have control over storage areas and the high risk of forgetting what is kept in the storage. The insights from the literature and the empirical data were the foundation for the area of *product states*.

The seven states are; high value, average value, low value, to be fixed, forgotten, back-up, and to be cleared out. They are divided in groups of *in use*, *no use* and *clearance*, all states and the three groups are presented in figure 9.2. The project duo acknowledged that the transitions between the states will be affected by the two earlier areas; *circular consumer characteristics* and *activities*. According to the empirical data the change of state will depend on how the user act based on their characteristics. The *product states* will also be affected by *activities* since one or more *activities* has to occur before a product can change state. The change in *product state* will eventually have an impact on the *clearance options*.

in use	HIGH VALUE	The most important products, the value will depend on the product, situation and consumer. The consumer is far from getting rid of or stop using these products.
	AVERAGE VALUE	The products averagely valued are not very important but unlikely to get replaced. The consumer values them and still considers them to be important.
	LOW VALUE	This product state is the closest to no use. Products in this state could be used frequently but are easily replaced.
no use	TO BE FIXED	Following products have been stored to be upgraded or repaired. These products can stay in storage for a long time or be fixed straight after damage.
	FORGOTTEN	Some products being stored or used less frequently and therefore forgotten. Memories can be triggered when finding these forgotten products.
	BACK-UP	After a product has been replaced, it could be stored as a back-up, in case of damage to the currently used product.
clearance	TO BE CLEARED OUT	The products in this state will be cleared out.

Figure 9.2: The seven product states.

9.1.4 Clearance options

The final part of the overview model is *clearance options*. Which represents what options the user have while clearing products. As mentioned in the literature review, there are twelve clearance options for owned products and products from services. The options are divided based on permanent or temporary clearance. The project duo decided, based on the complementary knowledge from the user study, to include the three most common options, these are all within the permanent disposal of owned products. They were the most relevant to include to enable deeper understanding and were supported by large number of empirical data. The three options are; *throw it, from now on called discard, sell it, and give it.*

The included *clearance options*:

Discard: A clearance option that is considered to be habitual and the less demanding one. A non-circular clearance option.

Sell: A motivating activity due to the financial benefits. The buyer can also purchase for a lower price, selling favors both seller and buyer.

Give: Consumers who do not find the time for selling products can choose to give or donate products instead. These options contribute to circular consumption if the usage are continuing.

9.2 Combination models

In order to understand the overview model and its four areas, two separate models were created. They aim to understand the incentives and barriers that users experience with clearance. Each of the models represents two of the areas, and they are from now on referred to as combination models. They are structured with empirical data and scenarios created out of them. These present real-life experiences and attitudes. The two combination models aided the development of the final delivery, the toolkit provided to designers and other agents. Besides supporting the toolkit development, the combination models aimed to bring trustworthiness to the overview model. Additionally, to create an understanding of the consequences of the users' actions.

The first ombination model contains *circular consumer characteristics* and *clearance options*. In this case, the area of *circular consumer characteristics* is subconscious and the area of *clearance options* is conscious. This combination presents the reasons or motivations for choosing a certain clearance option and were categorized within the *circular consumer characteristics* by the project duo, based on the impression of the participants. The second combination model is the combination of *product states* and *activities* where the area of *product states* is subconscious and the *activities* are conscious. These scenarios were created from the participants' stories and reflections regarding their products and what they typically do to establish that a product will be cleared out.

9.2.1 Circular consumer characteristics & clearance options

To combine *circular consumer characteristics* and *clearance options* shows the importance of the users in the clearance process. The user can determine whether the products get circulated or not. All users will use the *clearance options* in different ways, and therefore it is important to consider their characteristics traits. This combination model includes information from the user study, it presents the incentives and barriers the different users encounter with the *clearance options*, see figure 9.3. The model is structured with relevance of what is most important to consider within each of the options, the factors closest to the middle are the most important ones.

9.2.2 Product states & activities

Combining the *product states* with *activities* visualizes possible scenarios of how products can transfer between the states as a result of performed *activities*. This contributes to an understanding of the overview model and how the transfers between the *product states* can only occur in combination with *activities*, which in turn are dependent on the *circular consumer characteristics*. The other combination model resulted in four different diagrams, they are presented in figure 9.4. Each diagram represents one activity and presents three possible scenarios each.

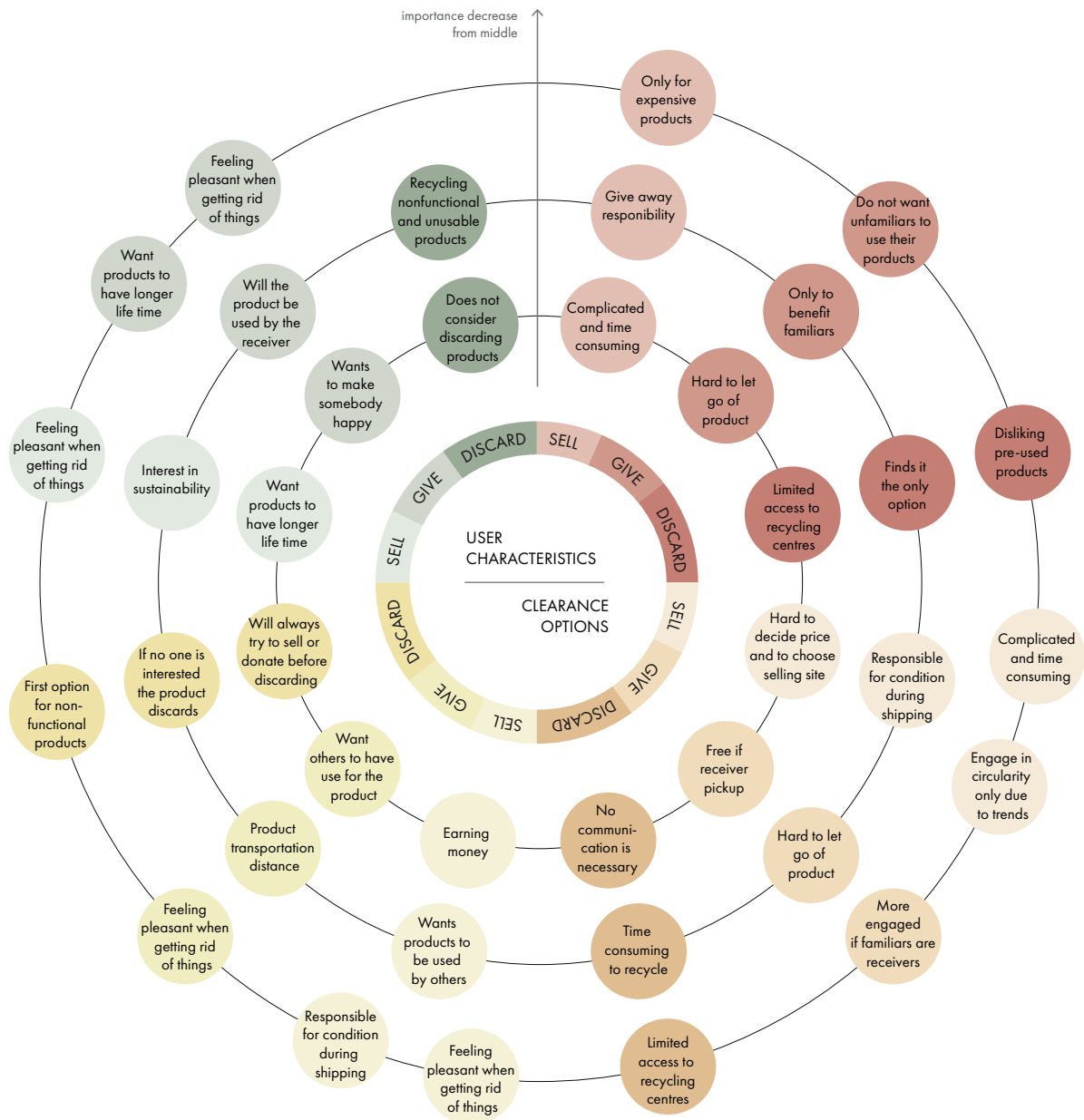
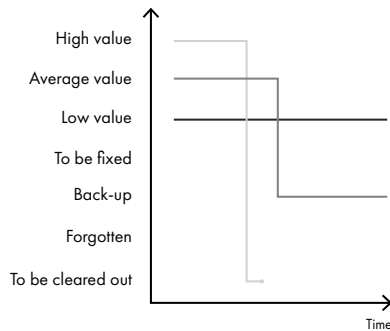
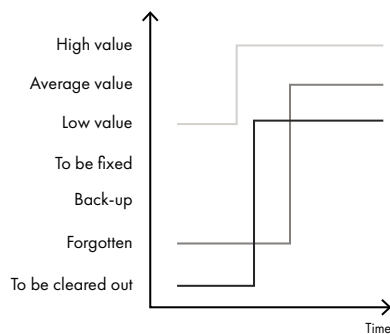


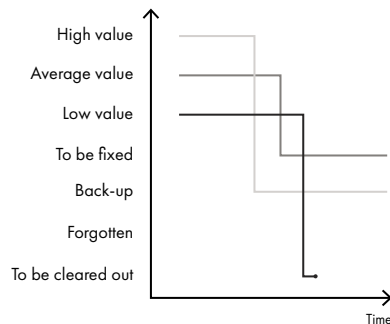
Figure 9.3: Different user group's typical barriers and incentives for three clearance options.

Examples of how *obtainment* influence product states

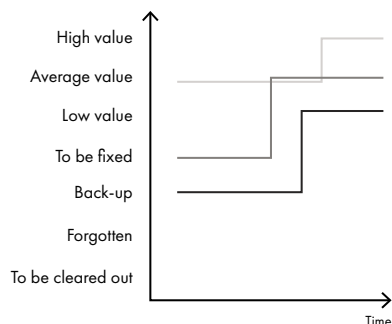
- When a product is obtained it could be considered high value for a time and later the need or the product could change to be undesired and therefore cleared out.
- The obtained product enters as average value and later becomes back-up without any other activity occurring. This could depend on a change in need or product.
- A product can be obtained in low value and let it stay in the same state during its entire life.

Examples of how *validation* influence product states

- Re-discovering a product that is present in low value and realizing the need is to transfer it up to high value.
- Finding a forgotten product in storage space and starting to use it again. It could transfer up to any *in use*-state.
- Regretting the decision of clearing an item out. Could be one user that has a "discard pile" and goes through it once more and gets second thoughts.

Examples of how *replacement* influence product states

- The replaced product can transfer from the *in use*-states to either to be fixed, back-up, or to be cleared out.

Examples of how *improvement* influence product states

- An averagely valued product can be considered highly valued after it has been upgraded.
- A broken product in to be fixed can transfer up to average value after reparation.
- Improving a product through reconfiguration can bring the product from the back-up state to the *in use*-states.

Figure 9.4: Typical examples of how products can transfer between states as a result of performed activities.

9.3 The toolkit Circulate it!

The overview model presented four areas; *circular consumer characteristics*, *activities*, *product state*, and *clearance options*. These are all important to consider when developing circular products or services. To ease the design process a toolkit called *Circulate it!* was created, it focused on *circular consumer characteristics* and *product states* since they occur subconsciously and are hard to affect and predict. *Circulate it!* will create an understanding regarding the customer group and the product and its lifetime. The purpose of the tools is for a designer to understand what potential obstacles the user and product can encounter in circulation. Also, to gain the knowledge required to overcome those obstacles and to guide the development of new circular solutions.

Circulate it! includes three tools, tool 1 - defining circular consumer characteristics, tool 2 - discover product states, and tool 3 - prevent & restore products from getting unused. Tool 1 and 2 are folders that should be filled in and create discussions. Tool 3, consists of 27 ideation cards that support the ideation of solving the discovered obstacles from the previous tools. The toolkit is additionally provided with an instruction sheet. The sheet provides the user with starting questions, information, instructions, and room for insight notes.

9.3.1 Instructions & guide to toolkit

The toolkit is provided with an information and guidance sheet beyond the three parts of the toolkit. The three tools are explained, and space is provided for documentations of thoughts and insights. This sheet also includes six initial questions to start the exercise. These regard the business, product, and target group. Besides instructions and guidance, it also provides information regarding the toolkit content, estimated time, and purpose for each tool. Further, the toolkit user gets information about the toolkit's relation to user studies. It is possible to use with or without gathered empirical data, either to explore the target group or as a complement to it. The need for the instruction guide was noticed during the evaluation of the three tools. The master's students mentioned they wanted clearer instructions and something to guide them through the tools. The purpose of each tools was also requested. Finally, they mentioned they wanted the required time for each of the tools to be presented to them in the beginning. The project duo also evaluated all of the tools and desired a summarizing conclusion to enable the user to move on with the newly received information. This was added in the introduction sheet. All input from the evaluations was implemented in both the instruction sheet and the tools.

If the toolkit user has gathered information regarding the target group before they start working with the toolkit, they can answer the questions easier and be more precise. Hence, if there is no assurance regarding the target users' mindset and relation to circulation the toolkit can acknowledge that empirical data is desirable. The information and guidance sheet further structure the toolkit and give the user a clear perspective on the content, the procedure, and expected outcomes, all of the pages are visible in appendix D.1.1. The toolkit user is supposed to return to the instruction and guidance sheet between each of the tools. To document the insights and read the instructions for the next tool.

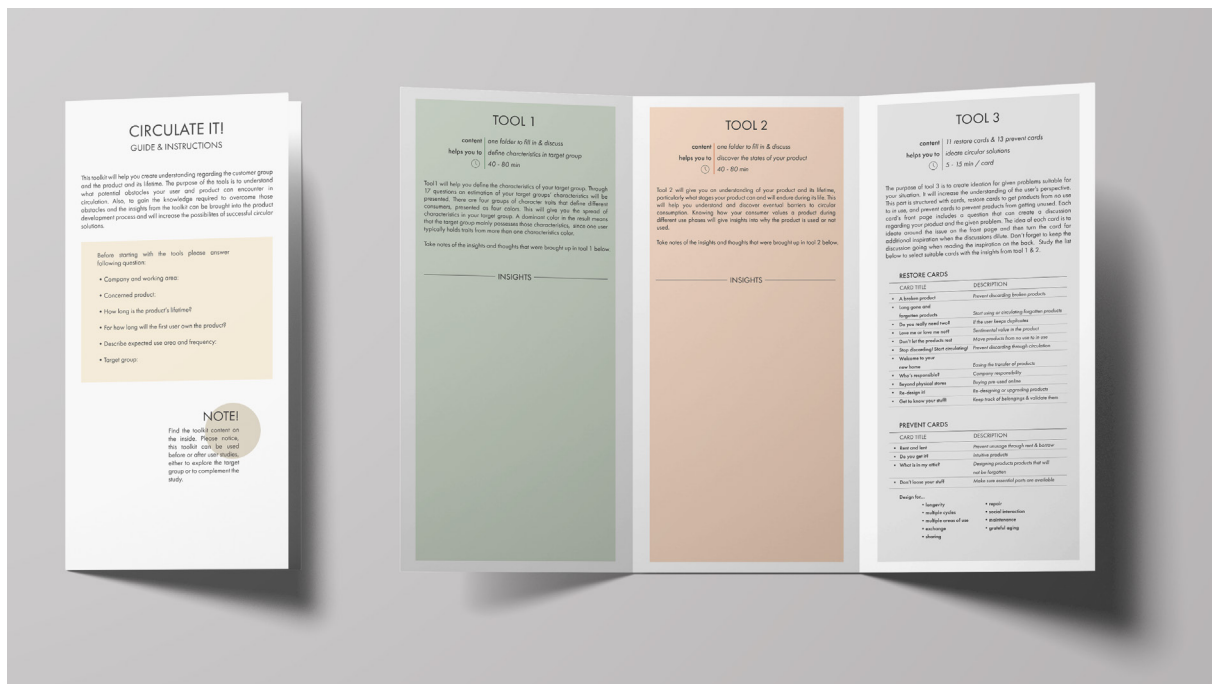


Figure 9.5: Introducing sheet of *Circulate it!*. Includes purpose, instructions, and guidance.

9.3.2 Tool 1 - Defining circular consumer characteristics

The first tool is a folder that aims to define a possible spread of characteristics traits within the target group, illustrated in figure 9.6, see the full description of the tool in appendix D.1.2. The empirical data indicated that the users' characteristics traits do highly affect decisions in the consumption process. This made the project duo realize that knowing the users and their traits will affect how suitable the developed product or service is for the user. There are also questions included in this tool, which aim to start discussions regarding the target user and circulation.

The folder involves six pages, the first fold, see figure 9.7, presents 17 questions and room to answer each of them. The questions will give an approximation of the spread in the target group. Knowing what attitudes the target group possesses can guide the development of products or services suitable for the target group. These pages also include instructions on how to carry on with the answers. The next spread reveals the answers to the questions, figure 9.8. When the answers are controlled the result should be plotted in the spider chart on page four. This gives the toolkit user the approximation of which characteristics color is most present in the target group. When opening page three as in figure 9.9, page five presents and gives information how to approach each color group. The information will give the toolkit user the possibility to learn about the group/s of color most represented in their target group and how to approach them. Also, the possibility to read about the other groups to figure out what differentiates them and to learn about other groups not represented. The characteristics described are the same once presented in chapter 9.1.1. Page six, see figure 9.9, includes a discussion part regarding circular design and will support discussion regarding the offer concerning the user and circulation.

Lastly, at the bottom of page six, the toolkit user is allowed to interpret how the users would value quality, function, price, and brand as a first, second, or third user and whether they relate or not.



Figure 9.6: Tool 1 of Circulate it!.



Figure 9.7: The 17 questions that the toolkit user will answer to get an estimation of the target group's characteristics.

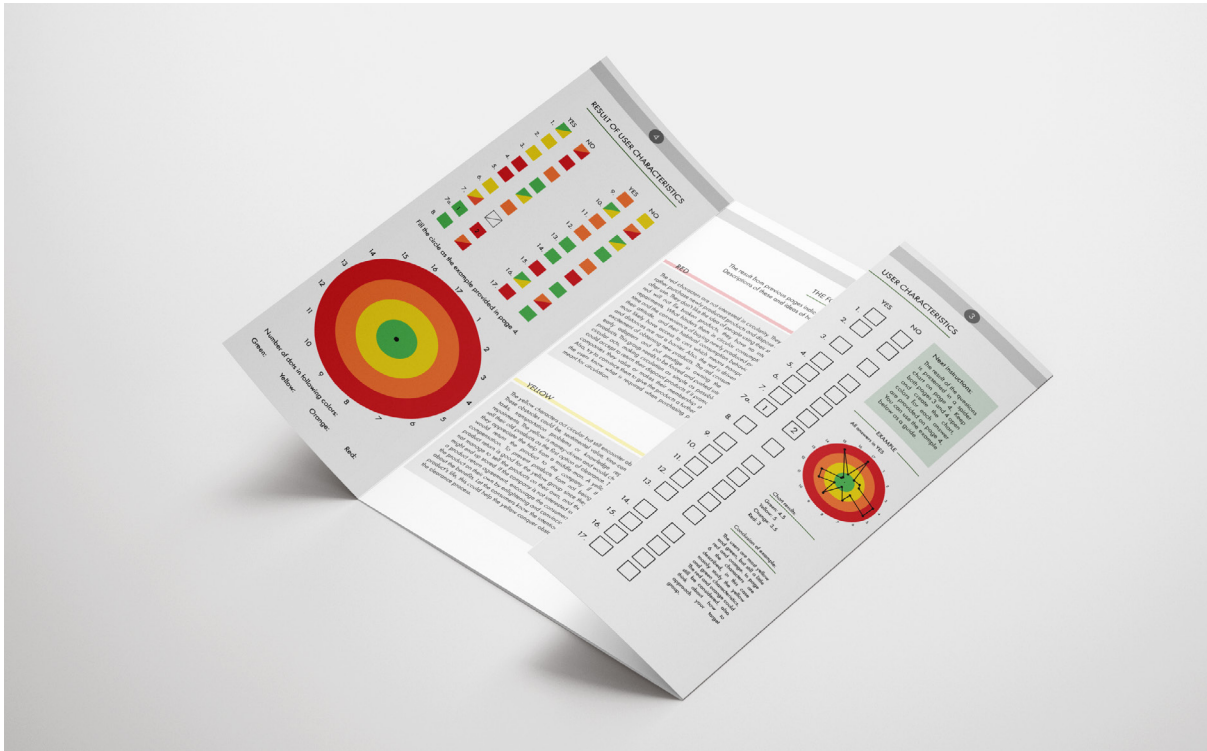


Figure 9.8: How to verify the answers and get the approximated result.



Figure 9.9: The inside of the folder presents information and how to approach each characteristics color. Together with discussion material.

9.4.3 Tool 2 - Discover product states

The second part of the toolkit aims for the designer to discover and learn about *product states*, illustrated in figure 9.10. The empirical data presented that participants subconsciously valued products into several categories that determined how much the product is used or desired to be kept. They also explained why products get circulated or not, the motives varied but could depend on products being forgotten, low valued products that still are considered to be suitable for potential future use, or damaged products and in need of reparation. The motives for not circulating products prove that products has a journey towards clearance just as the user's attitude to circulation determine the outcome. Tool 2 includes a description of the seven *product states*, a mapping of potential scenarios for the product, and questions and statements that support discussion. The purpose of the toolkit is to learn about the existing states. It also provides information on how to affect transfers between *product states*. Both tool 1 and tool 2 were part of the evaluation, performing the tools, and answering their questions enabled a holistic perspective which contributed to final changes in visualization, grammar, and structure. The supervisors also commented on tool 2 where they were confused about the product's states definitions of use, which was changed and focused more on value.

This folder consists of seven pages, all of them is presented in appendix D.1.3, it begins with a presentation of the *product states* to give the toolkit user an overview. The *product states* are; high value, average value, low value, to be fixed, forgotten, back-up, and to be cleared out, which were presented in chapter 9.1.3. Then, page three, visible on figure 9.11, allows the toolkit user to mark their vision regarding the states in one table and a more lifelike point of view in the second. This will contribute to the understanding of what the product will encounter. Also, it will enable a comparison of the two cases. On page 4, figure 9.11, several scenarios for the product over time can be graphed. This will create in-depth thoughts concerning the researched product and favor the toolkit user's creativity. Both *activities* on pages three and four are provided with examples to guide the toolkit user. Then both pages three and four are opened and exposed to the inside of the folder, figure 9.12. Page five gives instructions on how to continue and finish the exercise. Page six includes questions and statements for each of the seven *product states* and aims to create discussion regarding the certain product and the states. Space for notes is included to ensure that important insights from the discussion are gathered. Lastly, questions are provided regarding the product life cycle and older versions which will encourage discussions.



Figure 9.10: Tool 2 of Circulate it!.

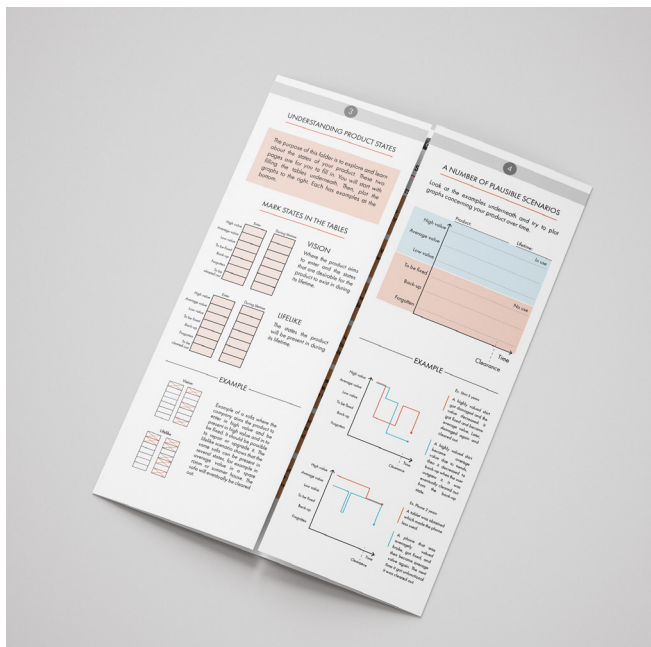


Figure 9.11: Allows the user to explore the life of the investigated product.

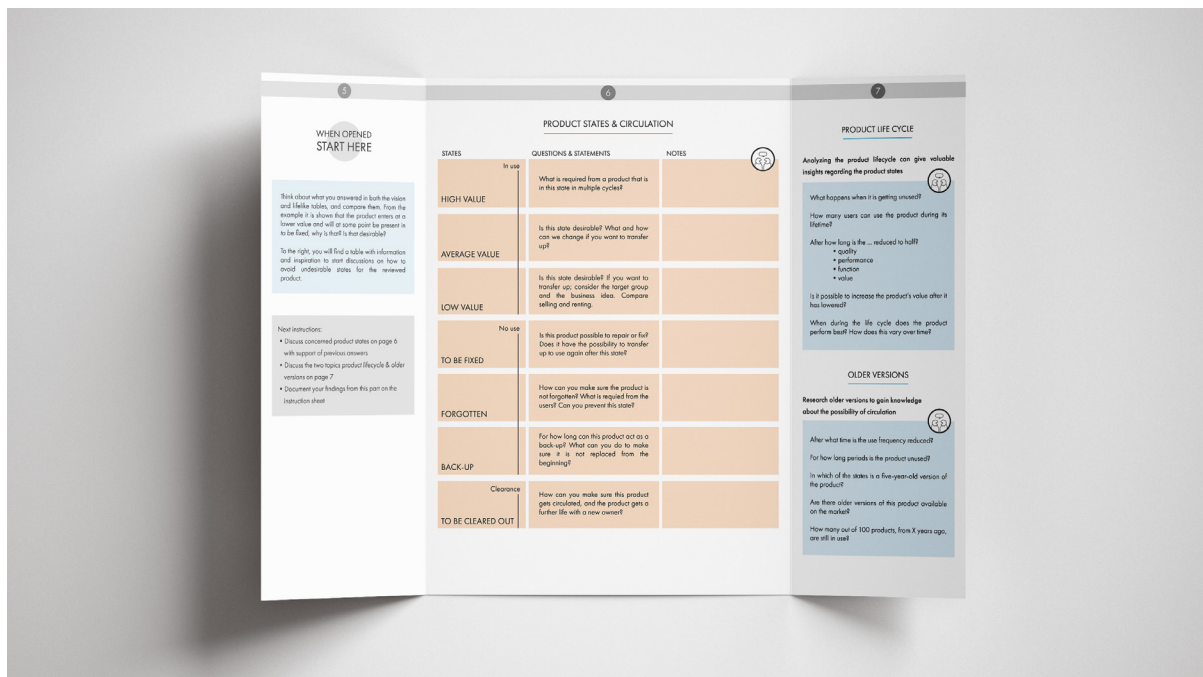


Figure 9.12: Discussion material regarding all seven product states and the product's life.

9.4.4 Tool 3 - Ideation cards - Prevent & Restore

The third and last part of the toolkit aims to support ideation sessions regarding the discovered findings from the earlier tools. Tool 3 is structured with 27 cards divided into two categories: restore and prevent, they are visible in appendix C.1.4. Evaluating the cards contributed to new insights and more information was added on them. The master's students found the cards were intuitive and enabled them to think creatively. The restore cards' purpose is to guide the designer to create products that can easily be transferred from no use to in use states. For instance, through acknowledge forgotten products. Or through easing the circular transition between users and thereby promoting usage for a new user. The prevent cards will guide the designer to create products that prevent them from getting unused and consist of basic prevent cards and "design for" strategies. Examples of preventing cards are how to prevent seldom used products or complex and counterintuitive products from getting unused. The "design for" cards includes strategies that extend or eases usage. The insights from tool 1 and 2 will ease the process for the designer to chose cards. A list of all the cards is available in the instruction and guide sheet and the user can select relevant cards to work with based on the short titles and descriptions in the list.

Each card's front page includes a question that can create discussions and ideation regarding the product in combination with the problem stated on the card. The issue on each card should be relevant to the toolkit user since starting tool 3 includes the selection of suitable cards. On the back of each card, there are ideas and inspiration that can support the discussion. These can also give additional ideas when the discussions diminish. Each card further includes a given product case, which enables the cards to be used as educational material if the toolkit user does not develop a specific product or business idea.



Figure 9.13: Introducing cards to tool 3. The grey card explains the tool, the orange card explains the purpose to restore cards, and the purple explains the purpose of the prevent cards.



Figure 9.14: Three examples from the two categories prevent and restore.

DISCUSSION

The discussion is divided into the three parts of the project; *literature review*, *user study*, and *final delivery*, and finishing with the evaluation of the toolkit.

10

10.1 Literature review

The literature review involved 47 papers and project reports, they were selected by reading their abstracts and titles. The literature review was executed in three steps, each with a different focus. The steps in the review gave the project duo knowledge of what to complementary search for. The searches were done with variations in keywords and with different search engines together with adequate literature provided by the supervisors. To identify the knowledge gap in the literature, the articles were studied once more to prevent missing out on information. Reading the articles thoroughly and complementing the review with papers three times makes the literature review thorough. Although, the processing of the data is worth discussing. The literature review was executed by creating a consumption process, five consumption paths, and aspects to sort the data. The data from the review was then divided into the right path and aspect. This way of analyzing and processing the data is one way of doing it and if another methodology would have been used the outcome might have been different. Also, if another researcher would have executed the same process the result might have been presented differently. Even though the literature review was conducted thoroughly and was well calculated and time invested.

The reason for analyzing the data within a consumption process, paths, and aspects was to give the review further dimensions and not missing essential findings. Also, to ease the comparison between the literature and the empirical data. Although, analyzing the data in this many steps increase the risk of information getting lost while transferring it between the analyzing phases. But then again, the information had to be summarized into the final themes, though it could have been variations in themes if other researchers had performed the study.

10.2 User study

Conducting the user study with 100 participants from the entire nation brings validity to the result. Although only involving participants from one nation resulted in differences between the two studies, since the literature contained international articles. All of the participants lived in Sweden, where many people are wealthy. If a user is not in the need of the financial benefit they receive through selling, they will not be as motivated to sell their pre-used products. Multiple users from the study mentioned they would rather give away products and giving someone else the joy of owning them, and that the payment was not as important, which might be one of the reasons why the financial aspect differed between the two studies.

The participants from the user study shared multiple characteristics, the majority was female, in the age between 20 and 45, and had a great interest in sustainability and circularity. This also affected the outcome since the participants were circularly biased. To give the study further dimension the project duo collected a handful of new participants, most males that were known as non-circular consumers. This gave important insights into their perspective but could not compete with the number of circular participants. Consequently, the result presents higher validity regarding the incentives and barriers from the consumers that are already familiar with circular consumption.

Performing a diary study with 60 of the participants was an effective way of collecting data. The diary study allowed the participants to keep track of their consumption behaviors. The study lasted four weeks during Christmas time. These weeks present unusual consumption since Christmas makes people consume more than they usually do. It would have been a better choice to have other weeks for tracking consumption. However, performing the study during Christmas, enabled the participants to reflect on potential over-consumption. Also, some participants have spare time during the holiday, which enable them to prioritize cleaning and clearing out storage spaces. Getting the participants to reflect regarding clearance was more important for the project and compared to getting correct consumption tracking.

Interviews were held with the remaining 40 and gave the possibility to collect indepth answers. The interviews were limited to 40 minutes each and could have been longer based on the interest from the participants. Performing all interviews online, enabled more people to participate in the study. It also enabled a spread across the nation, which makes the result more reliable.

Four focus groups were conducted with a total of 18 participants. All 18 were participants from the diary study, which gave them an introduction to the topics. Since all parts of the user study were carried out remotely, some technical problems were encountered. However, the participants were comprehensive and patient, every meeting was overall successful since they gave the project valuable information. After gathering the empirical data it was processed through affinity diagrams, qualitative notations, and discussions within the project duo and with the supervisors of the project. The result would have been different if other methods were used, but the ones performed were selected due to their flexibility and the possibility of collecting a large amount of data. The amount of data is nevertheless dependent on the response the study got when reaching out to participants. It was beyond expectations to involve 100 participants, the result would not have been as thorough without a large number of participants. The thoroughness the 100 participants contributed to was the endless stories regarding their experiences with circular consumption, it contributed to specific scenarios they had been involved in and created great understanding. Though, the 100 participants had similar incentives and barriers in general towards circular consumption, and all of them was not necessary to understand those. It would have been beneficial if the variety of the participant was larger.

10.3 Final delivery

To narrow the scope to clearance and enlighten the toolkit user about the journey towards clearance is important since circulation is not possible if clearance is noncircular. To enable circulation both the obtainment phase and the clearance phase have to match to close the circle. To ensure high usability the toolkit and the overview model were iterated several times. The project duo discussed which parts that were important to communicate and which were redundant.

Overview model

The overview model was iterated to make it as intuitive as possible. It includes the elements; the four affecting areas, the hierarchy, and the consciousness scale. The process of creating the

illustration of the overview model included one major issue of how to illustrate the hierarchy. The project duo was determined to include it and it was solved with connections between the areas, which represent from what point each area follows the journey towards clearance. The final presentation of the overview model might be difficult to interpret without the associated text. Although, it presents the four affecting areas in a concise way, which was considered to be most important part of the model.

Toolkit

The toolkit was iterated with both internal and external evaluation. The evaluations were performed by the project duo, the two supervisors, and four students. It would have been relevant to evaluate the toolkit further with additional researchers and students. If the project had continued with evaluations involving potential toolkit users, such as designers or other agents from various branches and corporations, it would have improved the results and proven the validity. It would have given valuable insights into what the toolkit can contribute with and what adjustments might be required. As a consequence of limited time, it is questionable if the toolkit contributes to new insights when designing products suitable for circular consumption. What is equally important, and remains as a question mark, is if the toolkit users will have enough motivation and understanding to use the tools. The time of performing the tools varies but the longer time spent on the tool will enable more results. However, if the user is unmotivated the results will not be as helpful compared to a motivated user. Performing the tool thoroughly and being involved in the discussion sessions will improve the results and the outcome. Still, the usefulness of the toolkit is high since it will educate both the engaged and the unengaged designer or other agent about further opportunities in circular consumption. If an engaged toolkit user interacts with the tools the project duo assumes they will get at least some new viewpoints and insights. The information that established the toolkit is supplementary to the information found in the literature, meaning this project is purposeful.

Using the toolkit will contribute to new perspectives on how products and resources can be taken care of, what some consumers desire from a company, or how to combine linear and circular offers. The outcome is expected to teach the designer about the target group and the *product states*. They will get new viewpoints that might not have been discovered or considered before. Further, to understand the *product states* and that it is desirable to keep products in use, with either the first user or another user. This will benefit the environment and bring trustworthiness into the company. It will create a sustainable brand image and attract more consumers. The companies can also expose their products to the market for a longer period of time, either through changing owners, or users sharing the product, or perhaps by selling their pre-used products in their stores.

The toolkit further gives the possibility of selecting separate tools to investigate, e.g. if the toolkit user is an experienced designer, with good knowledge regarding the target group and their products, they can use solely the third tool. The informative cards can contribute to solving problems or creating new ways of thinking. This is possible since the toolkit is intuitive and described step by step in the instruction sheet so it can be performed without a moderator. Using the toolkit will also get more products circulated compared to today since it explores new perspectives, including the journey of both the consumer and the product. The toolkit will help

the user to understand the importance and desire of circular options. Further to understand the requirements of circular solutions and how to design products suited for more than one user.

10.4 Evaluation of toolkit

When evaluating the toolkit it was done in three rounds with eight persons. The supervisors' input regarded the general purpose and presentation of each tool. Their insights made the project duo realize that all tools require thorough explanations and argumentation. Which the project duo had not seen when working closely with the tool over a long time. The implemented changes concerned the presentation of, and, the content.

The second round of evaluation was done with four student colleagues. The evaluation sessions contributed to discussions within the project duo on how to include real users when answering the questions in tool one, and if that would be valuable. The initial purpose of the toolkit is to be used by the designer or an other agent and that their knowledge, estimations, and discussions will be enough to get valuable outcomes from the tools. It was considered desirable to be kept in this way.

The last round of the evaluation was also performed by the project duo. After each tool in the toolkit, the project duo discussed the results, the outcome, and how valuable the information was. From tool 1, multiple of ideas of how to change the business idea and the product design were discussed. This discussion could be helpful to explore the target group and how to inspire them to act more circular. The evaluation started with a discussion of defining the target group and the product. However, the result of the yes and no questions still differed, which lead to differently prioritized characteristics. This indicated a risk of different answers and varying outcomes, therefore is it important to have existing knowledge about the target group. Also to be critical while answering the yes and no questions. If the questions are not answered properly the result can be inaccurate and guide the toolkit user in the wrong direction. Evaluating tool 2 as mountain bike designers contributed to more specific knowledge and discovering what the concerned product goes through during its life. When evaluating this tool thoroughly at a late stage of the project it was discovered that the outcomes are profound. Understanding what states is encountered can give possibilities to avoid undesirable states. It will educate about the product's life and cycles, how many users can use it, and how capable it is of repair. Further, it will give a more concise understanding of the pre-used market for the investigated product, help to develop new business ideas and target new customers or to create new collaborations. This tool tells what optimal usage requires and lastly, it can present the differences between vision and reality and how to achieve the vision. In tool 3 the relevancy of the discussion is dependent on the toolkit user and the product. The risk of the discussion becoming flat if there is low interest or limited knowledge were determined. There is also a risk of the toolkit user coming up with one idea and being satisfied with the results, instead of continuing the discussion and ideating more solutions. Some cards have similar content and therefore similar inspiration in the back. However, the toolkit user is supposed to select interesting cards before working with them. Therefore, some areas need to be presented more than once, at least for each card containing similar information. The majority of the cards consider how to affect the user which could be difficult, depending on the characteristics of the users. Some cases with

certain products and certain users will be a challenge for the toolkit users, but the purpose of the cards is to make it easier to design products that the consumer will continue to use.

Evaluating the toolkit was crucial to get other viewpoints on the content and the outcomes. Even though, the evaluation could have been done more thoroughly and with actual potential toolkit users if the project was not limited by time.

CONCLUSION

The conclusion of the master's thesis concerns the project's three research questions and concludes the work by answering them.

11

11.1 What makes users circulate stuff?

As the title of this thesis questions *what makes users circulate stuff?* the conclusion will link to that. What makes users circulate stuff has been concluded to the three themes; *the consumer*, *the offer*, and *external influence* during the project, which all affect the users' consumption behavior. The two first research questions that do further complement the answer to the question in the title. The first and second questions explore how literature describes incentives and barriers in circular consumption and how the users describe it themselves. The project has reached its goals to investigate the current literature, acknowledge a literature gap, and complement the literature findings with empirical data. The insights provided in this thesis do complement the current literature on circular consumption and provides extensive information on clearance.

The third research question answers how the knowledge about user incentives and barriers could be applied to create successful circular solutions. To give designers and other agents the possibility to create circular solutions together with the toolkit *Circulate it!* directly links to the purpose of promoting the UN sustainable development goal number 12. The UN sustainable development goal number 12 regards sustainable production and consumption and by start using *Circulate it!* today businesses can develop to be more sustainable and circular. The following section answers each of the research questions separately.

11.2 Research questions revisited

Research question 1: How are user incentives and barriers in circular consumption described in the literature?

The literature presents the incentives and barriers within circular consumption based on consumption paths. The paths found in the reviewed literature were; *product service systems*, *second hand*, *refurbished*, and *collaborative consumption*. The gathered data was summarized and converted to specific factors that affect the consumers when engaging in circularity. What was discovered was that the factors within the four paths could be categorized to cover either *the consumer*, *the offer*, or *external influences*.

Research question 1.1: What are the differences between linear and circular consumption?

Literature regarding linear consumption was researched to enable a comparison between linear behavior and the four circular paths. The comparison is based on the three themes discovered from the factors regarding circular consumption; *the consumer*, *the offer*, and *external influence*.

The consumer

The differences between linear and circular consumption regarding *the consumer* mainly cover habitual behavior. The literature indicates that habits are hard to change and that linear choices often are based on habits. The transfer from linear to circular consumption is difficult due to the weight of habitual behavior. Also, the difference for *the consumer* in the paths are the

environmental attitude. Users that usually consume linearly that attempt to act more sustainably with a circular choice often encounter rebound effects that will make their behavior less sustainable.

The offer

Comparing *the offer* between the linear and circular consumption paths indicates that the quality factor varies most. Quality is a big motivator for linear consumers, compared to purchasing a pre-used product with circular options, which is less dependent on quality. The importance of quality varies between the circular options but it is never as important as in the linear path. Another difference is the financial benefit, this is described as something that drives users to consume circularly and is not presented as a driver for linear consumption. A major barrier in linear consumption is the fear of value decrease after purchase.

External influence

The *external influences* that affect the consumption paths differ more than *the consumer* and *offer*. Circular consumption focuses on influencing consumers to create trust and reliability. In contrast, linear processes mainly focus on influencing people to create an urge to buy and to increase sales.

Research question 1.2: What are the knowledge gaps in the literature?

The literature study revealed that the clearance phase is the least researched. Though, it is partly investigated but not as thoroughly and with no specific incentives and barriers as in the other parts. These insights from the literature made the project proceed with further research regarding clearance. The insights on how consumers act and behave while getting rid of products are as important as what drives and hinders them when obtaining circular offers, to make products stay in the circular flow. The user study was constructed with the knowledge of this literature gap, this helped to structure the empirical study in a suitable direction to gather the information that could complement the literature.

Research question 2: How are incentives and barriers to act within circular consumption described by users themselves?

The incentives and barriers from the user study are also presented in three themes; *the consumer*, *the offer*, and *external influence*. They were compared with the incentives and barriers from the literature in chapter 7. The result indicated there were many incentives for sharing. It can create new relations and enable individuals to access new communities. Sharing products can also enable people to access products that could otherwise be unaffordable. The users also mentioned barriers for sharing as the desire to own products and meeting up with strangers. They also discussed insecurity, both of having products damaged, the fear of being fooled, and

dealing with unfamiliar. While mentioning the barriers they also gave ideas of how to improve the barriers for sharing. Such as good communication, insurances, and return agreements approved by the involved people.

The financial benefit was mentioned both as an incentive. The individuals who sold pre-used products thought that it favored both them and the person purchasing the product. They wanted to give the product a further life and described that circular consumption could increase trust, improve self-image, and motivate people to take better care of products.

The users also discussed social incentives and barriers, such as the mindset, which is important and determining when engaging in circular consumption. Peoples' mindsets can change when they try to act based on what other people expect from them, their cultural context and attitudes. All of the social factors could be considered both as an incentive and a barrier. It depends on the individual, the surrounding people, and their mindset regarding circular consumption.

Research question 2.1: Are the users' descriptions different from the descriptions found in the literature?

The descriptions of the incentives and the barriers from the empirical data differed in some areas compared to the literature. The literature focuses on different attitudes, and how to affect and understand them and the consumption choices. Habitual behavior and rebound effects are also important since they can be hard to change and predict. The users did not discuss habits as thoroughly as the literature and the rebound effects were not considered. Although, the users did mention how attitudes could hinder people from getting involved in circular consumption. The literature discusses how consumers want products to suit their lifestyle and the possibility of creating new social connections, which many of the participants also mentioned. Further, the literature presents the fear of breaking norms could hinder consumers to create new connections. The participants did not mention any similar barriers, since they focused on the opportunities.

In the literature, quality and insurance were significant for some of the consumption paths. The participants had a deeper focus on insurance rather than quality. Though, they discussed how they are aware of the variation in quality when buying pre-used products. Another barrier mentioned multiple times in the literature was the product function, the participants did not discuss it in the same way. They mention the fear of being fooled and the insecurity of purchasing online.

Research question 3: How can the knowledge about user incentives and barriers be utilised for developing design tools that aid designers or other agents to develop circular products and services?

The gained knowledge from the two first parts formed further investigation of the clearance process. The topics that summarized the data in the comparison analysis; *the consumer*, *the offer*, *external influence*, and *clearance* seemed too unspecific to teach about the process of clearance and thereby support the development of circular solutions. The themes were adjusted and restructured to suit clearance. The four new areas, founded in the earlier topics were; *circular consumer characteristics*, *activities*, *product states*, and *clearance options*. Finally,

the two areas; *circular consumer characteristics* and *product states* formed the two first tools in the toolkit. The toolkit additionally includes a third tool, restore and prevent cards. Tool 3 is required to progress the toolkit usage. Since tool 3 help the toolkit user to overcome the eventual obstacles examined in the previous tools and supports the ideation of circular solutions.

In conclusion, the incentives and barriers found in the literature and empirical data are converted into an overview model and a toolkit. The designer or other agent is provided with the toolkit and not the overview model, as they do not require the full background knowledge to execute the tools. If the toolkit users desire to read the background and motive to the development of the toolkit, the information is accessible in this report. At last, the toolkit Circulate it! will aid designers or other agents to develop circular solutions and develop businesses to be more circular.

REFERENCES

- Attri, R., & Jain, V. (2018). A study of factors affecting customer shopping behavior. *IUP Journal of Marketing Management*, 17 (1).
- Axelsson, M. (2018). *Film 1: Introduktion till etiskt tänkande*. video. Chalmers University of Technology. Retrieved 11 September, 2020, from https://play.chalmers.se/media/Ethics+for+engineers+Swe+1/0_2qev1eqx/169038
- Blackwell, R., Engel, J., & Miniard, P. (2015). *Consumer decision model*. Retrieved 9 November, 2020, from <https://www.strategic-planet.com/2015/06/the-consumer-decision-model/>
- Brown, H. S., & Vergragt, P. J. (2016). From consumerism to wellbeing: toward a cultural transition? *Journal of Cleaner Production*, 132.
- Camacho-Otero, J. (2020). Redrawing the circle: Integrating a consumption perspective into the circular economy.
- Camacho-Otero, J., Boks, C., & Pettersen, I. N. (2018). Consumption in the circular economy: A literature review. *Journal of Sustainability*, 10 (8).
- Carman, J. M. (1978). Values and consumption patterns: A closed loop. *Journal of ACR North American Advances*.
- Catulli, M. (2012). What uncertainty? further insight into why consumers might be distrustful of product service systems. *Journal of Manufacturing Technology Management*.
- Confente, I., Scarpi, D., & Russo, I. (2020). Marketing a new generation of bioplastics products for a circular economy: The role of green self-identity, selfcongruity, and perceived value. *Journal of Business Research*, 112.
- Cunnah, L. (2020). *Why mind mapping works: the benefits of mind mapping*. Retrieved 9 September, 2020, from <https://www.ayoa.com/ourblog/why-mind-mapping-works-the-benefits-of-mind-mapping/>
- Egiri, Y., & Wuritka, E. (2016). *Conceptualizing concepts: A new approach to industrial design*. Retrieved 15 September, 2020, from https://www.researchgate.net/publication/308332601_Conceptualizing_Concepts_A_New_Approach_to_Industrial_Design
- Eisenberg, B., & Eisenberg, J. (2006). *Call to action: secret formulas to improve online results*. HarperCollins Leadership.

- Evans, D. M. (2019). What is consumption, where has it been going, and does it still matter? *Journal of The Sociological Review*, 67 (3). Retrieved 15 September, 2020, from <https://doi.org/10.1177/0038026118764028>
- Fleming, S. (2020). *These four companies are embracing the circular economy*. Retrieved 17 May, 2021, from <https://www.ecowatch.com/circular-economy-adidas-ikea-2649689207.html>
- Guiltinan, J. (2010). Consumer durables replacement decision-making: An overview and research agenda. *Journal of Marketing Letters*, 21.
- Guiot, D., & Roux, D. (2010). A second-hand shoppers' motivation scale: Antecedents, consequences, and implications for retailers. *Journal of retailing*, 86 (4).
- Gullstrand Edbring, E., Lehner, M., & Mont, O. (2016). Exploring consumer attitudes to alternative models of consumption: motivations and barriers. *Journal of Cleaner Production*, 123. Retrieved 14 September, 2020, from <https://www.sciencedirect.com/science/article/pii/S0959652615015796>
- Hanington, B., & Martin, B. (2012). *Universal methods of design: 100 ways to research complex problems, develop innovative ideas, and design effective solutions*.
- Hanson, J. W. (1980). A proposed paradigm for consumer product disposition processes. *Journal of Consumer Affairs*, 14 (1). Retrieved 15 September, 2020, from <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1745-6606.1980.tb00652.x>
- Hetherington, K. (2004). Secondhandedness: Consumption, disposal, and absent presence. *Journal of Environment and Planning D: Society and Space*, 22 (1). Retrieved 15 September, 2020, from <https://doi.org/10.1068/d315t>
- Hjort af Ornäs, V. (2010). *The significance of things: affective user-artefact relations* [Thesis for the degree of Doctor of Philosophy, Chalmers University of Technology]. Chalmers Research. <https://research.chalmers.se/publication/129033>
- Holtzblatt, K., & Beyer, H. (2016). *Contextual design: Design for life*. (2nd ed.). Morgan Kaufmann.
- Hoque, N. (2013). Analysing sustainable consumption patterns: a literature review. *Journal of Development*, 56 (3).
- Integritets myndigheten. (n.d.). *The purposes and scope of the general data protection regulation*. Retrieved 9 September, 2020, from <https://www.imy.se/en/verksamhet/data-protection/this-applies-according-to-gdpr/lawful-grounds-for-personal-data-processing/>

- Jackson, T. (2005). Motivating sustainable consumption. *Journal of Sustainable Development Research Network*, 29 (1).
- Jacoby, J., Berning, C. K., & Dietvorst, T. F. (1977). What about disposition? *Journal of marketing*, 41 (2). Retrieved 15 September, 2020, from <https://doi.org/10.2307/1250630>
- Jager, W. (2003). Breaking bad habits: a dynamical perspective on habit formation and change. *Journal of Human Decision-Making and Environmental Perception*.
- Johannesson, H., Persson, J., & Pettersson, D. (2013). *Produktutveckling - effektiva metoder för konstruktion och design* (Vol. 2). Liber AB.
- Kim, J.-O., Forsythe, S., Gu, Q., & Moon, S. J. (2002). Cross-cultural consumer values, needs and purchase behavior. *Journal of Consumer marketing*.
- Kuah, A. T., & Wang, P. (2020). Circular economy and consumer acceptance: An exploratory study in east and southeast asia. *Journal of Cleaner Production*, 247.
- Luo, N., Wang, Y., Zhang, M., Niu, T., & Tu, J. (2020). Integrating community and e-commerce to build a trusted online second-hand platform: Based on the perspective of social capital. *Journal of Technological Forecasting and Social Change*, 153 (C).
- Maitre-Ekern, E., & Dalhammar, C. (2019). Towards a hierarchy of consumption behaviour in the circular economy. *Maastricht Journal of European and Comparative Law*, 26 (3). Retrieved 15 September, 2020, from <https://doi.org/10.1177/1023263X19840943>
- McCombes, S. (2019). *How to write a literature review*. Retrieved 10 September, 2020, from <https://www.scribbr.com/dissertation/literature-review/>
- Mont, O. (2013). *Förbättra nordiskt beslutsfattande genom att skingra myter om hållbar konsumtion* (No. 2013:552). Nordic Council of Ministers.
- Mont, O., & Heiskanen, E. (2015). Breaking the stalemate of sustainable consumption with industrial ecology and a circular economy. In *Handbook of research on sustainable consumption*. Edward Elgar Publishing.
- Mukhopadhyay, S. K., & Setaputra, R. (2011). Return policy in product reuse under uncertainty. *International Journal of Production Research*, 49 (17).
- Paper Masters. (n.d.). *How to approach a literature review*. Retrieved 9 September, 2020, from https://www.papermasters.com/literature_review_approach.html

- Park, C.-H., & Kim, Y.-G. (2003). Identifying key factors affecting consumer purchase behavior in an online shopping context. *International Journal of Retail & Distribution management*.
- Peterson, R. A., Balasubramanian, S., & Bronnenberg, B. J. (1997). Exploring the implications of the internet for consumer marketing. *Journal of the Academy of Marketing science*, 25 (4).
- Poppelaars, F., Bakker, C., & Van Engelen, J. (2018). Does access trump ownership? exploring consumer acceptance of access-based consumption in the case of smartphones. *Journal of Sustainability*, 10 (7).
- Ratneshwar, S., Mick, D. G., & Huffman, C. (2003). *The why of consumption: Contemporary perspectives on consumer motives, goals, and desires* (Vol. 1). Psychology Press.
- Roster, C., & Richins, M. (2009). Ambivalence and attitudes in consumer replacement decisions. *Journal of Consumer Psychology*, 19. Retrieved 15 September, 2020, from <https://doi.org/10.1016/j.jcps.2008.12.008>
- Schor, J., et al. (2016). Debating the sharing economy. *Journal of Self-Governance and Management Economics*, 4 (3).
- Selvefors, A., & Rexfelt, O. (2019). A tool for charting circular consumption journeys. Retrieved 1 March, 2021, from <https://research.chalmers.se/publication/514395>
- Selvefors, A., Rexfelt, O., Renström, S., & Strömberg, H. (2019). Use to use: A user perspective on product circularity. *Journal of cleaner production*, 223.
- Sherman, E., Mathur, A., & Smith, R. B. (1997). Store environment and consumer purchase behavior: mediating role of consumer emotions. *Journal of Psychology & Marketing*, 14 (4).
- Sheth, J. N., Mittal, B., & Newman, B. I. (1999). Consumer behavior and beyond. *Journal of NY: Harcourt Brace*.
- Sheth, J. N., Newman, B. I., & Gross, B. L. (1991). Why we buy what we buy: A theory of consumption values. *Journal of business research*, 22 (2).
- Srivastava, S., & Culén, A. L. (2019). *Implications for transitions to sustainable consumption: Finding millennials' behaviour archetypes*. Forthcoming.
- Suher, J., & Hoyer, W. D. (2020). The moderating effect of buying impulsivity on the dynamics of unplanned purchasing motivations. *Journal of Marketing Research*, 57 (3).

- Suyanto, B., Subiakto, H., & Srimulyo, K. (2019). Data of the patterns of youth local brand product consumption through online shopping. *Journal of Data in brief*, 23.
- Tableau. (n.d.). *Data visualization beginner's guide: a definition, examples, and learning resources*. Retrieved 11 September, 2020, from <https://www.tableau.com/learn/articles/data-visualization>
- Tse, D. K., Wong, J. K., & Tiong Tan, C. (1988). Towards some standardized crosscultural consumption values. *Journal of NA - Advances in Consumer Research*, 15.
- UNC-Chapel Hill. (n.d.). *Literature reviews*. Retrieved 10 September, 2020, from <https://writingcenter.unc.edu/tips-and-tools/literature-reviews/>
- United Nations. (n.d.-a). *The global goals and the 2030 agenda for sustainable development*. Retrieved 17 May, 2021, from <https://www.government.se/government-policy/the-global-goals-and-the-2030-Agenda-for-sustainable-development/>
- United Nations. (n.d.-b). *Goal 12: Ensure sustainable consumption and production patterns*. Retrieved 17 May, 2021, from <https://www.un.org/sustainabledevelopment/sustainable-consumption-production/>
- United Nations. (n.d.-c). *Transforming our world: The 2030 agenda for sustainable development*. Retrieved 11 September, 2020, from <https://sdgs.un.org/2030agenda>
- van Weelden, E., Mugge, R., & Bakker, C. (2016). Paving the way towards circular consumption: exploring consumer acceptance of refurbished mobile phones in the dutch market. *Journal of Cleaner Production*, 113. Retrieved 14 September, 2020, from <https://www.sciencedirect.com/science/article/pii/S095965261501731X>
- Visser, F. S., Stappers, P. J., van der Lugt, R., & Sanders, E. B.-N. (2005). Contextmapping: experiences from practice. *Journal of CoDesign*, 1 (2). Retrieved 10 September, 2020, from <https://doi.org/10.1080/15710880500135987> doi:10.1080/15710880500135987
- Webster, J. G. (2010). User information regimes: How social media shape patterns of consumption. *Journal of Northwestern University Law Review*, 104.
- Weder, F., Tungarat, A., & Lemke, S. (2020). Sustainability as cognitive “friction”: A narrative approach to understand the moral dissonance of sustainability and harmonization strategies. *Journal of Frontiers in Communication*, 5.
- Österlin, K. (2016). *Design i fokus* (Vol. 4:1). Liber AB.

APPENDIX

APPENDIX A: The full analysis from the literature review

APPENDIX B: Consumption models for consumption paths

APPENDIX C: Diary pages

APPENDIX D: Circulate it!

APPENDIX A

A.1 All findings from the literature review

Appendix A present the full analysis of the literature. The analysis is based on the aspects in which the data has been arranged. This enables a conclusion of the factors within the aspects. This analysis presents which aspects has the largest input on the consumer's consumption choices and the differences between linear and circular consumption.

Demographics

The basic demographics; gender, education, income, and status, are mentioned in the reviewed literature of both linear and circular consumption (Attri & Jain, 2018; Camacho-Otero, 2020; Kuah & Wang, 2020; Sheth et al., 1999; van Weelden et al., 2016). Additionally, the ability to purchase from any device and from anywhere is one defined demographic from the linear literature and can be associated with the accessibility of assets (Park & Kim, 2003; Peterson et al., 1997; Suyanto et al. 2019). The accessibility aspect is present in the circular paths, which makes the differences between linear and circular within the demographic aspect small.

Personal Influence

The difference between the linear and circular factors of personal influence is remarkable. The circular paths consider factors like creating trust in the consumer (Kuah & Wang, 2020; Gullstrand Edbring et al., 2016), giving the consumer the greatest possibilities of variation and access (Brown & Vergragt, 2016; Gullstrand Edbring et al., 2016), and promoting people's personal beliefs and image (Hiort af Ornäs, 2010). Finding trust in the provider is the most frequent factor (Camacho-Otero, 2020; Catulli, 2012; Kuah & Wang, 2020), with subfactors as; brand experience, correct marketing and perception, reliability, anonymity, value, the reputation of the provider, and to fit in the existing context. The factors of the linear process consider brand loyalty (Kim et al., 2002), image (Weder et al., 2020; Confente et al., 2020), and increased sales (Rexfelt & Hjort af Ornäs, 2008).

Marketing

The marketing of the different paths is executed in different ways for physical stores (linear and second hand stores), where in-store marketing, store atmosphere, and display are crucial (Attri & Jain, 2018; Webster, 2010). It makes these two paths relatively similar through this aspect, though the linear process is more focused on the unplanned purchases to increase sales (Suher & Hoyer, 2020). They are both, together with refurbished, using social media as an important platform. Additionally, the refurbished path markets with controlled quality and with suiting the image of sustainable consumption (van Weelden et al., 2016). PSS and collaborative consumption base their marketing on acceptance, which is done through the factors; trust and reliability (Catulli, 2012; Gullstrand Edbring et al., 2016). Further, both PSS and collaborative consumption market themselves with ease of upgrading and the desire for new products without being shamed (Guiltingan, 2010).

Psychological effects

The psychological effects are similar through all of the paths, they all consider the satisfaction of consumption and getting access to a new asset (Camacho-Otero et al., 2018; Kuah & Wang, 2020). The factors presented in both the linear path and the circular ones are emotional decision making, emotional value, feeling good, and self-fulfillment (Camacho-Otero, 2020; Kim et al., 2002; Sheth et al., 1991; van Weelden et al., 2016). One protruding factor occurs under the linear path; the urge to buy (Catulli, 2012; Kim et al., 2002; Ratneshwar et al., 2003; Suher & Hoyer, 2020).

Attitudes

The difference in attitudes from the linear to the circular patterns of consumption is the direction of the attitudes within linear consumption. Those are desires for product attributes, such as quality, aesthetics, and curiosity about newness (Camacho-Otero, 2020; Kim et al., 2002; Hoque, 2013; Srivastava & Culén, 2019). However, the attitudes in circular consumption rather concern uncertainty (Camacho-Otero et al., 2018; Catulli, 2012). Defined attitudes are; hygiene (Catulli, 2012), availability (Camacho-Otero, 2020), unfamiliarity, trust, and risk of bad product state (Catulli, 2012; Gullstrand Edbring et al., 2016; Schor et al., 2016).

Further, the circular patterns include attitudes like the desire to be unique and product variation. In total, this confesses a more positive attitude in general towards linear consumption patterns. Besides this, some attitudes apply to both linear and circular consumption. The selection of path is dependent on social context and status, which makes attitudes apply in both consumption types. Forthwith, hedonic and utilitarian values are attitudes in both linear and circular consumption. Hedonic value is the emotion that a certain, in this case, product or service arouses and how desirable and pleasurable it is. In contrast, utilitarian value is the motive of purchasing something for its practical use and to fulfill the consumer's needs (Carman, 1978; Camacho-Otero, 2020; van Weelden et al., 2016). Lastly, brand experience and loyalty are attitudes that affect the decisions in PSS (Catulli, 2012; Kuah & Wang, 2020), collaborative consumption, and linear consumption (Camacho-Otero et al., 2018; Carman, 1978; Confente et al., 2020).

Knowledge

The knowledge factor regards the product, service, concept, and how that creates acceptance for the different paths. In linear consumption and second hand familiarity is presented as a major driver. The familiarity factor is based on the knowledge in linear consumption, and the familiarity in second hand then refers to that knowledge due to the similarity with physical stores (Gullstrand Edbring et al., 2016), this makes it the most familiar circular consumption path. It is also acknowledged that the quality is guaranteed for newly produced products in linear consumption (Camacho-Otero et al., 2018; Kim et al., 2002), different from second hand where it is known that the state of the product may vary. In PSS the uncertainties are about hygiene, safety, and health (Catulli, 2012; Kuah & Wang, 2020) and those are factors that the consumer requires knowledge about before creating acceptance towards the path.

Consumer characteristics

The characteristics of the consumer affect the consumption process, what decisions are made, how acceptance is created, and how motivation for the different paths occur. In linear consumption, the important character traits are the consumer's inner harmony while involved in a purchase process (Carman, 1978; Kim et al., 2002; Suher & Hoyer, 2020; Suyanto et al., 2019), how post-purchase anxiety builds up and is tackled (Suyanto et al., 2019), and that the personal habits strongly affect the path decision. That habitual behavior is a motivator for linear consumption (Sherman et al., 1997) and could be both a barrier (Jager, 2003) and a motivator (Confente et al., 2020) for circular consumption. Habits is an important key factor for changing behavior (Jackson, 2005). Further, circularity can give consumers a feeling of uniqueness when accessing certain products (Camacho-Otero, 2020). Also, the rebound effects are present in the circular paths (Catulli, 2012). At last, there is anxiety in (circular) services as well as in linear consumption. Though, as fear during usage since the product is not personally owned (Gullstrand Edbring et al., 2016).

Motivation

The motivations for different paths and decisions within the paths vary distinctively from linear and circular ones. The factors that consider linear consumption are such that maximize what the consumer gets from each purchase. Also, what minimizes the risks (Mont & Heiskanen, 2015). The mentioned factors within those topics are; quality (Tse et al., 1988), call-to-action deals (Eisenberg & Eisenberg, 2006), and the assumed security of exchangeable assets. Further, linear motivators are responsiveness from the company (Carman, 1978) and emotional value (Sheth et al., 1991). Emotional value is mentioned in the circular paths as well (Gullstrand Edbring et al., 2016), but that is the motivation factor that solely occurs in both linear and circular paths. What motivates consumers in the circular paths varies between them. In service paths, PSS and collaborative consumption, the motivators are environmental concerns (Gullstrand Edbring et al., 2016), warranty and insurance (Catulli, 2012; Gullstrand Edbring et al., 2016), availability (Camacho-Otero, 2020), and the major one; to create new social connections (Gullstrand Edbring et al., 2016; Mont & Heiskanen, 2015). Financial benefit as a motivator is present in second hand and collaborative consumption (Gullstrand Edbring et al., 2016), different from refurbished where the motivators concern the product and its features together with self-image (van Weelden et al., 2016). External factors as peer pressure (Jackson, 2005; Mont, 2013) and advertisement (Suher & Hoyer, 2020) are equally important for all paths, both linear and circular.

Involvement

Involvement is an aspect that includes factors that encourage the consumer to choose circular consumption patterns. These incentives are about involvement in new systems, and/or being involved in a new community or context (Gullstrand Edbring et al., 2016; Mont, 2013; Mont & Heiskanen, 2015). The factors mentioned in the reviewed literature, that was categorized within this aspect, differ indefinitely between linear and circular consumption. The fact that social and cultural contexts and personal values influence people's behavior is mentioned for both consumption processes (Brown & Vergragt, 2016; Tse et al., 1988). Likewise is brand loyalty and responsiveness from the company (Catulli, 2012; Carman, 1978). The one topic that is existent in circular consumption but not linear is the involvement in a community (Gullstrand

Edbring et al., 2016; Mont, 2013; Mont & Heiskanen, 2015). Some of the mentioned factors are; social acceptance, access to a community, that communities create well-being, and that involvement in these consumption patterns will give new social connections.

Memory

The second hand and the linear consumption path are the paths where habits have the greatest impact on memory, which affect the behavioral decisions for consumption. Habitual behavior is what people are used to doing and what generates the least cognitive effort (Jager, 2003; Jackson, 2005).

Experience

Experience is relevant for both circular and linear consumption. Factors that matter are educational and generational differences (Camacho-Otero, 2020; Kuah & Wang, 2020), also the knowledge from previous experience regarding products and systems (Brown & Vergragt, 2016; Hiort af Ornäs, 2010; Gultinan, 2010). Experience creates trust and reliability, which are factors that are crucial for acceptance in PSS. Moreover, all of the circular paths carry experiential uncertainties about hygiene (Catulli, 2012; Gullstrand Edbring et al., 2016).

Stimuli

Stimuli, external impressions, are dependent on generation differences in all of the paths (Hanson, 1980; Kuah & Wang, 2020). The different generations will interpret stimuli in different ways, which is why the factor is important. Online services could also be important for the consumers' first impressions and for understanding the user interface (Gullstrand Edbring et al., 2016; Kim et al., 2002; Luo et al., 2020).

Financial aspects

The financial aspects are considered in all of the paths. All of the circular consumption paths mention the financial factor as a benefit (Camacho-Otero, 2020; Gultinan, 2010; Gullstrand Edbring et al., 2016). In collaborative consumption and PSS the financial factor is expressed as a benefit for seldom used and more expensive products (Catulli, 2012). In the linear path, financial concerns and special offerings are mentioned as potential motivators but also as a barrier due to the risk of losing value from a poor decision (Suher & Hoyer, 2020).

Environmental concerns

Consumers involved in sharing are driven by environmental factors (Gullstrand Edbring et al., 2016). For the second hand path, few consumers purchase products due to environmental concerns (Guiot & Roux, 2010; Gullstrand Edbring et al., 2016). For refurbished products, the environmental benefit was a factor consumers could reason for (van Weelden et al., 2016). But overall, environmental concerns for accessing products and services have not the greatest impact on peoples' behavior.

Product type / properties

The product type and properties affect the consumer while choosing and using the product or service (Camacho-Otero, 2020; Hiort af Ornäs, 2010). The value and characteristics of the product are mentioned in all of the paths (Camacho-Otero, 2020; Hiort af Ornäs, 2010; van Weelden et al., 2016). Consumers want a product that functions and suits their situation (Camacho-Otero, 2020). Insurance was also a factor that the literature found necessary for collaborative consumption and PSS, where other people and stakeholders are involved (Catulli, 2012; Gullstrand Edbring et al., 2016). Second hand considers that soft products are not accepted in the same way as other products (Gullstrand Edbring et al., 2016). In the other circular paths, this is not mentioned. Perhaps, because those products are often regulated by a third party who can assure good hygiene.

Product / Service characteristics

Hygiene is considered in all of the paths involving other consumers or stakeholders (Catulli, 2012; Gullstrand Edbring et al., 2016). For the refurbished and linear consumption paths, the literature focus on the importance of the products fitting into consumers lifestyle (Kim et al., 2002; vanWeelden et al., 2016). Further, quality (van Weelden et al., 2016; Tse et al., 1988) and durability (Suher & Hoyer, 2020) are also critical for these paths, especially quality in the refurbished path since it varies and is used by other consumers (van Weelden et al., 2016).

Value

During evaluation, value is considered before replacing the product (Camacho-Otero, 2020; Hanson, 1980). If the product is not worth the payment, consumers are more likely to find a reason for replacing the product or clearing it out (Camacho-Otero, 2020). Other values mentioned in the evaluation phase are desires for new products (Roster & Richins, 2009). This is stated in the second hand path but is estimated to apply to more consumers choosing different paths. Also, for the collaborative consumption path, the lack of trust in others is an important value (Gullstrand Edbring et al., 2016). If there is no trust towards the other involved in the ownership, consumers will most likely reject the involvement.

Maintenance

Maintenance is important in PSS (Camacho-Otero, 2020; Catulli, 2012). Consumers do not like to have responsibilities while they are renting a product and maintenance should be included (Catulli, 2012). Collaborative consumption does not mention maintenance during evaluation but insurance, which could include maintenance, in the use phase (Gullstrand Edbring et al., 2016). So for paths involving rental or multiple users, consumers like to have maintenance as a guarantee of functional products. For the other paths only involving one consumer, maintenance is not seen as an important factor.

Functionality

When it comes to the functionality of the service or product, it is assumed that it is an important factor in all different phases (Brown & Vergragt, 2016; Catulli, 2012; van Weelden et al., 2016). The collaborative consumption functionality is mentioned in the access phase (Camacho-

Otero, 2020). For PSS, technology performance is concerned, this is an important factor since the product is from a system and not owned (Catulli, 2012). But it could still be something consumers consider while making a purchase, both in circular and linear consumption.

Quality

The quality aspects, insurance (Catulli, 2012; Kuah & Wang, 2020) and functionality (Brown & Vergragt, 2016; Catulli, 2012; van Weelden et al., 2016) are important in the circular consumption paths. Quality is not seen as an evaluation factor within the refurbished path (van Weelden et al., 2016). However, the literature presents quality as an important aspect while evaluating alternatives for purchase. For collaborative consumption functionality is still mentioned through the utilitarian value, which is important in the use phase, to ensure the product will retain its function (Camacho-Otero, 2020). Compared to the linear consumption path, consumers have more expectations regarding quality, since the product is purchased and used for the first time. While consumers in circular consumption have the knowledge that the product has been used before (Catulli, 2012).

Replacement decision

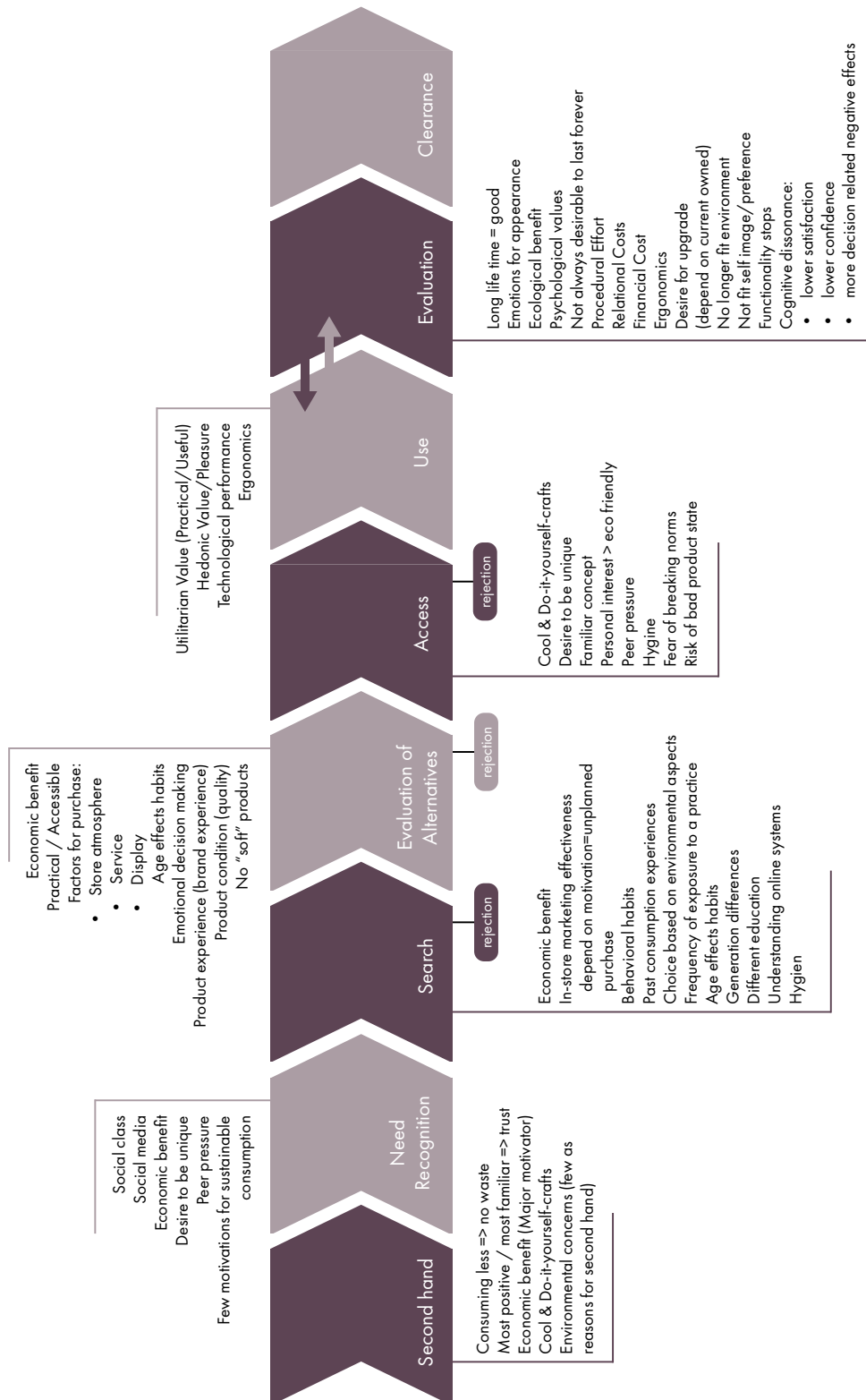
In the evaluation, multiple factors can generate a replacement decision. Many of these come from emotional decisions. Consumers often create bonds to products which could be a reason for keeping the product or service (Guiltinan, 2010). If it is rental or collaborative ownership the consumer could decide to purchase a similar product on their own (Catulli, 2012). However, desires for an upgrade could lead to replacing the existing product or service (Guiltinan, 2010). This is more easily done in collaborative consumption or PSS where the consumer is not responsible for the product.

Cognitive dissonance was discussed in the second hand path, collaborative consumption, and the PSS path. For the collaborative and PSS path, the product or service is involved with other consumers or stakeholders (Gullstrand Edbring et al., 2016). Using a product knowing it has been used by others can induce cognitive dissonance. For the second hand path, cognitive dissonance occurs in the same ways as for the other two paths. The reason for this is because the products have been handled by other consumers before (Gullstrand Edbring et al., 2016). Compared to linear and refurbished where the product or service is either new or has been repaired to an acceptable condition by a service (van Weelden et al., 2016). Finally, different costs are affecting the replacement decisions, both relational and economical costs. This occurs in all of the paths (Guiltinan, 2010).

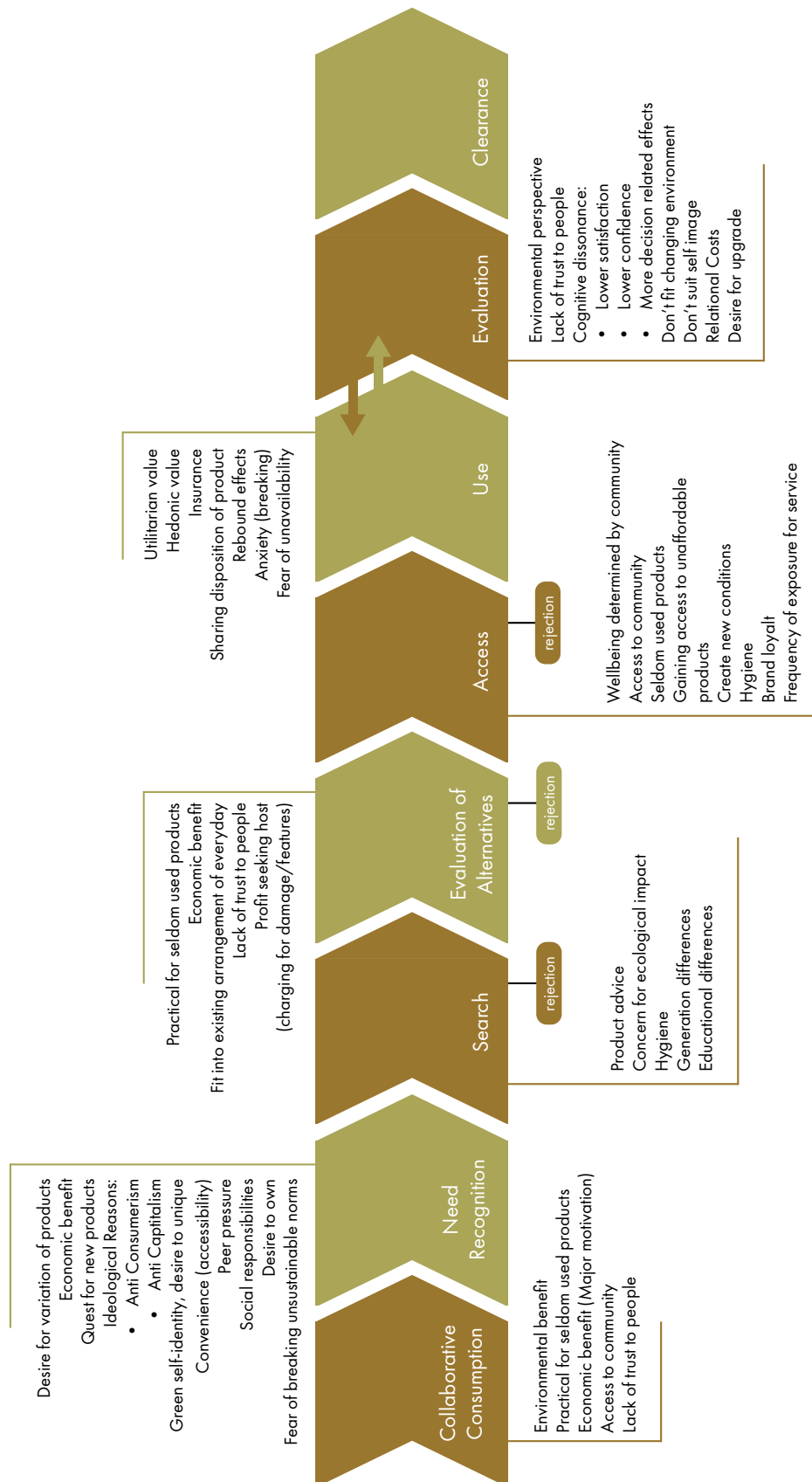
APPENDIX B

B.1 Consumption models for consumption paths

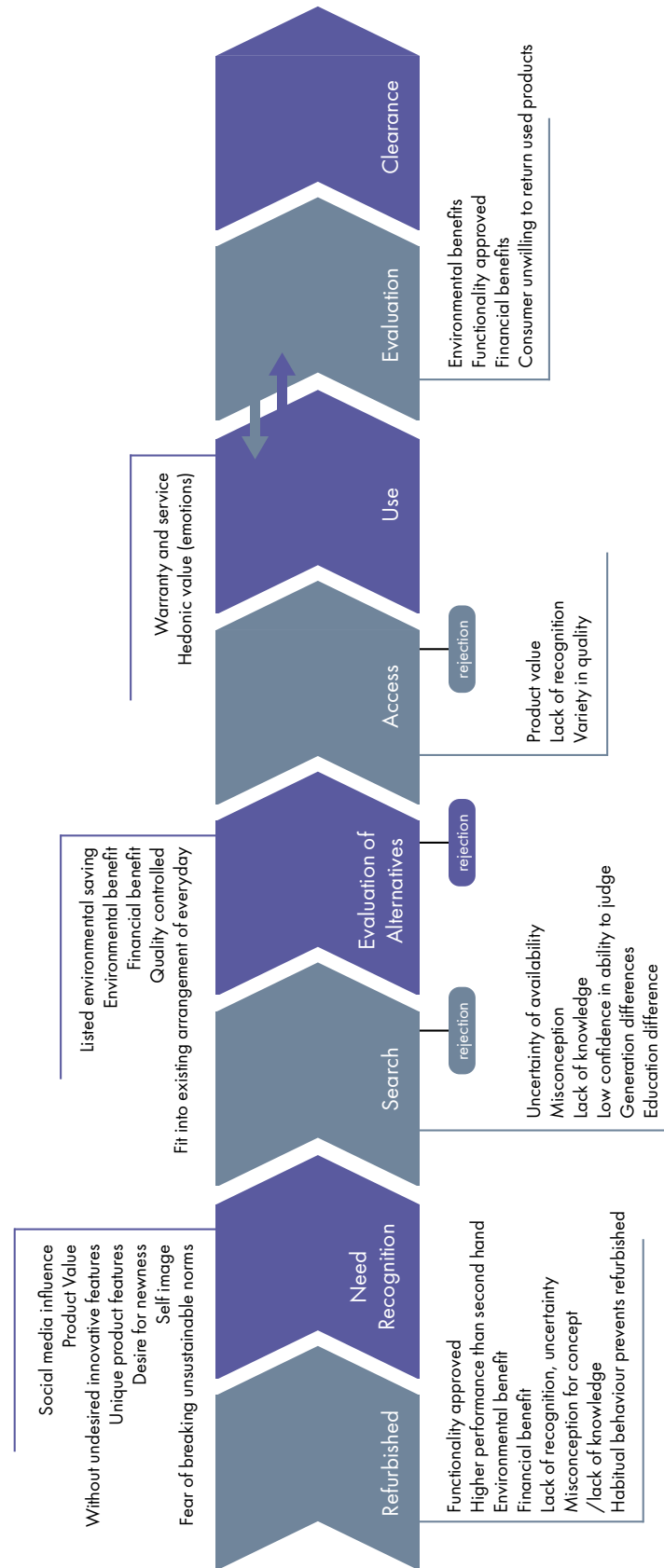
B.1.1 Second hand - path



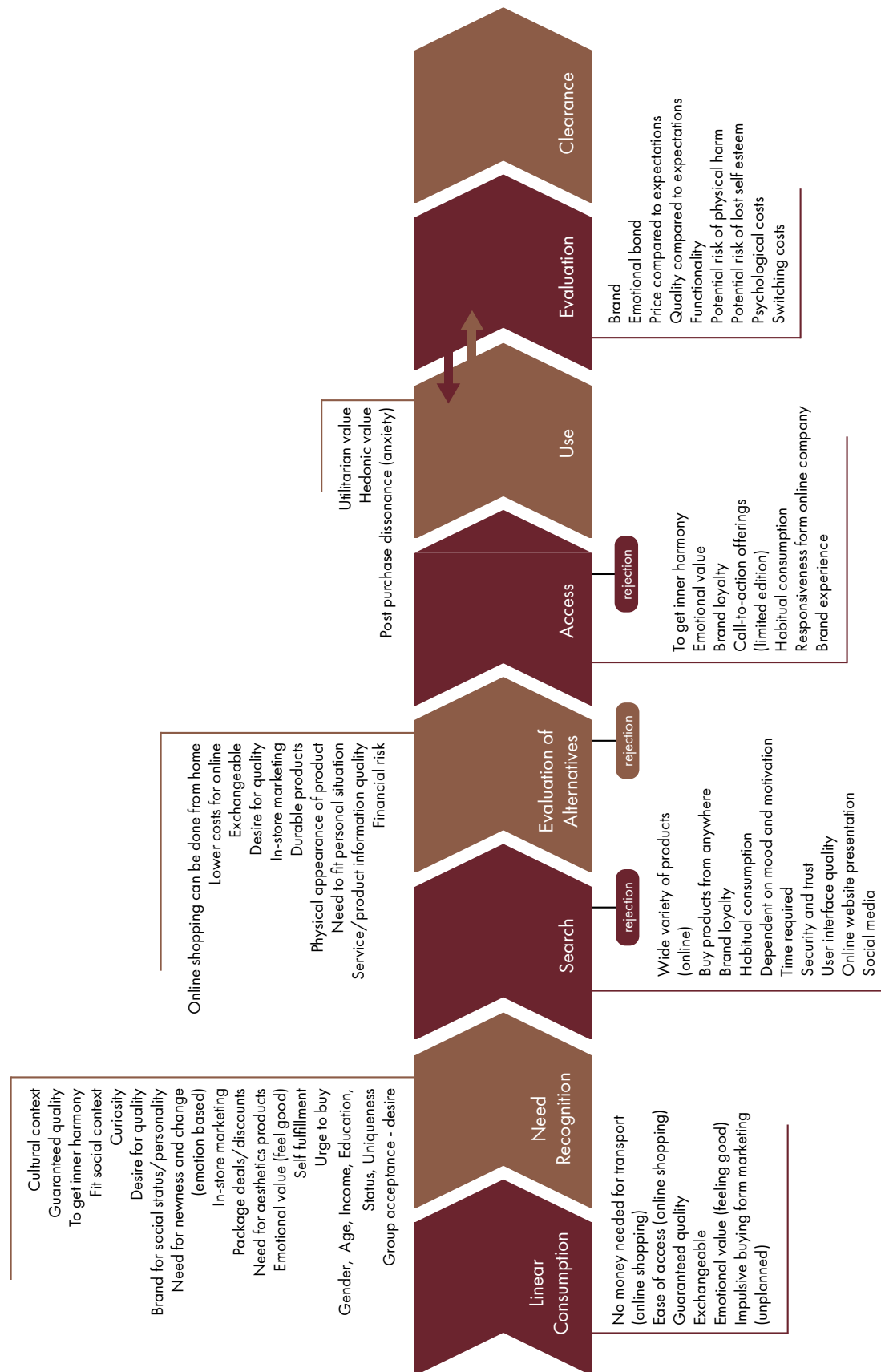
B.1.2 Collaborative consumption - path



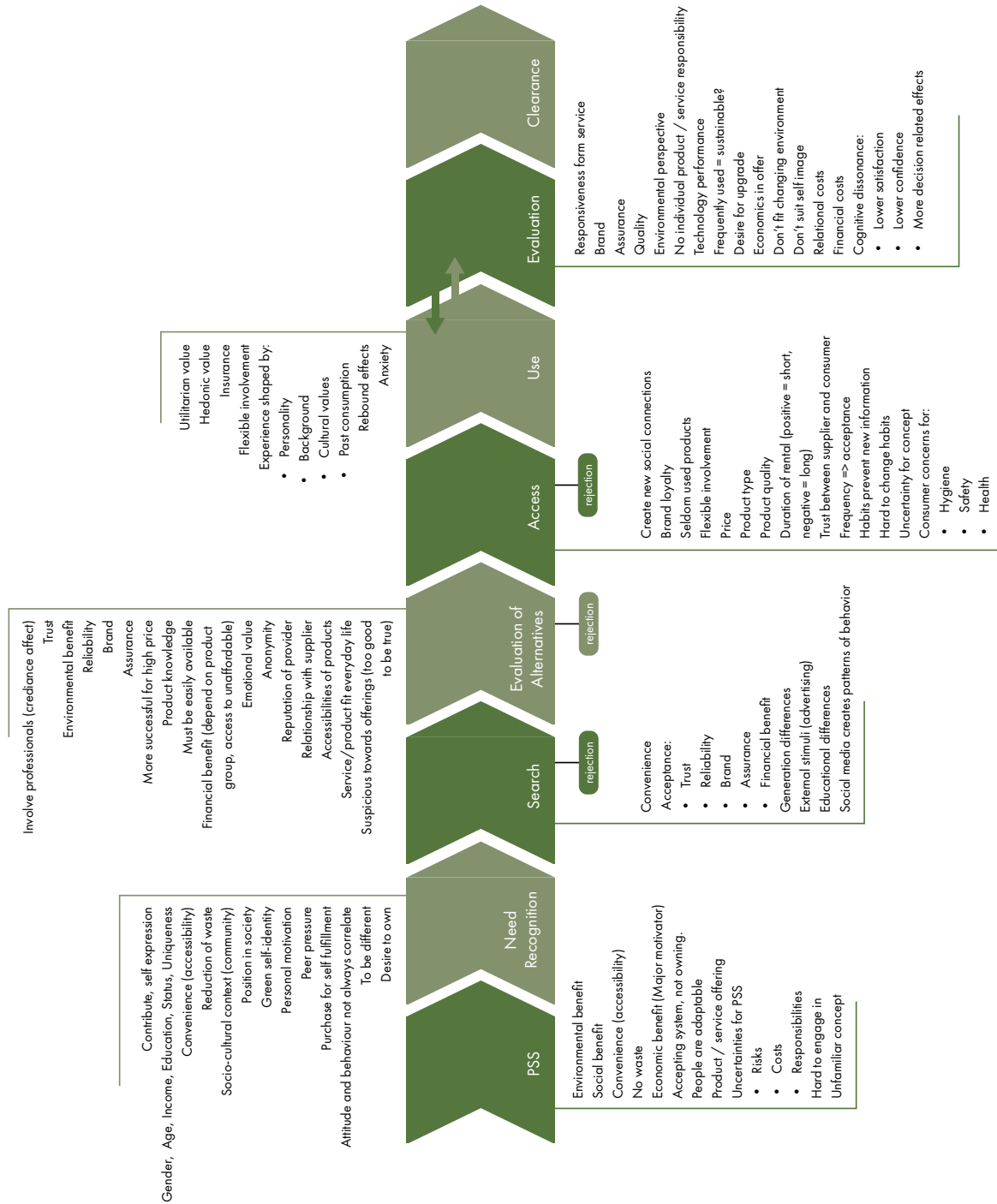
B.1.3 Refurbished - path



B.1.4 Linear consumption - path



B.1.5 Product service system



APPENDIX C

C.1 Diary pages

PRYLDAGBOKEN



OBS!

Påbörja studien den 14 december; notera att den INTE omfattar förbrukningsvaror (ex mat och hygienartiklar)

HEJ!

Vad kul att du nu har den här dagboken i dina händer. Den är 12 sidor och det finns något för dig att fylla i på varje sida, kolla gärna igenom hela innan du börjar med studien så du har koll på vilka sidor som finns och när du behöver fylla i. Studien varar i 4 veckor; du behöver inte fylla i varje dag utan när det passar dig men fyll inte i allt på en gång utan utnyttja dina 4 veckor med dagboken.

Tack för du ställer upp. Dina svar är värdefulla för oss och vårt arbete.

/Elin & Sandra

Vid frågor kontakta oss på:
circularconsumptionthesis@gmail.com eller

Elin Ljungberg: elinljungberg@hotmail.se / 0720339113
Sandra Sköld: sandra.skold@hotmail.com / 0723586021



Berätta om dig själv

Namn: _____

Ålder: _____

Sysselsättning / Yrke: _____

Stad: _____

Typ av hushåll: _____

Eventuell utbildning: _____

Färglägg antal personer i ditt hushåll

Vuxna 

Barn 

Koll på dina saker?

STRÄCKA VARJE GÅNG NÅGOT AV ALTERNATIVEN SKER

	vecka			
	1	2	3	4
	14 - 20 dec	21 - 27 dec	28 dec - 3 jan	4 - 10 jan
Gör dig av med en produkt				
Köper ny produkt				
Köper begagnat				
Lånar en produkt				
Låna ut en produkt				
Hyr produkt genom tjänst				
Får en produkt				



5 SAKER DU INTE ANVÄNDER

men ändå har kvar, motivera!

1 _____

2 _____

3 _____

4 _____

5 _____

RANKING

Hur jobbigt på en skala 1-5 är det att göra sig av med följande saker?

5 = väldigt jobbigt

Dyra ☐ 

 Bra att ha i framtiden ☐ 

Fina ☐ 

☐ Nostalgiska 

 ☐ Gåvor

Ger status ☐ 

Det Svarta Hålet

VILKA 5 SAKER SKULLE DU VILJA SKICKA IN HÄR?
HELT UTAN BEKYMME, MOTIVERA!

1 _____

2 _____

3 _____

4 _____

5 _____



Nu är det JUL igen

Om du har du införskaffat eller fått något nytt i jul, ersatte denna något du redan hade?

JÄ

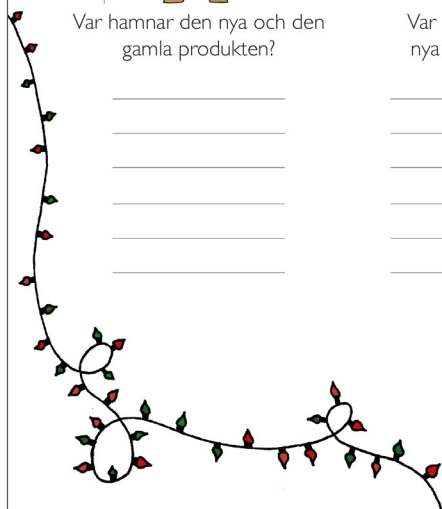


Fick du flera klappar? Välj då en

NEJ

Var hamnar den nya och den gamla produkten?

Var hamnar den nya produkten?



!!! ALLT SKA BORT

Om du skall göra dig av med följande välfungerande saker.

Hur tänker du och hur gör du?



UTMANING

Gå till ett utrymme där du har mycket saker

Hur känns det att ha mycket saker?

Vi ger dig ett magiskt trollspö så att du nu kan trola bort saker du inte vill ha kvar. Sätt ut post-it-lapparna på de föremålen. Skriv sedan upp vilka du valde nedan.



Nu har du lappar på ett visst antal saker; har utmaningen fått dig att vilja rensa? Vad hindrar dig?

Var hamnar det du rensar ut?



Till Sist

Vad skulle vara det mest optimala sättet att göra sig av med produkter? (beror det på produkttyp, förklara varför)

Tänkte du på trollspöet och det svarta hålet? Finns det ytterligare magiska sätt som du hade velat använda för att göra dig av med saker?

Har studien väckt några andra tankar hos dig gällande cirkulär konsumtion?



TACK!

Tack för ditt deltagande och din tid. Dina svar är mycket värdefulla för oss och studien. Vid frågor får du gärna kontakta oss.

Nu är det dags för dig att skicka tillbaka dagboken och det signerade GDPR-pappret till oss. Använd det förskrivna kuvertet och posta till oss, tack igen!

Om du ska delta i fokusgrupp ber vi dig fota din bok innan du skickar tillbaka den. Den kommer vara underlaget till diskussionerna i fokusgruppen.

/Celin & Sandra



TOOL 1

content | one folder to fill in & discuss
helps you to | define characteristics in target group
40 - 80 min

Tool1 will help you define the characteristics of your target group. Through 17 questions an estimation of your target groups' characteristics will be presented. There are four groups of character traits that define different consumers, presented as four colors. This will give you the spread of characteristics in your target group. A dominant color in the result means that the target group mainly possesses those characteristics, since one user typically holds traits from more than one characteristics color.

Take notes of the insights and thoughts that were brought up in tool 1 below.

INSIGHTS

TOOL 2

content | one folder to fill in & discuss
helps you to | discover the states of your product
40 - 80 min

Tool 2 will give you an understanding of your product and its lifetime, particularly what stages your product can and will endure during its life. This will help you understand and discover eventual barriers to circular consumption. Knowing how your consumer values a product during different use phases will give insights into why the product is used or not used.

Take notes of the insights and thoughts that were brought up in tool 2 below.

INSIGHTS

TOOL 3

content | 11 restore cards & 13 prevent cards
helps you to | ideate circular solutions
5 - 15 min / card

The purpose of tool 3 is to create ideation for given problems suitable for your situation. It will increase the understanding of the user's perspective. This part is structured with cards, restore cards to get products from no use to in use, and prevent cards to prevent products from getting unused. Each card's front page includes a question that can create a discussion regarding your product and the given problem. The idea of each card is to ideate around the issue on the front page and then turn the card for additional inspiration when the discussions dilute. Don't forget to keep the discussion going when reading the inspiration on the back. Study the list below to select suitable cards with the insights from tool 1 & 2.

RESTORE CARDS

CARD TITLE	DESCRIPTION
• A broken product	Prevent discarding broken products
• Long gone and forgotten products	Start using or circulating forgotten products
• Do you really need two?	If the user keeps duplicates
• Love me or love me not?	Sentimental value in the product
• Don't let the products rest	Move products from no use to in use
• Stop discarding! Start circulating!	Prevent discarding through circulation
• Welcome to your new home	Easing the transfer of products
• Who's responsible?	Company responsibility
• Beyond physical stores	Buying pre-used online
• Re-design it!	Re-designing or upgrading products
• Get to know your stuff	Keep track of belongings & validate them

PREVENT CARDS

CARD TITLE	DESCRIPTION
• Rent and lent	Prevent misuse through rent & borrow
• Do you get it?	Intuitive products
• What is in my attic?	Designing products that will not be forgotten
• Don't loose your stuff	Make sure essential parts are available

Design for...

- longevity
- multiple cycles
- multiple areas of use
- exchange
- sharing
- repair
- social interaction
- maintenance
- grateful aging

C.1.2 Tool 1 - Defining circular consumption characteristics

3

1

2

USER CHARACTERISTICS

Next instructions:
The result of the questions is presented in a spider chart on page 4. Keep both pages 3 and 4 open and create the chart, colors for each answer are provided on page 4. You can use the example below as a guide.

EXAMPLE

All answers in YES

Chart results:
Green: 4.5
Yellow: 5
Orange: 3.5
Red: 3

Conclusion of example:
The users are most yellow and green, but still a little red and orange. In page 6, the characters are described, in this case mainly study the yellow and green characteristics. The red and orange could still be considered, also think about how to approach your target group.

DEFINING POTENTIAL

Answer following statements:

1. The environment is important for the users

2. The users care partly about the product's destination after it has reached end of life

3. The users circulate products to ease for others to access products

4. The users need help to start circulating products

5. The users are early adopters

6. The users think quality is important

7. The users are driven by money

7a. If answered no: 1. Values sustainability higher
2. Does not care about money

8. The users will generally engage in circularity when obtaining and clearing products

9. Engaging in circularity is considered exhausting

10. The users will try to sell their product after use

11. Pre-used products are unfamiliar and uncertain

12. The users lack motivation in circular consumption

13. Likes to interact with other users

14. Sustainable development is highly valued by the users

15. The users value personal owning

16. The users are interested in buying pre-used products

17. Products are seen as a label of status

How to use the folder

Start at page 1 and then continue in numerical order

XVIII

4

RESULT OF USER CHARACTERISTICS

YES

NO

YES

NO

1.

2.

3.

4.

5.

6.

7.

7a.

8.

9.

10.

11.

12.

13.

14.

15.

16.

17.

5

THE FOUR CHARACTERISTICS

RED

The red characters are not interested in circularity. They would rather purchase newly produced products and dispose of them after use. They don't like the idea of people using their stuff. The red will not fix broken products, they have no interest in repairs. What hinders them in circular consumption are time and the convenience of buying newly produced products, their attitude, and their habitual consumption behavior. They most likely have access to cars which means transportation and distances are not a barrier. Also, the red is driven by the excitement of obtaining new products. The red consumers are early adopters and put prestige in owning the newest products. This group needs to be forced and pushed into doing circular acts, making circulation as simple as possible. They could accept to return their disposal products if it promotes the companies they value or makes their membership stronger. Also, try to convince them to give the products a further life. Let the users know what is required when purchasing products meant for circulation.

ORANGE

Orange characters often feel exhausted while engaging in circularity and their major barrier is motivation. Common for both red and orange is that they need a spark for circulating products. Motivating them through an offer of returning the product to the company by giving them compensation, such as a discount could work. This character is not money-driven but a smaller compensation or other promotion could spark their motivation. The orange is easier affected by peer pressure compared to the red. So there is a possibility of influencing the orange into acting more circular. The oranges' engagement could also be triggered through comprehension, reduction of smaller obstacles, or letting them feel good about themselves through e.g. reparations. Although, repairing or upgrading products is not of the highest interest for the orange. But if they manage the value of the product would increase. This value might not affect the circulation attitude but is still an approach to increase usage and value.

GREEN

The green characters are driven and engaged in circular consumption. They only need to be enlightened about opportunities. The green puts a lot of time into creating circular opportunities and sees it as a lifestyle. Show the user how much the product is appreciated by others, and suggest ways for them to donate and sell the products. These characters like to see their product get a further life, which makes them inspired to know when a new buyer has got a hold of their product. Green consumers are not money-driven and value life with fewer products. A green user likes social contact and contexts where new bonds could be created. Take advantage of the greens' attitude to sharing products and collaborative ownership when designing products and services. Also, make sure that the circulating products will last and suit the involved users.

YELLOW

The yellow characters act circular but still encounter obstacles. These obstacles could be: sentimental value, time-consuming tasks, transportation problems or knowledge regarding reparations. The yellow is money-driven and would choose to sell their old products as the first option of clearance. Though, they appreciate the help from a middle-man. A yellow user would return the product to the company if there is compensation. To prevent products from not being used, product return is good for the yellow group since they might not manage to sell the products on their own, and thereby it might end up stored. If the company is not interested in having a product return agreement, encourage the consumers to sell the product on their own by enlightening and convincing them about the benefits. Let the consumers know the intention of the product's life, this could help the yellow conquer obstacles of the clearance process.

6

CIRCULAR DESIGN

Questions for discussion regarding designing circular products.

Is this product meant for circulation?

Do you want to expand the customer range?

Do you adapt the products to suit various kinds of users? Can you increase the product's circulation potential?

How do you expand your target group?

What is your vision about product lifetime?

- How can it be increased?

How many users should be able to use the product? Who will use it?

How important are the following factors for the first, second, and third user?

Rate from a scale of 1: not important (left) - 5: very important (right)

FIRST USER

SECOND USER

THIRD USER

Quality: ☐ ☐ ☐ ☐ ☐

Function: ☐ ☐ ☐ ☐ ☐

Low price: ☐ ☐ ☐ ☐ ☐

Brand: ☐ ☐ ☐ ☐ ☐

Quality: ☐ ☐ ☐ ☐ ☐

Function: ☐ ☐ ☐ ☐ ☐

Low price: ☐ ☐ ☐ ☐ ☐

Brand: ☐ ☐ ☐ ☐ ☐

Quality: ☐ ☐ ☐ ☐ ☐

Function: ☐ ☐ ☐ ☐ ☐

Low price: ☐ ☐ ☐ ☐ ☐

Brand: ☐ ☐ ☐ ☐ ☐

17

Fill the circle as the example provided in page 4.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

Number of dots in following colors:

Green: ☐ Yellow: ☐ Orange: ☐ Red: ☐

XIX

C.1.3 Tool 2 - Discover product states

4

A NUMBER OF PLAUSIBLE SCENARIOS

Look at the examples underneath and try to plot graphs concerning your product over time.

Product:

High value

Average value

Low value

To be fixed

Back-up

Forgotten

Lifetime:

In use

No use

Time

Clearance

1

Created by Elin Ljungberg & Sandra Sköld

2

THE 7 PRODUCT STATES

in use

HIGH VALUE
The products that are most important, the value will depend on the product, situation, and consumer. The consumer is far from getting rid of or stop using these products.

AVERAGE VALUE
The products averagely valued are not very important but unlikely to get replaced. The consumer values them and still considers them to be important.

LOW VALUE
This product state is the closest to no use. Products in this state could be used frequently but are easily replaced.

no use

TO BE FIXED
Following product has been stored to be upgraded or repaired. These products can stay in storage for a long time or be fixed straight after damage.

FORGOTTEN
Some products are being stored or used less frequently and therefore forgotten. Memories can be triggered when finding these forgotten products.

BACK-UP
After a product has been replaced, it could be stored as a back-up, in case of damage to the currently used product.

clear

TO BE CLEARED OUT
The products in this state will be cleared out.

These 7 states can exist while owning a product. Knowing which states your product will be in can ease the design process.

3

UNDERSTANDING PRODUCT STATES

The purpose of this folder is to explore and learn about the states of your product. These two pages are for you to fill in. You will start with filling the tables underneath. Then, plot the graphs to the right. Each has examples at the bottom.

MARK STATES IN THE TABLES

High value

Average value

Low value

To be fixed

Back-up

Forgotten

To be cleared out

Enter

During lifetime

VISION
Where the product aims to enter and the states that are desirable for the product to exist in during its lifetime.

High value

Average value

Low value

To be fixed

Back-up

Forgotten

To be cleared out

Enter

During lifetime

LIFELIKE
The states the product will be present in during its lifetime.

VISION

LIFELIKE

Example of a sofa where the company aims the product to enter in high value and be present in high value and in to be fixed. It should be possible to repair or upgrade it. The lifelike scenario shows that the same sofa can be present in several states, for example in average value in a spare room or summer house. The sofa will eventually be cleared out.

1

How to use the folder

1

2

3

4

5

6

7

Start at page 1 and then continue in numerical order

4

EXAMPLE

High value

Average value

Low value

To be fixed

Back-up

Forgotten

Clearance

Time

Ex. Shirt 5 years

A highly valued shirt got damaged and the value decreased. It got fixed and became average value. Later, damaged again and cleared out.

A highly valued shirt became average value due to trends, then it decreased to back-up when the user outgrew it. It was eventually cleared out from the back-up state.

High value

Average value

Low value

To be fixed

Back-up

Forgotten

Clearance

Time

Ex. Phone 2 years

A tablet was obtained which made the phone less used.

A phone that was averagely valued broke, got fixed, and then became average value again. The next time it got unfunctional it was cleared out.

5

WHEN OPENED START HERE

Think about what you answered in both the vision and lifelike tables, and compare them. From the example it is shown that the product enters at a lower value and will at some point be present in to be fixed, why is that? Is that desirable?


To the right, you will find a table with information and inspiration to start discussions on how to avoid undesirable states for the reviewed product.

Next instructions:

- Discuss concerned product states on page 6 with support of previous answers
- Discuss the two topics *product lifecycle & older versions* on page 7
- Document your findings from this part on the instruction sheet

6

PRODUCT STATES & CIRCULATION

STATES	QUESTIONS & STATEMENTS	NOTES
In use	HIGH VALUE What is required from a product that is in this state in multiple cycles?	
	AVERAGE VALUE Is this state desirable? What and how can we change if you want to transfer up?	
	LOW VALUE Is this state desirable? If you want to transfer up; consider the target group and the business idea. Compare selling and renting.	
No use	TO BE FIXED Is this product possible to repair or fix? Does it have the possibility to transfer up to use again after this state?	
	FORGOTTEN How can you make sure the product is not forgotten? What is required from the users? Can you prevent this state?	
	BACK-UP For how long can this product act as a back-up? What can you do to make sure it is not replaced from the beginning?	
Clearance	TO BE CLEARED OUT How can you make sure this product gets circulated, and the product gets a further life with a new owner?	

7

PRODUCT LIFE CYCLE

Analyzing the product lifecycle can give valuable insights regarding the product states



What happens when it is getting unused?

How many users can use the product during its lifetime?

After how long is the ... reduced to half?

- quality
- performance
- function
- value

Is it possible to increase the product's value after it has lowered?

When during the life cycle does the product perform best? How does this vary over time?

OLDER VERSIONS

Research older versions to gain knowledge about the possibility of circulation



After what time is the use frequency reduced?

For how long periods is the product unused?

In which of the states is a five-year-old version of the product?

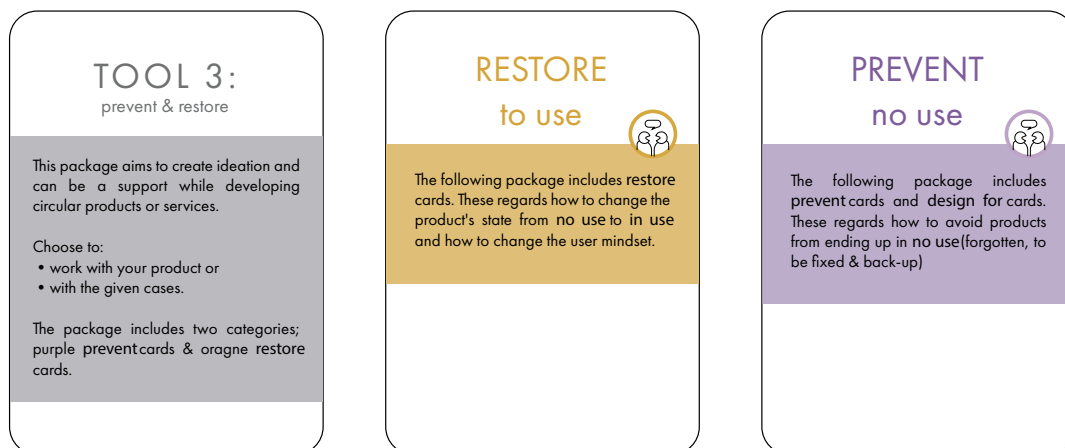
Are there older versions of this product available on the market?

How many out of 100 products, from X years ago, are still in use?

C.1.4 Tool 3 - Ideation cards - Prevent & Restore

C.1.4.1 Tool 3 - cover cards

COVER CARDS



C.1.4.2 Tool 3 - restore cards

FRONT

LONG GONE & FORGOTTEN PRODUCTS

A user has stored a product for a long time and the product has been forgotten. How do you encourage the person to start using the product again, or to circulate it?

Turn to the back for ideas & inspiration

CASE: A PAIR OF OVER-EAR HEADPHONES

DO YOU REALLY NEED TWO?

A user keeps their old product after purchasing a newer edition. How do you ensure people do not keep the old product and outdate them instead of circulating them?

Turn to the back for ideas & inspiration

CASE: A SIX MONTH OLD FUNCTIONING MOBILE PHONE IS REPLACED

LOVE ME OR LOVE ME NOT?

One problem for not clearing out things is the sentimental value. How can you ensure the product is not kept only due to sentimental reasons and not because of need?

Turn to the back for ideas & inspiration

CASE: TOYS FROM CHILDHOOD

BACK

LONG GONE & FORGOTTEN PRODUCTS

- Remind the users to go through their stuff. To validate and to circulate the products they do not need.
- Remind them of the reason for the purchase, why they felt a need of owning the product.
- Show them the happiness another user could experience while obtaining the product.
- Enabling the user to personalize the product can increase the use of the product.
- How do you believe the users feel about owning many products?

DO YOU REALLY NEED TWO?

- Offer a discount while returning their product.
- Offer the consumers to borrow a back-up product instead of storing an old version.
- Present the financial value for similar pre-used products.
- Enlighten the users that the amount of storage space can be connected with the ambition of clearing things out.
- Enlighten the users about resources that were needed for producing the product. How it should be used and not stored or discarded.

LOVE ME OR LOVE ME NOT?

- Create less opportunities for users to create sentimental value in products. Create value in other ways.
- Make the experience memorable, rather than the product.
- Present the value of joy which could be achieved by giving the product to another user.
- Try to reduce the anxiety that can occur in clearance. Can relief be the focus instead?
- Help to price products with high sentimental value.

FRONT

A BROKEN PRODUCT

A user has damaged a newly produced product. How do you prevent the person from discarding the product?

Turn to the back for ideas & inspiration

CASE: A PAIR OF RIPPED JEANS

GET TO KNOW YOUR STUFF!

How can users be encouraged to keep track of their things? And to validate and clear out the things they do not require?

Turn to the back for ideas & inspiration

CASE: MOTIVATE THE USER TO KEEP BETTER TRACK OF THEIR WARDROBE

RE-DESIGN IT!

How can redesign be used to upgrade products? Both from a company and a consumer's point of view.

Turn to the back for ideas & inspiration

CASE: A WOODEN CHAIR

BACK

A BROKEN PRODUCT

- Show the user how to repair the product.
- Present them with a re-design solution, how they can improve the product by themselves.
- Show them options of services that can repair the product for them.
- Enlighten them of the resources that were needed for producing the products.
- Suggest donating options or recycling.
- Discarding is mainly due to habitual manner, no cognitive effort is needed. How do you change or influence people's habits?
- Create a special connection between the user and the product, the bond might trigger them into fixing the product.
- Promote the emotions of joy for successfully taking care of the products.

GET TO KNOW YOUR STUFF!

- Encourage the users to validate their belongings while they are purchasing products. Convince them to pass on the products they do not use and circulate them.
- Inspire them through e.g. social media, where you can present the appreciation your product might bring other people by selling or donating.
- Owning fewer products could result in more space and a feeling of freedom.
- Promote the positive feelings of repair and taking care of existing products.

RE-DESIGN IT!

- Is it possible to change the design of the product without damaging or decreasing the product's value?
- Can the product be upgraded by the producers?
- Is it possible for the consumer to upgrade or re-design the product?
- Is it easy to change the state of the product by an upgrade? Will there be any complications?

FRONT

BEYOND PHYSICAL STORES

How do you work with online services where consumers want to examine the pre-used products before purchase?

Turn to the back for ideas & inspiration

CASE: SHOPPING PRE-USED CLOTHING ONLINE

WHO'S RESPONSIBLE?

Discuss what responsibility the company has. Should products be reclaimed?

Turn to the back for ideas & inspiration

THIS CARDS AFFECTS:

WELCOME TO YOUR NEW HOME

How can you ease the process of transferring the ownership of the product?

Turn to the back for ideas & inspiration

CASE: A DINING TABLE

BACK

BEYOND PHYSICAL STORES

- How can quality be described online? Could different tools such as checklists, verifications, standardization descriptions be used?
- How is acceptable hygiene communicated?
- Get quality validation from the producing company. The validation can depend on production year and amount of use to inform purchasers about the product condition.
- Describe the history of the product and persuade the buyer to value the history more than the quality.
- Can products be presented with videos instead of only descriptions and/or photos.

WHO'S RESPONSIBLE?

- Can the company bring back the products after use? Can the old products be offered as pre-used products by the company?
- Enhance brand loyalty through circulation with reclaimed products.
- Start collaborations together with circulation services.
- Start leasing or renting reclaimed products. Consider your business idea, can you do both renting and selling?
- Work together with groups of people, e.g. residential areas, office places, or online groups. If a lot of people are in the need of the product offer them a leasing deal.
- Reclaiming products can remove the barrier of practical work and transportation for the user.

WELCOME TO YOUR NEW HOME

- Use existing online services for selling and buying pre-used products.
- Renting a product is also a way of changing the ownership temporarily.
- Reduce the social barrier of meeting and communicating with the new owner.
- Consider eventual effort of creating ads and pricing.
- Users can find it exhausting to put time and effort into selling items.
- Enlighten the user about the product getting a further life with another user.
- Present the economic and environmental benefits of circulation.

FRONT

DON'T LET THE PRODUCTS REST

A product of no use is supposed to be brought back into use. How would you motivate each of the characteristics from part 1?

Turn to the back for ideas & inspiration

CASE: SPORTING GEAR

STOP DISCARDING! START CIRCULATING!

How can users be hindered from discarding functional products? How can they be motivated to start circulating?

Turn to the back for ideas & inspiration

CASE: A KITCHEN APPLIANCE

BACK

DON'T LET THE PRODUCTS REST

- The red often owns a lot of products and is most likely to forget about the products. They need to be pushed to clear out things and to do that circularly.
- The oranges are similar to the red ones, they like to own a lot of products and need a reminder of what they own. They need to be motivated to validate the products they do not use.
- The yellow know about the possibility to circulate products and simply need to be reminded of the reason for clearing things out.
- The green users are most likely not to forget about products. Remind them to keep track in case they obtain a product that replaces another one, or have products in the need of fixing.

STOP! DON'T DISCARD

- Understand the personalities and use them to your advantage.
- Ease the process of circulating the product, offer them services that pick up the product, and remove any transportation needed, and other complications.
- Make discarding products more difficult, the biggest reason for discarding something is because of the simplicity.
- Discarding is mainly due to habitual manner, how can the user be affected to change their behavior?
- Notice that people often feel bad when discarding functioning products, take advantage of these scenarios.
- Motivate with new interactions and contexts in circular consumption.

C.1.4.3 Tool 3 - prevent cards

FRONT



RENT & LENT

Is it possible to rent and borrow products from other users to prevent products from being unused?

Turn to the back for ideas & inspiration

CASE: SHARING TOOLS IN NEIGHBORHOOD



DON'T LOOSE YOUR STUFF

What if one consumer intends to sell an incomplete product? Is it still sellable?

Turn to the back for ideas & inspiration

CASE: A SEWING MACHINE WITH MISSING CORD

BACK

RENT & LENT

- Is it possible to have a business idea of both selling and renting the product?
- Encourage your customers to share products to make the products be more used.
- What are the requirements for a product that is shared? Compared to bought?
- When sharing, the consumers demand good hygiene and quality.
- Clearly communicate the agreement.
- How can trust be created between individuals?

DON'T LOOSE YOUR STUFF

- To prevent the product from ending up in the no use states, it is important to ensure that it will stay intact.
- Reduce the risk of losing essential parts of the product.
- Consider that access to spare parts may be limited if the product is older.
- Encourage the user to value their product and to take good care of them.

FRONT

DO YOU GET IT?

Intuitive products are easier to understand and can therefore be used to their full capacity and with a higher chance of staying in use. How can intuitive products be created?

Turn to the back for ideas & inspiration

CASE: CHANGING A CAR TO BE MORE INTUITIVE

WHAT IS IN MY ATTIC?

How can products be designed to prevent states such as forgotten and back-up?

Turn to the back for ideas & inspiration

CASE: PREVENT A CAMERA FROM BEING UNUSED

BACK

DO YOU GET IT?

- A new user should understand and explore the product without complications, it should be easy to like and to use.
- If instructions are needed to use the product, ensure these are available for as long as the product is in use.
- Help the user discover the product and the functions, if they are able to predict and orient it saves the users from experimenting.
- Think of the purpose of the use, will the product be used for one or several purposes?
- During use, responses should be provided to confirm correct use.

WHAT IS IN MY ATTIC?

- If the user knows its belongings and storage it is more likely for the user to continue usage.
- Find different ways for the user to keep track of their products.
- Find ways to design the product to suit the user's preferences and for them to make it more personal.
- Present the products environmental impact, and give reasons for continuous usage.

C.1.4.4 Tool 3 - prevent & design for cards

FRONT	DESIGN FOR MULTIPLE CYCLES		
	DESIGN FOR SHARING		
BACK	DESIGN FOR LONGEVITY		
	DESIGN FOR ...		
FRONT	DESIGN FOR ...		
	DESIGN FOR ...		
BACK	DESIGN FOR ...		
	DESIGN FOR ...		
FRONT	DESIGN FOR GRATEFUL AGING		
	DESIGN FOR MAINTENANCE		
BACK	DESIGN FOR SOCIAL INTERACTION		
	DESIGN FOR ...		

FRONT

DESIGN FOR
REPAIRDESIGN FOR
MULTIPLE AREAS OF USEDESIGN FOR
EXCHANGE

BACK

DESIGN FOR ...

- Is it possible for products to be modularized and therefore easier to repair or upgrade.
- Is it possible for the users to execute the repair themselves? Repairs that have to be delivered to workshops have a higher risk of never getting repaired.
- It could help to provide instructions on repairs to guide the users.
- To ensure that repairs are possible, spare parts have to be provided.
- The user can feel good for successfully managing a repair by themselves.

DESIGN FOR ...

- Can your product have multiple areas of use?
- Can the target group be expanded with the increase of use areas?
- Is it possible to expand the number of functions of the product during its lifetime?
- Can too many functions contribute to less use?

DESIGN FOR ...

- Can you ease product transfer between users? To ensure the clearance phase agrees with another user's obtainment phase.
- Can you ease the exchange by creating comprehension for the involved in the deal?
- Can you find available and suitable channels for the exchange of a specific product?
- How can you create trust between the involved users?
- Is it possible for users to request your product pre-used? On many occasions, the product owner will not let go of it until someone asks them about it.

DEPARTMENT OF INDUSTRIAL AND MATERIAL SCIENCE
DIVISION DESIGN & HUMAN FACTORS

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