

Transitioning Second-Hand Stores:
The Impact of Technology and
Innovative Application on Sustainable Fashion



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**Transitioning Second-Hand Stores:
The Impact of Technology and
Innovative Application on Sustainable Fashion**

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Abstract

This master's thesis in informatics: Design, Use, and Interactions, investigates the opportunities to affect consumerism and clothing thrown-away culture among young people.

To deal with growing complexity of our environmental challenges, we must adopt new interdisciplinary perspectives to create more sustainable solutions. The fashion industry stands out as a significant culprit among the various industries contributing to environmental degradation. In this thesis, I explore how mobile interaction can impact the behaviour of consumers and second-hand shop owners, guiding them toward more sustainable practices concerning the use of second-hand clothing and making a good alternative to fast fashion that has contributed to the environmental challenges.

The main research question that the thesis seeks to answer is: *How can a second-hand store application be designed to engage both store owners and users, at the niche level, to increase sustainability in the fashion industry?*

To address this inquiry, a broad, holistic perspective framed by transition design and qualitative research employing interviews was utilized as a research approach. The study included five store owners from both Norway and Sweden as participants. These interviews took place over a three-month duration and followed a semi-structured format guided by an interview guide (Appendix 2). Additionally, research through design approach was used to create a mobile phone application, using low-fidelity and high-fidelity prototyping. The selected methodologies for this thesis aimed to instigate change through innovative design approaches. Although researchers and designers have investigated this problem before, my solution integrates interaction and transition design, offering a fresh perspective. It includes features like event listings, local second-hand shop searches, and simplifying sustainable choices for consumers.

Data collection and analysis, based on the experiences of store owners with this phenomenon, culminated in the development of this application. The project's outcomes demonstrate that the application is user-friendly for consumers and store owners.

Acknowledgments

The moment has come to submit my master's thesis, a journey that has proven to be educational and challenging. Along the way, I have navigated the highs and lows of balancing academic pursuits with work commitments. Most importantly, I am thrilled to have had the opportunity to explore a subject that greatly captivates me – the intersection of fashion and technology. I was fascinated by combining my fashion design background with interaction design principles. This mix of fields truly captivated me. While working on my master's thesis, I had a great time and learned a lot, gaining valuable knowledge and insights along the way.

I would like to show my appreciation to the participants in the study for their invaluable contribution that made this research possible. Thank you for your time, feedback, and engaging conversations. I would also like to extend my appreciation to my colleagues for our insightful discussions during time on “the jump seat”, their keen interest in my project, and their unwavering support as I worked to complete my master's thesis.

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1. Introduction

Despite an increasing number of young individuals expressing concerns about the environment and their desire to contribute to a more sustainable fashion industry, there are obstacles in engaging in sustainable practices such as buying used clothes. One significant challenge to increasing second-hand purchases is the price of new textile garments. Since 1995, the fashion industry has made it more affordable to purchase new clothes from regular "fast fashion" stores rather than locating and buying from various second-hand shops (Grimstad, Klepp et al., 2015). Furthermore, fast fashion consumption has led to an enormous waste of textiles, with Norwegians throwing away approximately 23 kilograms of textiles per person each year (Bjørke, 2020). While these textiles might still be fully usable, they are discarded due to being out of fashion, fitting, or lack of incentives to repair.

Fretex¹, a well-known Norwegian second-hand shop, effectively advertises and attracts customers. However, many similar stores remain unknown to the public, leaving Fretex to increase the prices at will, making second-hand purchases pricey. Thus, if more stores were made known to local inhabitants, this might affect the price of second-hand fashion increase its consumption, and shape more sustainable fashion practices.

The motivation for this thesis came from a pressing issue: How can we make second-hand choices more sustainable? This question started the research journey explored within this work, aimed at improving the accessibility and convenience of sustainable alternatives. Specifically, the focus was on creating pathways, facilitated through a mobile application to encourage both consumers and second-hand store owners to reconsider and transform their practices. My perspective in this topic focus on a specific group, especially younger people. Recognizing the potential for meaningful change at a small level, I decided to develop a niche solution in the form of a mobile application. This application might inspire more sustainable choices in second-hand fashion.

1.1 Personal motivation

The focus of my master's thesis revolves around young adults and their engagement with sustainable fashion. I aim to explore various opportunities to inspire young people and encourage their involvement in sustainable fashion practices. Over the years, my perspective on fashion and the prevailing "use and discard" culture has transformed, leading me towards a more conscious approach to sustainable fashion. Through my work in fashion design, I have embraced an innovative

¹ <https://www.fretex.no/>, also having an online store <https://nettbutikk.fretex.no/>

mindset and developed an awareness of the problem of overconsumption in the textile industry. It is crucial to acknowledge the intricate environmental and sustainability challenges associated with the textile industry. As an interaction and fashion designer, I aspire to utilize my creativity and technology skills to develop unique solutions that contribute to a more sustainable and positive change in the industry.

1.2 The approach

My thesis explores the intersection of sustainable interaction design (Blevis, 2006; Pierce et al., 2013), Research Through Design (Zimmerman & Forlizzi, 2014) Transition Design (Irwin, 2015a), and fashion design (Bertola & Teunissen, 2018). It also hinges on building sustainable practices (L. Kuijer, 2017; S. C. Kuijer, 2014) and my experiences described above. I wished to use mobile interaction with applications to provide easy access for shop owners and young people to change their fashion behaviours and access information that might affect those behaviours. Thus, I can frame my main research question as stated below.

1.3 The Research Question

In the face of our increasingly complex environmental challenges, it is crucial that we embrace fresh, interdisciplinary perspectives to devise more sustainable solutions. The fashion industry stands out as a significant culprit among the various industries contributing to environmental degradation. Considering this concern, this thesis embarks on a journey, focusing on the fashion industry through the lens of an interaction designer. The primary objective is to contribute to its transformation towards sustainability. This concept encompasses responsible resource utilization and a commitment to the well-being of the environment, society, and the economy (Chairpail, 2022):

How can a second-hand store application be designed to engage both store owners and users, at the niche level, to increase sustainability in the fashion industry?

To explore both facets of this research question and capture store owners' and users' insights, two distinct research sub-questions have been formulated to resolve the main research question:

- 1. What are the preferences and criteria of store owners and users when it comes to a mobile application that helps showcase second-hand stores and promotes sustainable fashion?*
- 2. How did the selected methodology influence the research to advocate a positive transformation, and encourage store owners and users, at the niche level, to support more sustainable fashion choices?*

The first research question aims to address store owners' experiences with secondhand stores that have yet to embrace digitalization and to identify the steps they can take to increase their visibility to

the public. The second research question seeks to explore how the application's usability can be enhanced through the selected methodology and how it can guide businesses in transitioning to the digital realm.

Wanting to gain insight into what is already there, I have started my work with ethnographic online explorations of similar undertakings - a sample is addressed in the background section. Furthermore, the development of this application stemmed from data collection, primarily focusing on the experiences of store owners with this phenomenon. My solution takes a novel approach by integrating interaction with an application that will serve as a tool for second-hand shops. It incorporates various features such as event listings, and second-hand shop searches. Gathering internal insights enabled the creation of an exploratory prototype. The project's result highlights the user-friendliness of the application for both consumers and store owners.

1.4 Contribution

This thesis makes a valuable contribution by focusing on altering the behaviours and attitudes of young individuals when it comes to second-hand fashion. To achieve this goal, the thesis emphasizes the development of a dedicated application, as previous outlined. It leverages a value-based design approach to facilitate this shift in behaviour. The experience of users with the application consistently reveals a notable improvement in their attitudes towards second-hand fashion. Users express higher levels of satisfaction with the shopping experience, a deeper sense of value for sustainable options, and an increased feeling of engagement with the community. They enthusiastically embrace the applications user-friendly interface and easy accessibility, which ultimately leads to a more positive perception of second-hand fashion.

However, it is important to acknowledge a limitation in this work. The thesis was not tested in real-life scenarios, which means that the observed outcomes and impacts are based on simulated or controlled conditions. Future real-world testing may provide additional insights and further validate the application's effectiveness.

1.5 Chapter guide

Chapter 2: Background

In this chapter I introduce the concept of sustainability, Human computer Interaction (HCI) and Sustainable Interaction Design (SID) within the context of sustainable fashion. I will also present an overview of the fashion industry, including its historic development and its impact on consumer behaviour.

Chapter 3: Fashion Sustainability & Design

In this chapter, I explore sustainability in fashion and Sustainable Interaction Design (SID) are important for creating a more sustainable future. I study the second-hand store industry, emphasizing the role it plays in sustainable fashion. I explore how SID can make technology and fashion more sustainable and research the current situation of second-hand stores, their potential in promoting sustainable fashion, and the issues they encounter.

Chapter 4: Theory

Chapter 4 provides the theoretical foundations of the research project, focusing on social change and needs. It explores the social-transition theory, the theory of needs and the social practice theory to offer a perspective on using technology for social change. This chapter establishes the theoretical framework guiding the research and its impact on technology-driven societal transformation.

Chapter 5: Methodology & Method

In this chapter, I introduce the research methodologies, highlighting Transition Design and Research Through Design (RtD). Transition Design combines various disciplines to promote sustainability and social innovation, using knowledge, production process guided by guided by RtD and other methods. These methodologies intersect to create solutions that encourage sustainable behaviours in the face of evolving environmental challenges through interaction design.

Chapter 6: Applying the Combined Framework

In Chapter 6, I integrate the methodologies within the Transition Design and Research Through Design framework. This involves elucidating the primary structure of Transition Design, encompassing Visions for Transition, Theories of change, Posture and mindset, and New ways of Designing combined with the methods applied.

Chapter 7: Design Considerations Developing the Application & Its User Interface

In this chapter, I explore the application's design structure influenced by research findings and sustainable design's transformative impact on my view of second-hand clothing. I discuss the integration of Transition Design and Research Through Design, highlighting the significance of prioritizing Generation Z and store employees' needs for sustainable fashion choices.

Chapter 8: Findings

In this chapter, I explore the valuable insights gained from interactions with store owners and users, examining the impact of my methodology and theory. I assess the improvements made based on user testing results. The collaborative approach of involving both users and store employees in application development is highlighted, emphasizing sustainable fashion practices and the

integration of social practice theory to understand how technology shaped user behaviour and clothing choices.

Chapter 9: Discussion & Conclusion

In chapter 9, I will explore the methodologies utilized, connecting the insights from interviews with store owners and users to the applied theories and methodologies. Additionally, I address the study's limitations and proposed potential avenues for future research.

2. Background

In this chapter, I will present the background for why I have chosen to do research within the field of sustainable fashion. This section is divided into three parts, firstly I will focus on the need for sustainability and sustainable design. The second part investigates the realm of fashion, examining the fashion industry and its sustainability aspects. The third part focuses on consumerism.

2.1 Sustainability and sustainable design

Sustainability is defined as the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, G.H., 1987).

2.1.1 Sustainability

The idea of sustainability originated in the field of forestry, where it was about ensuring that no more trees were harvested than what the forest naturally replenished in new growth (Wiersum, 1995). The term “Nachhaltigkeit”, which is the German word for sustainability, was first employed with this meaning in 1973 (Wilderer, 2007). However, the concern for preserving natural resources for the future has been a recurring one throughout history (Kuhlman & Farrington, 2010). In recent times, increasing attention has been drawn to sustainable development due to heightened concerns about environmental issues, climate change, poverty, growing societal disparities, and social inequalities (Giovannoni & Fabietti, 2013).

Environmental concerns are important, but the central idea is to secure the well-being of both current and future generations. Our responsibility to care for the environment is not solely because it is valuable on its own, but rather to ensure sufficient resources remain for our descendants, as discussed by Kuhlman and Farrington in their article “What is Sustainability?” (Kuhlman & Farrington, 2010). In their work, Kuhlman & Farrington highlight two significant shifts in our understanding of sustainability.

Firstly, they emphasize the concept’s three interconnected dimensions: social, economic, and environmental, all of which must harmonize. Secondly, they make a clear distinction between “strong” and “weak” sustainability (Kuhlman & Farrington, 2010). Figure 1 illustrates the weak and strong sustainability approaches. Weak sustainability, aligned with sustainable development treats environmental, social, and economic aspects equally to balance them. This figure is based on the Brundtland Report (Brundtland, G.H., 1987). On the other hand, strong sustainability, influenced by

system thinking, depicts these three elements as interconnected and assigns varying significance to each. This model was introduced by Giddings (Giddings et al., 2002) and illustrated in the paper by (Morandin Ahuerma et al., 2019).

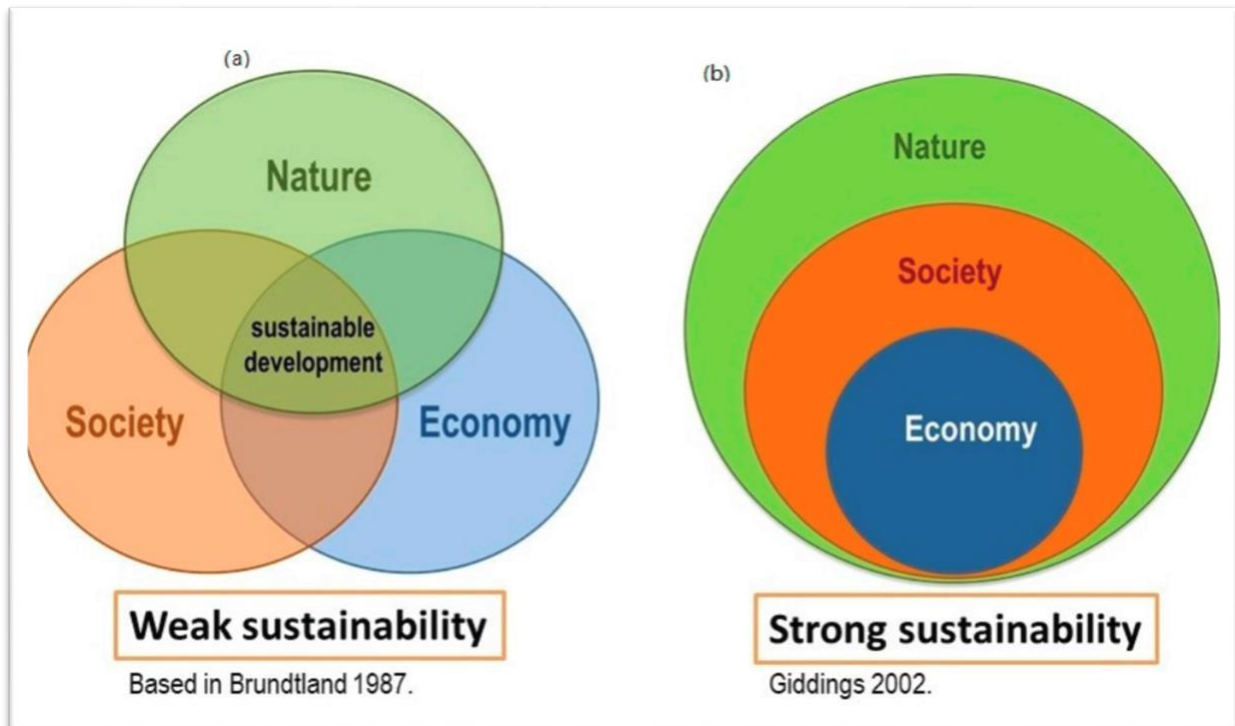


Figure 1: The weak and strong sustainability challenges, retrieved from (Morandin Ahuerma et al., 2019)

“Weak” sustainability believes that natural resources and man-made resources can replace each other, and it does not see a big difference in the well-being they provide. The main goal is to keep or even grow the total value of all resources for future generations. In this view, it does not matter if we use up non-renewable resources or add pollution to the environment, if we build enough machines, infrastructure, and other things to make up for it. Compensating for environmental damage with money. They rely on technology to find a solution to environmental issues caused by increased production. The focus within this understanding is that we can trade natural resources for man-made ones and that technology will fix any problems that come up (Pelenc et al., 2015)

“Strong” sustainability says we must protect certain natural resources because they are crucial for our survival. Strong sustainability has specific rules and limits that we should not cross. (Kuhlman & Farrington, 2010). Natural resources are different from man-made ones. Man-made stuff can be made again, and we can fix or replace it if it breaks. But when we use up natural resources, it is usually permanent. For example, if a species is gone, it is gone forever, but we can rebuild buildings (Pelenc et al., 2015).

The idea of sustainability originally aimed to balance development with environmental preservation. This means that we are trying to meet human needs while also ensuring we do not harm the environment. When we think about sustainability in three ways, economic development is about making money. Social development includes things like fairness, equal opportunities, and health. Environmental issues are when we look at projects that can help the environment but might not be great for people or money, it can lead to different decisions. Some say we should give all three aspects equal importance, but that might weaken our focus on the environment (Kuhlman & Farrington, 2010). In the end, making everything equal can hide the fact that sometimes we need to choose between improving our lives now and taking care of the planet for the future (Kuhlman & Farrington, 2010)

Given the urgent global crisis, we must rethink how we act, recognizing that the situation is complicated. This means reviewing economic ideas, planetary limits, and growth models that have led to unsustainable economic growth, a major cause of our current social and environmental problems (Morandin Ahuerma et al., 2019). Sustainability is about what we leave for future generations in terms of natural resources, environmental quality, and capital (like money or technology) (Kuhlman & Farrington, 2010). Hence, each person's efforts toward sustainability, such as recycling and purchasing second-hand clothing, can help raise awareness and prompt future generations to consider how they can address emerging needs.

2.1.2 Design for sustainability (DfS)

Creating sustainable designs involves making designs that affect how consumers behave, live, and engage in practices like buying clothes, doing laundry, reusing items, and recycling (Wahl & Baxter, 2008) Designing for sustainability (DfS) means not only changing our habits, lifestyles, and practices but also transforming the way we think about design itself. Sustainability is a process of coevolution and co-design, involving various communities in making flexible and adaptable design choices on different scales (Wahl & Baxter, 2008)

Sustainability is an ongoing process of learning and adapting. It has become important for both designers and society and it involves dealing with a range of interconnected problems related to the environment, culture, economics, and our awareness of the issues. These problems have come together in the current crisis of our unsustainable way of life (Wahl & Baxter, 2008)

Sustainable design is an integrated, holistic approach that positively impacts all phases of a building's life cycle and encourages compromise and tradeoffs. It can be achieved through design (and focusing on behaviour or by focusing on sustainability in design (material sustainable) (Ceschin & Gaziulusoy, 2020; Coskun et al., 2015).

Ceschin and Gaziulusoy discuss in their paper the Design for Sustainability (DfS) approaches that can be divided into four innovation levels:

Product innovation level:

At this level of design aims to create better or new products with sustainability in mind. Eco-design considers a product's entire life cycle and its environmental impact, while emotionally durable design seeks to build lasting attachments to products, although consumer preferences can be influenced by culture and personal feelings, sometimes affecting sales (Ceschin & Gaziulusoy, 2016).

Product – Service System innovation level:

At this level, the focus moves beyond individual products to combinations of products and services, along with innovative business models. Early 'green' design often encouraged more consumption, while eco-design considered a product's lifecycle. Product-Service Systems (PSS) have emerged, emphasizing access over ownership, benefiting the environment and the economy. PSS design now integrates technical, social, and ethical aspects (Ceschin & Gaziulusoy, 2016).

Spatio-Social innovation level:

This level focuses on innovative human settlements through a mix of technology and social solutions. Social innovation often emerges from communities and is refined and spread through design for social innovation, involving both professionals and non-professionals. The challenge is avoiding overreliance on technology to prevent shifting problems elsewhere (Ceschin & Gaziulusoy, 2016).

Socio-technical System innovation level:

This design approach aims to transform how we meet societal needs like food and transportation for greater sustainability by enhancing material and energy efficiency inspired by nature. It should complement other design methods to address consumer usage patterns (Ceschin & Gaziulusoy, 2016).

Design for Sustainability (DfS) has transformed over time, progressing from a narrow product-focused approach to a broader perspective considering intricate systems. Initially, it emphasized technical sustainability aspects like Green Design and Eco-design. Later, DfS recognized the significance of people, addressing user involvement and societal dynamics. Sustainability concerns also broadened from environmental aspects to include labour, poverty, social inclusion, and citizen empowerment, reflecting a greater understanding of sustainability's interconnected nature (Ceschin & Gaziulusoy, 2016).

In simple terms, design affects how things like products, transportation, economies, rules, cities, and how we use resources all fit together in our world. It also influences our big ideas, the way we see

the world, and what we value through design framework. Changes in our culture, what we believe, and our goals can lead to major changes in how and why we design things. These shifts, driven by the design framework, play a crucial role in our journey toward a sustainable society (Wahl & Baxter, 2008). Design for Sustainability can be connected to Human-computer Interaction (HCI) and Sustainable Interaction Design (SDI) through their shared focus on creating technology and solutions that are environmentally, socially, and economically sustainable. The following chapter provides an in-depth of HCI and SID. By merging these approaches with DfS, designers have the possibility to craft user-friendly products and interfaces that also demonstrate environmental consciousness and social responsibility.

2.1.3 Human-Computer Interaction (HCI) & Sustainable Interaction Design (SID)

In the context of sustainability and Human Computer Interaction (HCI), Wakkary and Tanenbaum argue that we should see “users” as not just consumers but also as everyday creative designers. They emphasize the value of viewing reuse as a creative act. These concepts offer a structure for grasping the relationship between fashion and Sustainable Interaction Design (SID). They aid in the exploration of the interconnections between fashion, HCI, and sustainability, as discussed by Pan and Blevis (Pan & Blevis, 2014).

Sustainable Interaction Design (SID focuses on how interactive technologies relate to environmental sustainability in two ways:

- 1) Sustainability through design - using interactive systems to promote sustainable behaviour (Hanks et al., 2008). This means using interactive systems (Like applications, websites, or other digital platforms) in a way that encourages people to behave in environmentally sustainable ways. For example, an application that will encourage users to buy more used clothes.
- 2) Sustainability in design – integrating sustainability into the design of interactive technologies (Hanks et al., 2008). This means that when a designer and developers are creating a new digital product or system, they consider how it can be made in an eco-friendly way. This might involve using renewable energy sources, minimizing electronic waste, or designing products that have longer lifespans.

In the field of Human Computer Interaction (HCI), the exploration of sustainability began in 2007 with the influential paper by Eli Blevis titled “Sustainable Interaction Design: Invention & Disposal, Renewal & Reuse” (Blevis, 2007). Blevis contends that sustainability should and can serve as a central emphasis in interaction design (Blevis, 2007). This article marked the beginning of considering sustainability within HCI research and emphasized its importance in interaction design (Blevis, 2007).

Blevis laid the foundation for Sustainable Interaction Design (SID) with a focus on environmental sustainability and the relationship between technology and resource utilization. One of Blevis's key points is that a design is not truly complete until we consider what will happen to new products, technologies, or systems at the end of their lifecycle, right from the beginning of the design process. Blevis explores how interactive technologies can encourage more sustainable behaviors, and how sustainability can be a critical framework for designing interactive systems. Furthermore, Blevis (2007) has proposed a set of design principles that can serve as objectives for sustainable interaction design, with three key principles at the forefront: "linking invention & disposal", "promoting renewal & reuse" and "Promoting quality & equality". "Linking invention & disposal" means that designing a new object is not finished until we know what will happen to the old one it is replacing. When we incorporate technology into our designs, it is crucial to think about how we can make the most of what is already out there and use it again. This approach aligns with "Promoting renewal & reuse". A more detailed explanation of "Promoting renewal & reuse" and "Promoting quality & equality" can be found in Chapter 3.2, where sustainable interaction design and fashion are discussed.

Design can serve as a powerful tool for shifting mindsets and decision-making towards sustainability. This can happen at the individual level, where people are provided with environmental data to make informed choices, or at a broader societal level by, driving social and cultural changes (Blevis, 2007).

2.2 Fashion, fashion industry and its sustainability

2.2.1. Fashion

The significance of the term "fashion" extends far beyond mere clothing and style. As quoted in the paper by (Pan & Blevis, 2014), Wilson suggests that in today's world, fashion is a great way to show how culture and lifestyles are always evolving. Wilson puts it like this: "Fashion in dress in which the key features is rapid and continual changing of styles. Fashion, in a sense, is change" (Pan & Blevis, 2014). In my thesis, "fashion" encapsulates a dynamic and ever-evolving cultural expression that mirrors individuality, societal values, and historical influences. I've chosen to retain the term "fashion" because it encompasses the intangible aspect of this domain.

Fashion includes questions like what makes new digital products popular or not, which locations are considered cool to live in, how fashion influences changing cultures and lifestyles, and how fashion as a social phenomenon affects the way people buy things (Pan & Blevis, 2014). If the accessibility, ease, and fashionability of purchasing used clothing are promoted, it could potentially transform into a widespread social phenomenon, thus serving as a scalable approach to enhancing sustainability.

History of Fashion

The history of fashion can be traced back to ancient civilizations such as Egypt and the Roman Empire, where distinctions between the rich and the poor were evident through their clothing. However, in the 18th century, Charles Fredrik Worth, often called the first-ever fashion designer, introduced a groundbreaking idea. He focused on helping people express their unique style through clothing by offering advice on what to wear and showing them clothing patterns. This shift away, from just displaying finished clothes to presenting them on a person, made a significant turning point in the fashion process (*Fashion History*, 2020).

Another pivotal moment in fashion history occurred in the 18th century with the invention of the first sewing machine in 1790. This innovation opened new possibilities for more efficient garment production, reducing labour hours and accelerating the fashion industry's growth. As a result, the fashion design concept emerged, evolving into the industry we know today. In the 20th century, fashion design was inspired by the entertainment industry as movies and music, and we welcomed fashion design that was cheap and made of synthetic materials (*Fashion History*, 2020).

2.2.2. Fashion industry

The fashion industry is a huge global system that covers everything from creating and selling clothes, shoes, and accessories to how people buy and use them. It is a massive industry that makes a lot of money and provides jobs for millions of people around the world. Its influence extends to nearly everyone's lives (Bhardwaj & Fairhurst, 2010).

The fashion industry, according to the UN Conference on Trade and Development (UNCTAD), ranks as the second most polluting sector globally (United Nations, 2020). The fashion industry uses an enormous amount of water, as much as the use of five million people. It also releases tiny fibers into the ocean, the same as 3 million barrels of oil, every year (United Nations, 2020).

Over the past two decades, the fashion apparel industry has experienced significant transformation. To succeed in this changing landscape, the industry needs to emphasize cost-effectiveness and flexibility in design, quality, and speed to market. Within the fashion sector, there are distinct segments, each with its unique features, audience, and business approach, such as high fashion, luxury fashion, fast fashion, and streetwear (Bhardwaj & Fairhurst, 2010).

High fashion and luxury fashion focus on crafting high-end, exclusive, and often artisanal garments and accessories. Prominent brands in this category include Chanel, Gucci, and Louis Vuitton, and their products are typically priced high. Fast fashion, on the other hand, emphasizes the swift production of affordable clothing and accessories intended for short-term wear. Brands such as Zara,

H&M, and Forever 21 operate within this segment, offering products at relatively lower prices (Ray & Nayak, 2023).

Fast fashion or “throwaway”

This exemplifies “fast fashion”, it involves the mass production of inexpensive disposable clothing. With countless new collections released each year, it creates a sense of always being behind and encourages us to purchase more (Ray & Nayak, 2023).

The fast fashion industry has shifted from the traditional two-season model to 52 seasons per year. This means new clothing arrives in stores every week. As a result, worldwide clothing consumption has risen to around 80 billion new items annually, about a 400% increase compared to the 1990s (Ozdamar-Ertekin, 2017). The speed and scale of this change in clothing consumption require us to address the consequences that come with such a rapid increase. Figure 2 illustrates the quantity of clothing we purchase and the estimated duration we typically wear them (Chairpail, 2022).

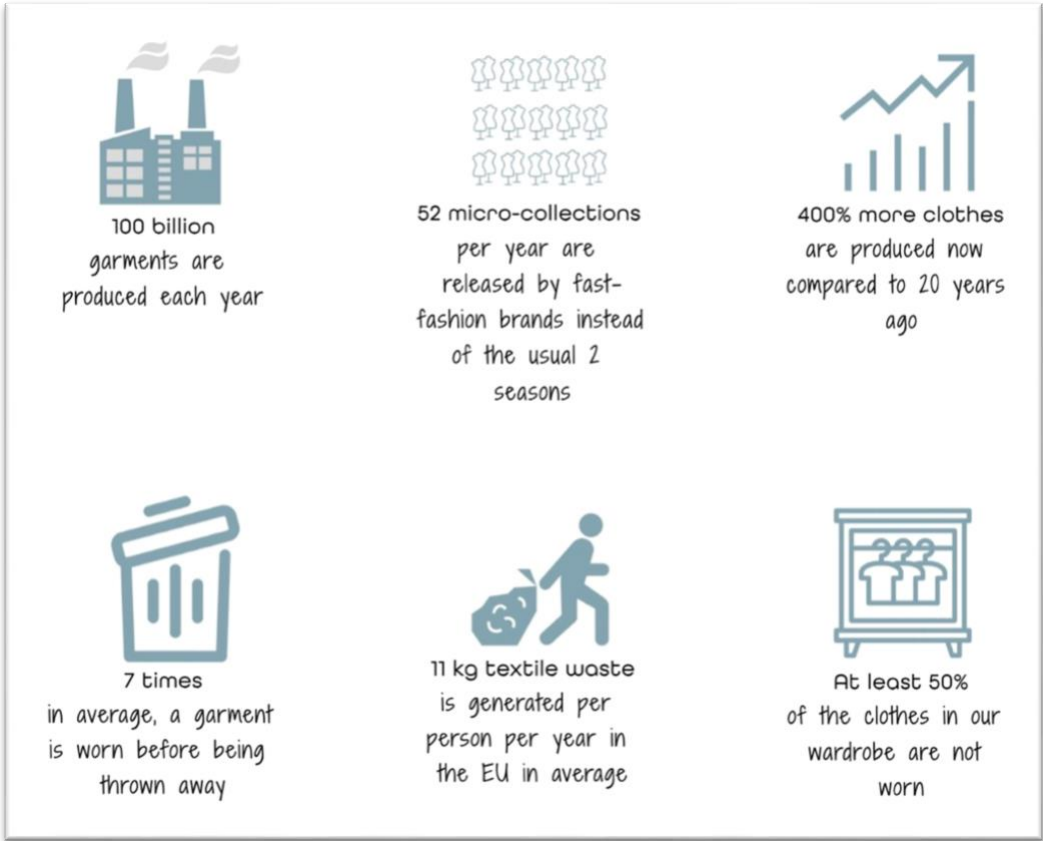


Figure 2: Illustration of clothing production and the use (Chairpail, 2022)

Globalization has made clothing production cheaper, leading to the rise of “fast fashion” compared to “fast food”, which offers affordable clothing, especially for young women. Fashion magazines fuel

the desire for new styles each season (Claudio, 2007). Generation Z (Dimock, 2019), expresses a desire for sustainable clothing, but new research reveals a significant gap between their ideals and purchasing behaviour, with 90 % of those surveyed buying fast fashion. The study, conducted among university students aged 18-24, highlights their concerns about the social and environmental implications of the fast fashion industry. The students had difficulty in naming sustainable clothing brands and cited price as the primary barrier to buying sustainable fashion. Generation Z's interest in sustainability contrasts with their fast fashion purchases (Trueman & Management, 2022).

Production

Fast fashion has environmental and work-related risks. Polyester, a common material, is petroleum-based and pollutes during production. Cotton, another popular fabric, requires extensive pesticide use and the use of chemicals in factories contributes to toxic waste being released into the air and water systems (Claudio, 2007; Sakay, 2021). It is estimated that the textile industry is responsible for 20 per cent of global water pollution, a number projected to increase to 60 per cent by 2030 due to the growing demand for fast fashion (Harding-Rolls, 2020). Water plays a crucial role in textile production, dyeing, and washing processes. For instance, it takes approximately 1400 litres of water to produce a single t-shirt, as highlighted by the Nordic Council of Ministers (2014). Additionally, the annual textile consumption of an individual contributes more CO₂ emissions than the combined electrical consumption of household appliances (*Producing One T-Shirt Requires 1,400 Litres of Water*, 2014).

In a recent revelation, it has come to light that fast fashion shops discard unused clothing in the Atacama Desert (Chile) to make space for more items. Shockingly, nearly 40,000 tons of used fashion clothing have been discovered in this pristine environment over the last year (Figure 3). The clothing importers are prohibited from dumping these clothes in public landfills, but unfortunately, they are still polluting the beautiful landscape with around 70 per cent oil-based garments, which can take up to 200 years to decompose (Stefansen, 2022).



Figure 3: Atacama Desert, 40,000 tons of clothing (Stefansen, 2022)

This alarming environmental impact is a clear sign of how fast fashion can be harmful. It shows that we must quickly understand the effects of our consumption habits and start adopting more sustainable fashion choices.

2.2.3 Sustainable fashion

The term "sustainable fashion" is also synonymous with "ethical fashion," which signifies that the production and distribution of clothing must be equitable and considerate of workers and the environment, considering the entire product life cycle (Crane, 2016).

Practical issues significantly impact ethical fashion consumption. Price is a crucial factor for consumers, often outweighing ethical considerations. Cheap products from sweatshops in developing countries thrive due to their affordability. Ethical fashion's success depends on it being competitively priced without sacrificing quality or convenience for shoppers. Although, ethically manufactured clothes are often criticized as less fashionable and harder to find, requiring consumers to conduct extensive research. Moreover, the shopping environment, especially in a mall, can induce vulnerability and affect shoppers' decision-making, making ethical consumption less likely (Crane, 2016).

Sustainable fashion entails an approach to fashion design and manufacturing that center on minimizing the ecological and societal repercussions of clothing and accessories. This involves

utilizing environmentally friendly materials like organic cotton or recycled polyester, implementing ethical manufacturing practices that uphold fair labour standards, and creating garments that are durable and easily repairable. Sustainable fashion aims to produce clothing that is not only stylish and functional but also has a minimal adverse impact on the environment and the individuals involved in its production. The principles that guided my application designed are closely tied to ethical fashion, specifically ethical fashion consumption, which prioritizes minimizing waste and environmental impact. This approach focuses on promoting sustainable practices and ensuring that fashion choices align with ecological and ethical values. In essence, the application's design emphasizes the importance of reducing waste and supporting sustainable fashion options.

2.3 Consumerism

Different types of fashion consumers can be identified, fast fashion consumers, typically under 35, are drawn to the rapid turnover of styles that allow them to express evolving self-perceptions inexpensively (Cachon & Swinney, 2011). They seek instant gratification in fashion, mirroring the fast-food model. Interestingly, some young fast fashion consumers express concern for sustainability and environmental protection but do not associate the values with fast fashion. They support recycling and organic food but continue to buy disposable, frequently replaced clothing because it aligns with their style preferences (Crane, 2016).

On the opposite end are the "ethical hardliners," a minority group committed to sustainability, opting exclusively for eco-fashion, recycled clothing, and ethically made garments. These consumers prioritize personal ideology over identity and aesthetics, aiming to implement ethical, fair trade, and environmental standards in their purchases (Niinimäki, 2010).

"Voluntary simplicity" is a way of ethical consumption that focuses on being simple and mindful, avoiding unnecessary excess. People who practice this lifestyle follow guidelines that promote environmental consciousness and responsible consumption. Their goal is to build a more humane and more sustainable society based on values like equality, enduring, solidarity, and thriftiness (Marchand, de Coninck and Walker, 2005 in (Crane, 2016).

2.3.1 Consumers

Consumer behaviour in the fashion industry is significantly influenced by advertising, marketing, and the fashion media, which promote ever-changing trends. The fashion business thrives on continuous change, shaping consumer habits from an early age. Ethical fashion consumers are in the minority (Crane, 2016).

Consumer purchasing behaviour has transformed, with fewer people relying on brand suggestions and store employees for inspiration. Instead, consumers turn to various sources like social media, celebrities, influencers, and stylish individuals they encounter. A 2017 survey of millennials highlights this shift, with 41 per cent citing influencers and bloggers as a source of inspiration, compared to just 20 per cent mentioning store employees (McCormick & Ram, 2022)

For consumers, being fashionable means staying attuned to evolving tastes in a changing world, reflecting a desire to align with what holds a favorable reputation (Pan & Blevis, 2014). To varying degrees of consciousness, people use clothing to convey their identity and social status.

“Woke” Consumerism

Fashion companies are becoming more socially aware, a trend often described as “getting woke” (meaning they are becoming more alert to societal injustices, a trend popularized on social media) (McCormick & Ram, 2022; Oxford Dictionary, 2023).

Consumers today, especially millennials Born between 1981 and 1996), and Generation Z (young people born between 1997 and 2012)(Dimock, 2019), are increasingly concerned about the environmental and social consequences associated with their fashion choices (Liu et al., 2023). This trend, known as “woke consumerism,” is pushing brands to actively address these concerns and prioritize positive change. Luxury brands are facing growing pressure to prioritize social responsibility and sustainability, with consumers expecting them to do good rather than simply minimize harm. As a result, social sustainability has become a mandatory element of a brand’s identity, alongside environmental considerations (McCormick & Ram, 2022).

A significant number of young consumers have a strong dedication to social and environmental causes, viewing them as the paramount concerns of our time. As a result, they are incorporating these beliefs into their shopping choices by favoring brands that align with their values and steering clear of those that do not (Imran et al., 2019). Gen Z is known for its social and environmental activism. They use social media as a tool for raising awareness, organizing protests, and supporting social causes. Movements like Fridays for Future and Black Lives Matter have been greatly influenced by Gen Z’s social media activism. Brands can collaborate with Gen Z influencers and advertise on platforms like YouTube, which is highly influential among this generation (Wang, 2021).

2.3.2. Online sales and marketing

The way we purchase clothes has undergone significant changes, with online shopping becoming more prevalent due to its convenience and affordability. Online fashion retail is growing three times faster than the overall market. Companies like Zalando, initially focusing on shoe sales, have

expanded their offerings and gained success through strategies like free shipping and easy returns, expanding to multiple countries (Keller et al., 2014). Young people and Sustainable Interaction Design are teaming up to make shopping online and everyday consumption more environmentally friendly and socially responsible. Young consumers are increasingly concerned about the environment and society, leading to a shift in the market. They are demanding products and services that are responsible and sustainable (Wang, 2021).

Young fashion customers readily use a spectrum of digital platforms to get information on trends, exchange experiences, or compare prices. Within these customer journeys, social media plays a key role. Up to 35 per cent of consumers indicate that they rely on recommendations from social networks (Keller et al., 2014). They often use Instagram for sharing visual content, Snapchat for ephemeral messaging, TikTok for short-form videos, Twitter for quick updates, and more. This diverse landscape reflects their multifaced online presence (Keller et al., 2014).

Social Media (SOME) and Generation Z

Generation Z has grown up in the world profoundly shaped by technology, and their use of social media (SoMe) is defining characteristic of this generation. Gen Z is considered the first native digital generation, meaning they have never known a world without internet, smartphones, and social media (Wang, 2021). This familiarity with technology has made them adapt at navigating the digital landscape and using various social platforms seamlessly.

Many young fashion consumers extensively utilize various digital platforms to access trend information, share experiences, and compare prices. Social media (SoMe), [...] A social media platform where individuals generate their content and engage with others, hence the term “social” in social media (admin_morningtrain, 2023). SoMe play a crucial role in these consumer journeys, with up to 35 per cent of shoppers relying on recommendations from their social networks. This merging of fashion and technology, exemplified by interactive mirrors like those used by Adidas’ NEO brand, reflects the changing landscape of retail and consumer engagement (Keller et al., 2014). When customers try on an outfit, they can use the mirror to take photos of themselves wearing the items, These photos can then be instantly shared on social media platforms like Facebook (Keller et al., 2014). Interactive mirrors (Keller et al., 2014), not only enable customers to seek immediate opinions from friends and followers, but they also serve as a means of user-generated content. When shoppers share their outfit choices and receive feedback, they become part of a larger fashion discourse, their posts may influence others and contribute to trends and styles, showcasing the powerful role of SoMe in the fashion industry.

Adidas' NEO brand has recognized the role of digital technology and social networks in shaping the modern shopping experience (Keller et al., 2014). By providing customers with a platform to solicit input from their social circles, the brand enhances user engagement and taps into the potential of user-generated content and social influence in the fashion industry. This example underscores the evolving relationship between fashion and technology, demonstrating how Human-Computer Interaction and fashion intersect to create innovative and interactive shopping experiences. In Chapter Three, I will further explore the roles of consumers and social media platforms as influential forces in promoting sustainability.

3. Fashion Sustainability and Design

In this chapter, I begin a journey to reveal the complex relationship between sustainability and the world of fashion by reviewing existing research on fashion sustainability. The research explores Sustainable Interaction Design (SID) in fashion, emphasizing its role in sustainability. It examines second-hand stores and their current customer base to better understand the challenges and potential for sustainable fashion.

In the design of my second-hand application, it is essential to highlight the global concerns linked to the textile industry and prioritize the promotion of sustainable fashion. However, our perception of fashion and our relationship with it has evolved throughout history, and lately, fast fashion has been deemed as one of the main pollutants. It is therefore vital to underscore the importance of opting for using already produced textiles as long as possible, by either focusing on second-hand clothing instead of fast fashion (Papasolomou et al., 2023) or on using the textiles to re-design, both for the benefit of the planet.

However, what second-hand clothing implies is often misunderstood. The quote below indicates that it also includes new clothing, but it does not distinguish between it and fast fashion (those new items are likely fast fashion).

While some Online Clothing Resale (OCR) platforms may carry goods that are “like new” and still tagged, which might not have been worn, they are not the same as “new”, since they have been owned previously. The term “second-hand”: [...]not new and has been owned by someone else). (Armstrong & Park, 2020)

3.1 Sustainability & second-hand

The fashion industry ranks as the second-largest contributor to pollution, trailing only behind the major oil industry. This industry represents a vast global market valued at 1.3 trillion dollars and employs 300 million people (United Nations, 2020). Recently, sustainability has gained prominence in fashion due to growing interest both within and outside the industry. This interest has grown because of concerns about unethical and unsustainable practices in areas like production, sourcing materials, supply chains, and working conditions (Zhang et al., 2021). When people become more aware of these environmental issues, they might want to purchase fashion items that are eco-friendly (Shen et al., 2012), such as those made from biodegradable materials (Zhang et al., 2021). However, these environmentally conscious products are often costly, which can discourage consumers from buying them. That is why I am advocating for sustainability and the adoption of secondhand clothing solutions.

Sustainability and second-hand refer to the connection between promoting environmentally responsible practices and the utilization of second-hand products. Choosing to buy second-hand goods, whether it be clothing, furniture, electronics or other items, helps decrease consumer spending and increase economic sustainability (Zhang et al., 2021). The figure 4, depicted below illustrates the reduction in CO2 emissions, energy usage in kilowatt-hours (kWh), and water consumption in gallons achieved when opting for used clothing instead of new garments.

Lifetime impact of a buying a secondhand clothing item over new




	 CO2e emissions	 kWh of energy	 Gallons of water
New	35.96	76.59	282.70
Secondhand	27.55	60.11	193.81
Secondhand savings	8.41 lbs of CO2e	16.48 kWh of energy	88.89 gallons of water

Figure 4: ThreadUP (thredUP, 2023)

In Europe, buying things in flea markets, thrift stores and antique shops, has now become very popular. This trend encourages buying and selling used items as a socially acceptable practice. Second-hand shopping means two things: Not buying new things and shopping in places and ways that are different from where you would buy new things. So, second-hand shopping is defined by (Guiot & Roux, 2010) as: “the acquisition of secondhand objects through methods and places of exchange that are generally distinct from those for new products.” I am curious about the reason behind people choosing to buy second-hand clothing. Is it related to their financial situation or is it more about the emotions and feelings they experience when shopping for second-hand clothes? Guiot & Roux (2010) suggest that a person’s decision to buy second-hand can be influenced by various factors like desires, emotions, interests, past experiences, habits, and more (Guiot & Roux, 2010).

Vintage and second-hand

As addressed in the article by Strähle & Klatt (2016), The French term “second-hand,” is derived from the Latin word *occasio*, meaning “a stroke of luck” and signifies a transaction where buyers benefit from attractive prices due to depreciation (Strähle & Klatt, 2016).

The distinction between second-hand and vintage products is essential to grasp. Vintage products encompass items from the 1920s to the early 1980s, regardless of previous ownership (Cervellon et al., 2012). In contrast to this, second-hand products include any used item, regardless of its age. These items always have a lower financial value than their new counterparts (Strähle & Klatt, 2016). The second-hand market, as defined by (Han, 2013), encompasses all consumer durables that households give away, sell, or swap, with or without intermediaries or third parties. Second-hand clothes offer an affordable alternative to purchasing new garments, potentially curbing excessive spending and fostering economic sustainability. Moreover, they provide access to quality clothing for individuals who may not afford new items (Strähle & Klatt, 2016; thredUP, 2023). The rise of vintage and second-hand fashion represents a meaningful shift in the way we perceive and interact with clothing. As a consumer, we now have the possibility to make more responsible choices when building our wardrobes. Vintage and second-hand fashion not only offer distinctive style options but also actively support the movement towards a more sustainable and eco-conscious future for the fashion industry.

3.1.1 Reacquisition

The term “reacquisition” is used to describe obtaining an object that was previously owned, typically referred to as “used” or “second-hand”(Pierce & Paulos, 2011).

Back in 2011, Pierce and Paulos authored a paper exploring the driving forces behind reacquisition (Pierce & Paulos, 2011) and in this paper they conducted a qualitative study on reacquisition, which involves people getting things they have owned before. They gathered empirical data through in-depth interviews with 18 individuals engaged in reacquisition of (Pierce & Paulos, 2011). In this article, they critique the sustainable consumption, and they refine how they think about consuming technology by breaking it down into four stages: *acquisition, possession, dispossession, and reacquisition*.

Then they identify four motivations and practices for reacquisition: *Casual, necessary, critical, and experiential* (Pierce & Paulos, 2011).

Casual reacquisition: To individuals of this type, reacquisition represents a cost-effective alternative. It allows them to possess items that would otherwise be financially out of reach. They aim to

minimize the distinction between new and secondhand goods. “For an informal reacquire, the regular store with new items is preferable in almost every way, except for the price difference” (Pierce & Paulos, 2011).

Necessary reacquisition: Necessary reacquisition views reacquisition as a financial necessity. They seek to obtain crucial items due to financial constraints, often living near the poverty threshold (Pierce & Paulos, 2011).

Critical reacquisition: Critical reacquisition is deeply engaged in considerations of social, political, economic, ethical, and/or environmental factors when reacquiring (Pierce & Paulos, 2011).

Experiential reacquisition: For experiential reacquisition, reacquisition is rooted in aesthetic qualities, both in the process of acquiring and in the acquired object its selves. These individuals take pleasure in the hunt for aesthetically pleasing secondhand items, even if it requires hours of searching (Pierce & Paulos, 2011).

They conclude by discussing how technology design can support how we get things back now, and how Human-Computer Interaction (HCI) and interaction design can be more open to reacquisition and the values we have when using everyday technology (Pierce & Paulos, 2011).

The findings discussed in the papers mentioned are important for my research because they provide a way to evaluate the types of clothing ownership people have and the kinds of customers who are likely to shop at secondhand stores. Additionally, they shed light on how HCI and interaction design can play a pivotal role in developing sustainable technology practices for the future and promoting sustainable clothing consumption. My primary goal with this research is to empower consumers to make well-informed decisions regarding their clothing purchases and shed light on the associated outcomes. The paramount focus is on crafting a user-friendly tool that streamlines this process.

3.2 Sustainable Interaction Design (SID) & Sustainable Fashion (SF)

The idea of a connection between fashion and information, symbolized by the iconic status of mobile phones, presents a range of possibilities and methods to explore fashion in HCI and research (Pan & Blevis, 2014). Fashion and information enable people to engage with the ongoing developments in the world and stay in sync with the pace of social life and transformations. Fashion serves as a means for individuals to adjust to swift social and life shifts by continually refreshing their self-expression. Meanwhile, information keeps people informed with the latest knowledge and news using digital technology and communication devices (Pan & Blevis, 2014).

The design principles by Eli Blevis, (2006), are hypotheses about how to make the environmental impacts of interaction design better. For example, choosing to reuse things instead of recycling them is usually an eco-friendlier option. These principles involve understanding the impact of the present on the future (design criticism), while (critical design) is about actively shaping and influencing the future through design choices (Blevis, 2006). The two approaches are complementary and can be used together to create more thoughtful and intentional designs. In this chapter, I will explore two of the five principles of sustainable interaction design (SID) - "*Promoting renewal & reuse*" and "*Promoting quality & equality*," with a focus on their relevance to the fashion industry, as proposed by Blevis (Blevis et al., 2007).

"*Promoting renewal & reuse*" involves two key aspects. First, from a critical design perspective, it emphasizes that when designing objects or systems with embedded information technologies, the primary consideration should be the potential for renewing and reusing existing objects or systems to promote sustainability. Second, from a design criticism standpoint, it underscores the importance of understanding why inventions and disposal are more prevalent than renewal and reuse (Blevis et al., 2007).

From a critical design perspective, fashion designers can take inspiration from the principles of renewing and reusing. Just as technology systems can be designed with the potential for renewability and reusability, fashion products can be created with a focus on longevity and adaptability. This means designing clothing that stands the test of time, both in terms of durability and style. Instead of following fast fashion trends that lead to frequent disposal, designers can consider how garments can be easily refreshed, restyled, or repaired to extend their lifespan. The fashion industry can learn from critical design thinking, by understanding why people tend to discard clothing, rather than renewing or reusing it. The desire for new things, ever-changing fashion styles, and the ease of buying new items all play a part in this culture of throwing things away. By looking into these factors and questioning the idea of always needing new fashion, the fashion industry can inspire people to adopt secondhand fashion. This way, we can support sustainability and reduce waste in the fashion world.

"*Promoting quality & equality*" involves two key ideas. First, it means designing new objects or systems that use information technology while considering quality as something related to how these items make people feel and how long they last. It also involves planning for ways to renew and reuse them, ensuring that they continue to be valuable when they change owners. Second, it is about recognizing that low-quality items often end up being thrown away and are not good for bridging social gaps. This perspective suggests that disposable aesthetics, the idea that things are made to be thrown away, is a barrier to sustainability and equality (Blevis et al., 2007)

When we think about fashion, it is common to see trends come and go, with people frequently buying new clothing items to stay up to date with the latest styles. However, this fast-paced consumption leads to a significant amount of waste as old clothes are discarded. To address this issue, the fashion industry is increasingly embracing the idea of renewing and reusing garments. Looking at it critically, a fashion designer can put their focus on making clothes that are not just stylish but also long-lasting and adaptable. We must start creating things that are both good quality and long-lasting, this will push for a change in the idea of making things to throw away, promoting the reuse of items and aiming for a sustainable society.

From a design perspective, it is important to acknowledge the value of vintage, classic, and antique styles in fashion. There is an opportunity to incorporate these elements of fashion into contemporary design, especially in the context of digital and interactive technology. However, this presents a complex challenge because technology tends to make things appear absolute over time, unlike the enduring charm of vintage haute couture (Pan & Blevis, 2014).

3.2.1 Sustainable millennials

In 2008, Hanks and colleagues authored an article titled “Sustainable Millennials: Attitudes towards Sustainability and the material effects of interactive technologies (Hanks et al., 2008).” This paper examines the attitudes and behaviours of millennials concerning sustainability and the tangible effects of interactive technologies. Conducted by Hanks et al., the research involves a survey of 435 undergraduate students, aimed at understanding how these demographic views sustainability in the corner of the context of IT materials. This article builds upon the earlier work by Eli Blevis (Blevis, 2006), as discussed in the preceding section, to advance empirical insights within the context of Sustainable Interaction Design (SID).

The study identifies four distinct profiles based on the respondent attitudes and actions regarding sustainability:

- *Individual Material Success*: Individuals who prefer new items and don't prioritize environmental sustainability as their primary concern (Hanks et al., 2008).
- *Collective Material Success*: People who value the preservation of durable possessions, passing them down through generations, but don't primarily focus on environmental sustainability (Hanks et al., 2008).
- *Legacy Material Success*: Individuals who appreciate new things and prioritize environmental sustainability (Hanks et al., 2008).
- *Global Collective Fate*: People who prioritize both the preservation of durable items and environmental sustainability (Hanks et al., 2008).

This research provides valuable insight into how millennials think about sustainability. It shows that we need specific strategies to encourage them to be more environmentally responsible. In the field of SID, they focus on designing interactive systems, products, and services that are environmentally and socially responsible. It considers the entire life cycle of products and aims to reduce waste, energy consumption, and adverse social consequences. Sustainable Interaction Design is especially pertinent to online shopping, where digital interfaces play a pivotal role in influencing consumer behaviour.

3.3 Online Shopping & Interactions

By understanding the views of millennials and Gen Z, we can create technologies and sustainability projects that match what they care about and like. As addressed in my research question, to [...] *help showcase second-hand stores and promotes sustainable fashion* the store owners need to understand the preferences of their customers to increase the sale of second-hand clothes. Recent data from thredUP (2023) highlights that Generation Z and Millennials stand out as the primary consumers of second-hand fashion, comprising nearly two-thirds of the growing resale market due to their increasing purchasing power (thredUP, 2023). Generation Z's preferences, particularly in their focus on sustainability and resale practices, are set to influence the fashion industry's future (Liu et al., 2023). I offer a selection of young people and the way they interact when it comes to online shopping and SoMe (admin_morningtrain, 2023). Online collaborative consumption and digital technologies have created opportunities for more sustainable consumption. They provide convenient avenues for consumers to discover and buy used clothing. This role in facilitating consumer engagement with second-hand fashion is vital in today's market (Charnley et al., 2022).

3.3.1 Second-hand Consumers

Gen Z cares a lot about social and environmental issues. They are good with technology, like being unique, and want things to be practical and affordable. They care about honesty, openness, and not spending too much when they shop. They often influence what their families buy and prefer shopping online. Social media matters a lot to them, and they like things that are eco-friendly and do not cost too much. When it comes to fashion, Generation Z is into eco-friendly and sharing practices. Many have bought second-hand clothes and are okay with spending more on sustainable fashion. But they also like to express themselves and might shop at fast fashion stores even if they care about sustainability. Gen Z is helping the resale fashion industry grow. They care about fashion's impact on the environment, like unique items, and find online resale platforms appealing. They are also big on digital platforms for shopping impulsively. Social media plays a big role in promoting eco-friendly fashion among them (Liu et al., 2023; Wang, 2021).

ThredUp’s recent report reveals that Generation Z and Millennials are leading the way in second-hand fashion consumption, making up nearly two-thirds of the growing resale market. As their purchasing power continues to rise, this trend is expected to significantly impact the global fashion industry. A majority of Gen Z and Millennials, specifically 58%, believe that their wardrobe plays a role in climate change, in contrast to 43% of the general consumer population (thredUP, 2023). It is anticipated that the global resale market will experience a threefold growth rate compared to the overall global apparel market until 2027, primarily propelled by the influence of Generation Z consumers (Diaz, 2023; Liu et al., 2023).

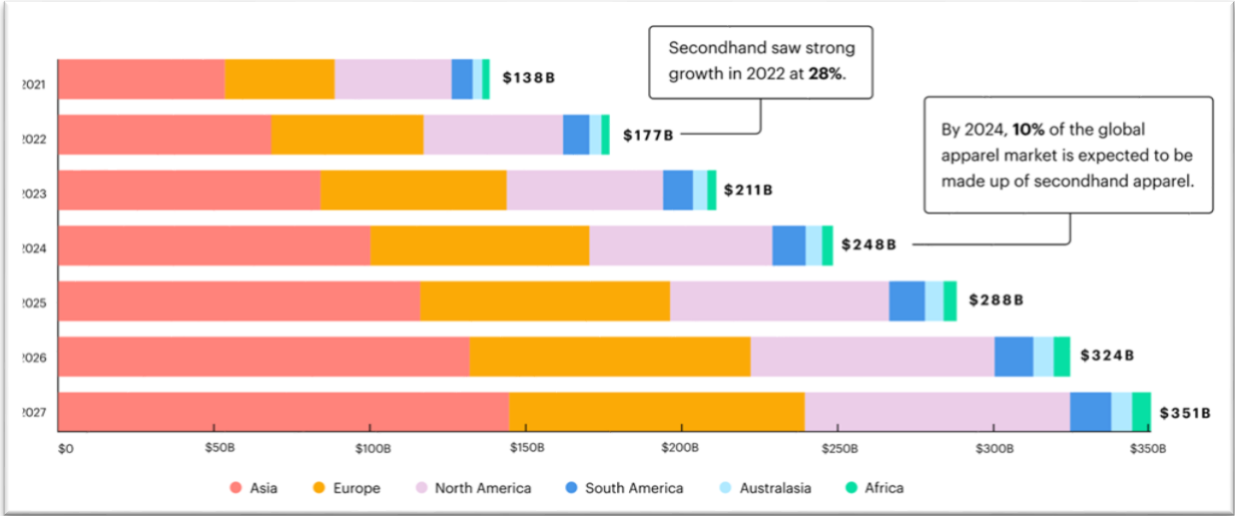


Figure 5: ThredUP-resale-report-2023 (thredUP, 2023)

The market for secondhand clothing could grow faster than the fast fashion industry as more people realizes the environmental, social, and economic advantages of thrift shopping (Figure 5). A recent report from thredUP (thredUP, 2023), an online consignment and thrift store, predicts that the global secondhand apparel market will increase by 127% by 2026.

Gen Z is concerned about sustainability. Brands can address this by upcycling products and reducing waste. They can also invest in the second-hand market to recycle and resell clothes, supporting sustainability (Wang, 2021). Gen Z expects brands to speak out and act on social issues. Brands should align with causes that resonate with Gen Z, as seen with Nike's partnership with Colin Kaepernick, which led to record sales.

3.3.2 Online Second-Hand Shops (OCR)

Online clothing resale (OCR), these platforms facilitate the procurement and redistribution of second-hand clothing items (Armstrong & Park, 2020). While the concept of second-hand trade is not

new, technological advancements have greatly expanded the capacity of this industry. Online platforms like Tise.no and Finn.no have made it easier for buyers and sellers to connect, effectively creating a substantial marketplace for used clothing. Online resale platforms have the potential to promote sustainability in the fashion industry by extending the life of clothing items and reducing waste. The convenience of online shopping has made it an integral part of modern consumer culture, especially among young people. However, challenges related to packaging, transportation, and user interaction need to be addressed to maximize their environmental benefits (Armstrong & Park, 2020).

The survey finding from the article by (Charnley et al., 2022) highlights the positive impact of online platforms and tools on the purchasing behaviour of consumers in the second-hand fashion (SHF) market (Figure 6).

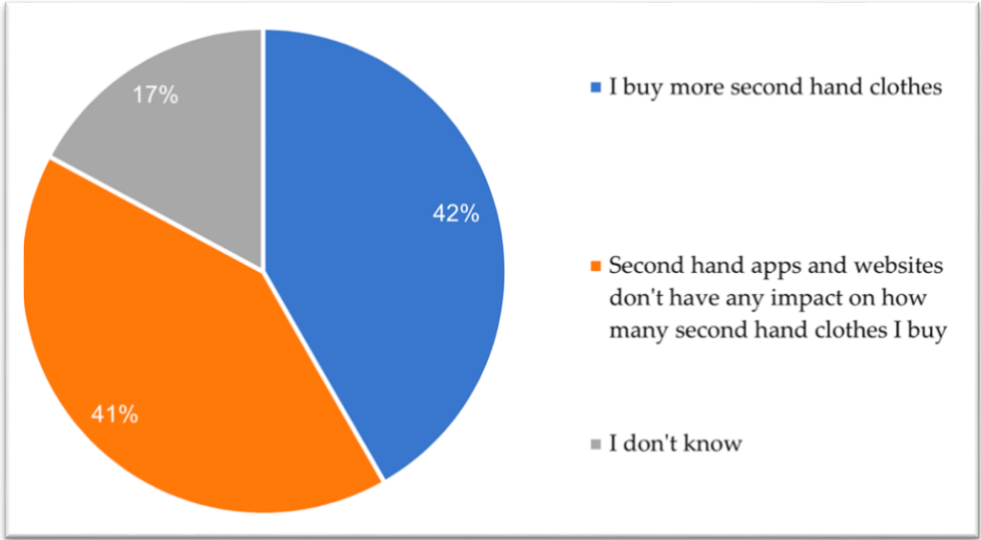


Figure 6: : Representation from the age 18-24 (Charnley et al., 2022).

42 % reported an increase in their SFH purchases since the introduction of dedicated applications and websites. The data also shed light on overcoming inconvenience and ease of finding specific items (Charnley et al., 2022). Online solutions offer a wider selection and makes it easy for consumers to find specific items compared to the in-store experience.

These findings emphasize the role of online platforms in enhancing the accessibility and convenience of the second-hand fashion market, particularly among younger consumers. The result suggest that dedicated applications and websites are not only expanding the reach of the SFH market but also contributing to an increase in the sustainable fashion consumption (Charnley et al., 2022).

While Generation Z consumers are increasingly drawn to buying and selling used fashion products on online sale platforms, it remains uncertain whether they will continue to engage in this sustainable

consumption pattern. Research has found that motivations behind consumers' participation in online fashion resale, such as financial savings, access to a variety and unique items and affordability of high-end fashion. However, how these motivations influence Generation Z consumers' intentions to continue participating in online fashion resale has not been thoroughly examined (Liu et al., 2023).

This chapter concludes with a focus on online shopping interactions, specifically targeting Generation Z and millennials as primary consumers of second-hand fashion. The positive impact of online platforms on sustainable fashion consumption is highlighted, with an emphasis on the growing global resale market. The role of technology in influencing consumer behaviour and promoting sustainable practices in the fashion industry is a central theme, setting the stage for the subsequent theoretical exploration in chapter 4.

4. Theory

Sociological theories and studies within the field of Society and technology explore the intricate relationship between humans and technology, recognizing how they can influence each other (Irwin et al., 2020). Technology encompasses skills, methods, processes, and techniques for producing goods or services and conducting scientific research. It can refer to knowledge like techniques and processes, machines, computers, and specific equipment, or even be found in factories (Yegen, 2018). A broad spectrum of theories is trying to explore the correlation between technology and society and different perspectives that on this relationship. Two important viewpoints are: utopian (optimistic) and dystopian (pessimistic) perspectives on technology and socio-technological structures (Yegen, 2018). In everyday, these terms are discussed as various benefits and drawbacks of technology when pushed to extremes.

4.1 Utopia and Dystopia

From a utopian perspective, technology is portrayed as a tool for improving the quality of life, simplifying daily tasks, and improving communication. For instance, innovations like robot vacuum cleaners, robot grass clippers, and smart homes aim to make people's lives more convenient and comfortable. In contrast, the dystopian viewpoint highlights the potential risks associated with advanced technology (Yegen, 2018). It raises ethical questions about the use of artificial intelligence, human interaction with technology, and the consequences of creating human-like robots (Finkel & Krämer, 2022). It is important to explore both the advantages and disadvantages of technology through a dystopian perspective while also recognizing the benefits highlighted by the utopian view. Technology has permeated every aspect of our lives, influencing our physical actions and cognitive processes on various levels. Due to the pervasive impact of technology, we find it challenging to part with our smartphones and tablets. Many people feel lost without their smartphones, which have become repositories for their entire lives, including bank accounts, schedules, family interactions, and photos. Smartphones and television have access to the internet, and this has been the subject of both optimistic and pessimistic perspectives (Fisher & Wright, 2001). They help us organize our lives and provide the convenience of portability, but they also tether us to a constant cycle of checking messages and being readily available to others and society (Fisher & Wright, 2001). We need to start thinking about how these differing views represent the larger societal discussion about technology. This highlights the need to thoughtfully assess how technology influences our future, recognizing both its possible advantages and the risks associated with unregulated technological progress. It is important to carefully consider the overall impact of technology and communication technologies.

However, we should always keep in mind that whether technology is helpful or harmful depends on how we use it and why we use it.

4.2 Socio-technical transition theory

The socio-technical transition theory, also known as the multi-level perspective (MLP), provides a framework for understanding and analyzing processes of societal change towards sustainability (Irwin et al., 2020). It provides a lens through which we can examine how societies have changed from one socio-technical regime (dominant production and consumption systems) to another that is more sustainable. Socio-technical transition theory aims to understand these changes better to help societies shift toward more sustainable ways of living. By studying past historical events and how things have evolved, socio-technical transition theory hopes to provide useful advice on how we can live more sustainably in the future (Irwin et al., 2020).

Socio-technical transition theory understands that achieving sustainability means making big changes, not just small ones. It looks at three main levels: the little changes happening in a specific area (niche), the bigger systems in place (regime), and the overall context (landscape) (Irwin et al., 2020). Figure 7 illustrates the interconnection of the three central levels within a multi-level perspective (MLP), resembling a hierarchy (Geels, 2002a).

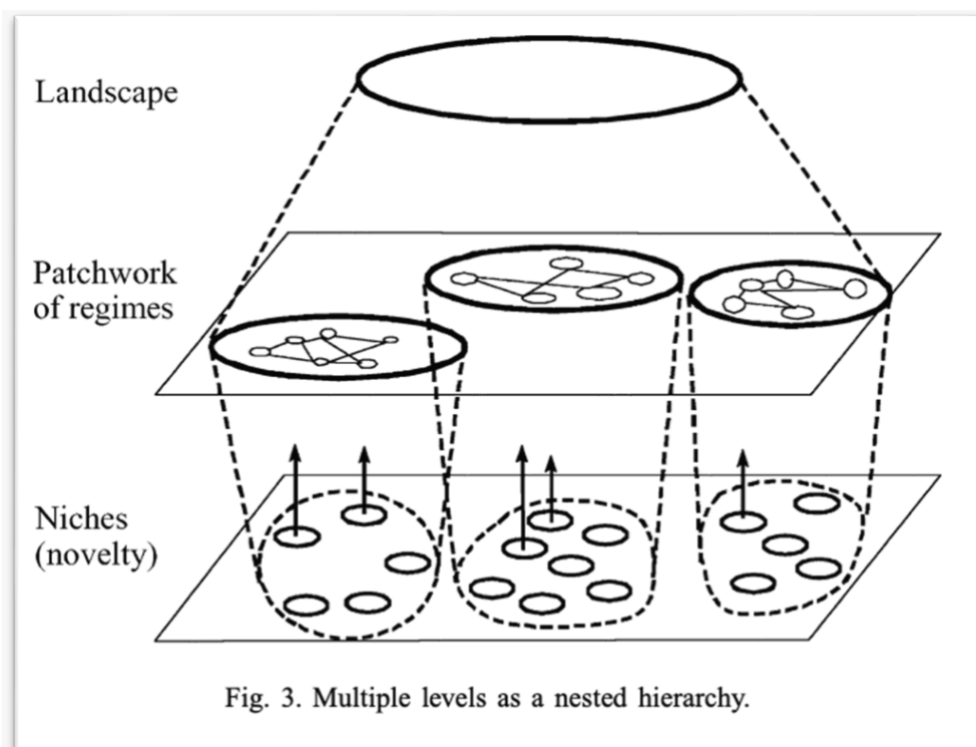


Figure 7: The MLP hierarchy (Geels, 2002a).

Niche level

The niche level (micro-level) is where new and innovative ideas, technologies, and practices come up as alternatives to the current dominant system. These innovations usually begin on a small scale and can challenge established norms and practices. The niche level is important as it allows for experimentation and learning and can potentially challenge and disrupt the existing regime. They offer new possibilities and demonstrate the potential for more sustainable ways of organizing societies. The niche level is characterized by diversity, experimentation, and learning from them (Geels, 2002a; Irwin et al., 2020).

Regime level

The regime level (meso-level) refers to the dominant socio-technical regime that controls how society works. It includes all the rules, institutions, and practices currently in place for production and consumption (Irwin et al., 2020). It represents the established systems and structures that govern how things are produced, distributed, and consumed. For instance, think of the way we use fossil fuels for energy or how traditional transportation systems operate. This regime level is characterized by stability and does not like to change. It is deeply rooted in society and has strong support from influential groups and interests (Geels, 2002a; Irwin et al., 2020).

Landscape-level

The landscape level (macro-level) represents the broader socio-cultural, economic, and political context in which transitions take place. It is influenced by factors such as culture, rulers, and market dynamics (Irwin et al., 2020). The landscape level sets the broader conditions within which niches and regimes operate. For example, if people start caring more about the environment, it creates an opportunity for sustainable practices and technologies to become more accepted. However, if some strict rules and policies favor old ways of doing things, it can be a barrier to change. This level can create windows of opportunity or barriers to sustainable transitions (Geels, 2002a; Irwin et al., 2020).

Socio-technical transition theory suggests that when these three levels – the small-scale experiments (niche), the big established systems (regime), and the broader context (landscape) – interact, that is when you get sustainable changes (Irwin et al., 2020). It is not a straightforward process; it is messy, with conflicts and learning along the way.

The theory emphasizes how important it is to grasp how the niche, regime, and landscape levels interact and work together to successfully guide sustainability transitions. When people understand the socio-technical transition theory, researchers, policymakers, and practitioners can get valuable insight on how encouraging and backing sustainable changes. They can also spot what is blocking

progress and where chances lie, allowing them to create plans and policies that facilitate transformative change at multiple levels of society (Irwin et al., 2020).

Multi-level Perspective

The multi-level perspective emphasizes that transitions occur through interactions and dynamics between these three levels. Niches are like test areas where new ideas and ways of doing things are tried out. If these ideas work well, they can grow and challenge the established way of doing things (the regime). However, the regime often resists change. The landscape, which includes things like rules and values in society, can help or hinder these changes. The multi-level perspective helps us understand the dynamics and tensions involved in sustainability transitions. It highlights that niches are where new ideas start, regimes are the powerful current ways of doing things, and the role of the landscape in shaping the conditions for transitions. By studying these interactions and understanding how niches, regimes, and landscapes work together, policymakers, researchers, and practitioners can identify leverage points and strategies to support and facilitate sustainable transitions (Irwin et al., 2020).

4.3 Theory of Needs

In our daily routines, we seek to fulfil various needs through different practices. Unsustainability arises because many things that satisfy our needs come from external sources, and local communities often lack control over meeting their own needs (Shove & Walker, 2010). The concept of “satisfiers” refers to elements within a practice that fulfils our needs. For instance, locally grown food consumed socially satisfies not only sustenance but also accretion, understanding and participation needs. Effective integration of satisfiers can simultaneously fulfil multiple needs, enriching everyday life and promoting sustainability (Shove & Walker, 2010).

Within the context of lifestyles and everyday life, understanding how people are satisfying their needs is a key strategy for developing sustainable solutions. We believe that everyday life is essential when it comes to making sustainable changes. It happens when people try to meet their needs through different activities. The reason it often does not work well or is not sustainable is that many of the things that fulfil these needs come from outside the local community. In simpler words, local communities do not have control over how they meet their own needs (Irwin et al., 2020).

We have failed to differentiate between needs and how we fulfil those needs, Max-Neef addresses this as “conceptual shortcoming” (Max-Neef, Manfred A., 1991). As a result, needs appear to be endlessly variable and expandable, influenced by culture, environment, and historical context. According to Max-Neef, it is not our needs that are constantly changing and endless but rather the ways we fulfil those needs (Max-Neef, Manfred A., 1991).

Our daily lives revolve around meeting our needs, like food. How we meet these needs shapes our lives; for instance, growing food can fulfil our hunger and sense of connection and understanding. When these aspects align, they satisfy multiple needs, enriching our daily lives (Irwin et al., 2020). Figure 4 illustrates a few elementary needs and the “satisfier” that is used to fulfil these needs, modified from Max-Neef et al. book (Irwin et al., 2020).

4.4 Max-Neef Theory of Needs

Within the context of lifestyles and everyday life, understanding how people are satisfying their needs is a key strategy for developing sustainable solutions. We believe that everyday life is essential when it comes to making sustainable changes. It happens when people try to meet their needs through different activities. The reason it often does not work well or is not sustainable is that many of the things that fulfil these needs come from outside the local community. In simpler words, local communities do not have control over how they meet their own needs (Irwin et al., 2020).

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Our daily lives revolve around meeting our needs, like food. How we meet these needs shapes our lives; for instance, growing food can fulfil our hunger and sense of connection and understanding. When these aspects align, they satisfy multiple needs, enriching our daily lives (Irwin et al., 2020). Figure 8 illustrates a few elementary needs and the “satisfier” that is used to fulfil these needs, modified from Max-Neef et al. book (Irwin et al., 2020).

Needs <i>universal</i>	Satisfiers <i>unique to time/place/culture</i>
Subsistence	<i>Food, shelter, clothing</i>
Participation	<i>Associations, churches, councils</i>
Protection	<i>Healthcare, shelter</i>
Affection	<i>Friendship, family</i>
Creation	<i>Workshops, cultural groups, craft, music</i>
Understanding	<i>Literature, education</i>
Transcendence	<i>Meditation, religion, spiritual practices</i>
Identity	<i>Customs, traditions</i>
Freedom	<i>Equality, political organizations</i>
Idleness	<i>Games, parties, sun bathing</i>

Figure 8: Simplified rendition of Max-Neef et al.'s matrix of needs (Irwin et al., 2020).

Take clothing, for example; it is not a fundamental need but serves to satisfy our need for comfort and warmth, among other things. If various types of clothing become available and desirable, it is inaccurate to claim that our “need” for clothing is growing. Instead, the options for satisfying our need for comfort and warmth are increasing (Irwin et al., 2020). Without distinguishing between needs and how we satisfy them, it might seem like our “needs” are always expanding as new ways to satisfy them emerge. To illustrate further, it would not make sense to say that Europeans “need” clothing made from cotton or wool while people who live in the Arctic regions of Canada, Greenland, or Alaska “need” fur clothing. Both types of clothing serve the same fundamental need for warmth and comfort but vary based on social, cultural, and environmental factors (Irwin et al., 2020).

4.5 Social Practice Theory

Social practice theory suggests that people's actions are not simply individual choices, but are instead shaped by the norms, values, and expectations of their social networks and cultural contexts. It looks at how people engage in practices, recruit others to join them, and how they can be encouraged to adopt more sustainable practices (Hargreaves, 2011).

For example, a person may be more likely to recycle if their friends and family members also recycle, or if there is a strong cultural norm in their community that supports this behaviour (Irwin et al., 2020). As an interaction designer, I might create a product or service that promotes a more

sustainable behaviour, then use marketing and communication strategies to encourage its adoption and help create a cultural norm around that behaviour. By considering the social, cultural, and economic context in which people's actions take place, social practice theory provides a way to design interventions that are more effective, efficient, and equitable (Irwin et al., 2020).

Practices

Social practice theory takes a closer look at the myriad of individual “practices” that make up people’s daily routines, such as bathing, eating, driving, dressing, and shopping. It views these practices as the fundamental unit of analysis and focuses on how they contribute to both individual well-being and environmental degradation through repeated, daily actions (Irwin et al., 2020).

Practices are essentially performances. They come to life and continue through action, through the act of doing. Each time people engage in a practice, they reinforce the connection between various parts. For example, a ball alone is not enough for a game; you also need the concept of playing, people to play with, and some level of skill (Shove et al., 2012). This highlights the idea that practices are not solely dependent on physical objects or materials (represented by the “ball” in this example). Instead, they emphasize that practice involves a combination of various elements. Practices are holistic and multifaceted, involving not only physical objects but also knowledge, social interactions, and skills. It highlights the interconnectedness of the elements in the performance and reproduction of practices within a social context.

Consumption practices

In social practice theory, there are diverse methods of defining practices and developing new ones. Different theories emphasize various elements within a practice. Science and Technology Studies (STS) and social theories of consumption and practice are presented by Ingram, Shove, & Watson (Ingram et al., 2007). This approach recognizes that products and technologies are not merely static objects but are deeply embedded within the routines and behaviours of people’s everyday lives. Consumption practices can drive the creation of new products more than specific design challenges (Ingram et al., 2007).

This illustration (Figure 9) emphasizes the importance of examining both products and practices, not just at the point of sale, but also throughout their integration into people’s lives to gain a comprehensive understanding of product design. (Figure 9) depicts how a product cycle typically ends when it reaches the market, just as people start using it. It is essential to recognize that the reverse sequence is equally valid. As illustrated in Figure 2 (Figure 9), consumer behaviours, including the materials, symbols, and procedures they employ, evolve, creating opportunities for designing new products. When we combine these two figures, we end up at Figure 3 (Figure 9), representing a

cyclical model of design and consumption. This model can inspire new designs and products, which, in turn, can inspire further innovative designs (Ingram et al., 2007).

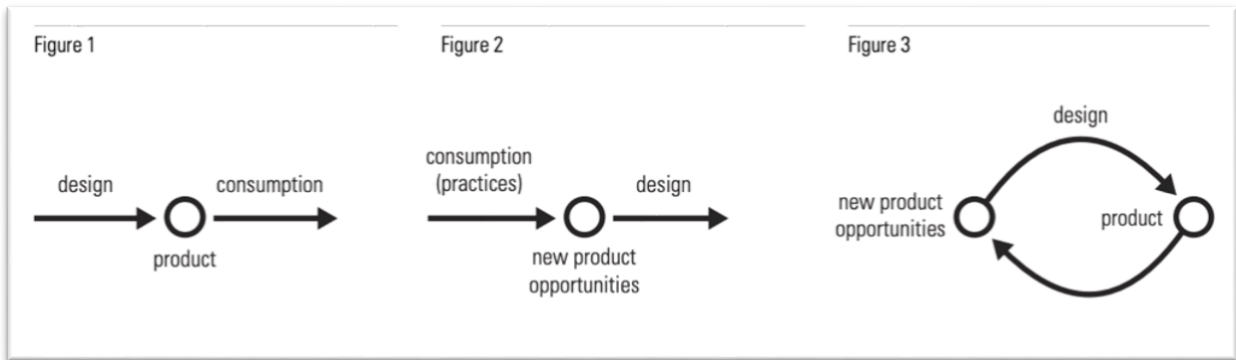


Figure 9: The design-consumption cycle, which illustrates how consumption practices can drive the creation of new design (Ingram et al., 2007).

Studying products and technologies in isolation from theory-embedded practices can lead to a limited understanding of their societal impacts. Instead, by adopting an interdisciplinary approach that draws from STS and social theories, researchers can gain a more comprehensive perspective on how products, technologies, and practices interact and influence one another (Ingram et al., 2007).

Summary

In this chapter, I have explored the intricate relationship between society and technology, examining perspectives on technology's impact. Transition theories, like socio-technical theory, details a shift toward sustainability through niche, regime, and landscape levels. The theory of needs, inspired by Max-Neef, stresses local fulfillment, and differentiates needs from their satisfaction. Social practice theory highlights action shaped by social norms guiding sustainable interventions. These foundational theories serve as a cornerstone for the ongoing exploration within this thesis.

5. Methodology & Method

Considering my emphasis on sustainable fashion and encouraging people to opt for second-hand shops, Transition Design and Research through Design are both relevant methodologies to use in this thesis, each described in a subsection below.

5.1 Transition Design

Transition Design is a contemporary design methodology addresses complex, systemic challenges and promote sustainable and resilient outcomes. It recognizes the urgent need for societal transformation and emphasizes the design's role in facilitating this transition (Irwin, 2015a). A significant advantage of Transition Design lies in its capacity to confront "wicked problems", which are intricate, interrelated issues that defy straightforward solutions. These challenges involve a wide spectrum, from addressing the hunger crisis and preserving biodiversity to coping with the climate crisis and broader sustainability issues (Irwin, 2015a). Transition Design is a holistic approach to addressing complex, systemic, and long-term challenges by focusing on creating sustainable and impartial transitions. This methodology focuses on making changes that are good for the environment and fair for everyone. It employs various methods and numerous tools to facilitate the implementation of changes. It is possible to compare it with a giant toolbox for solving complex problems that affect the environment, society, and how things work while ensuring fairness for all. It makes you understand that tough problems need smart flexible solutions that consider all the challenges. Irwin (2015) argues that transition design is not just about designing products or services, but about creating systemic change. She highlights the importance of designing for resilience and creating adaptable solutions that can evolve (Irwin, 2015a).

The Framework for Transition Design

The Transition Design framework comprises four fundamental building blocks for designing transitions, helping us examine where efforts are positioned within the broader context. Knowledge, action, and self-reflection, each mutually supporting and evolving alongside the others (Irwin, 2015a). As shown in (Figure 10), the framework comprises four distinct areas, each with its own proposed practices and explanations of how they influence one another.

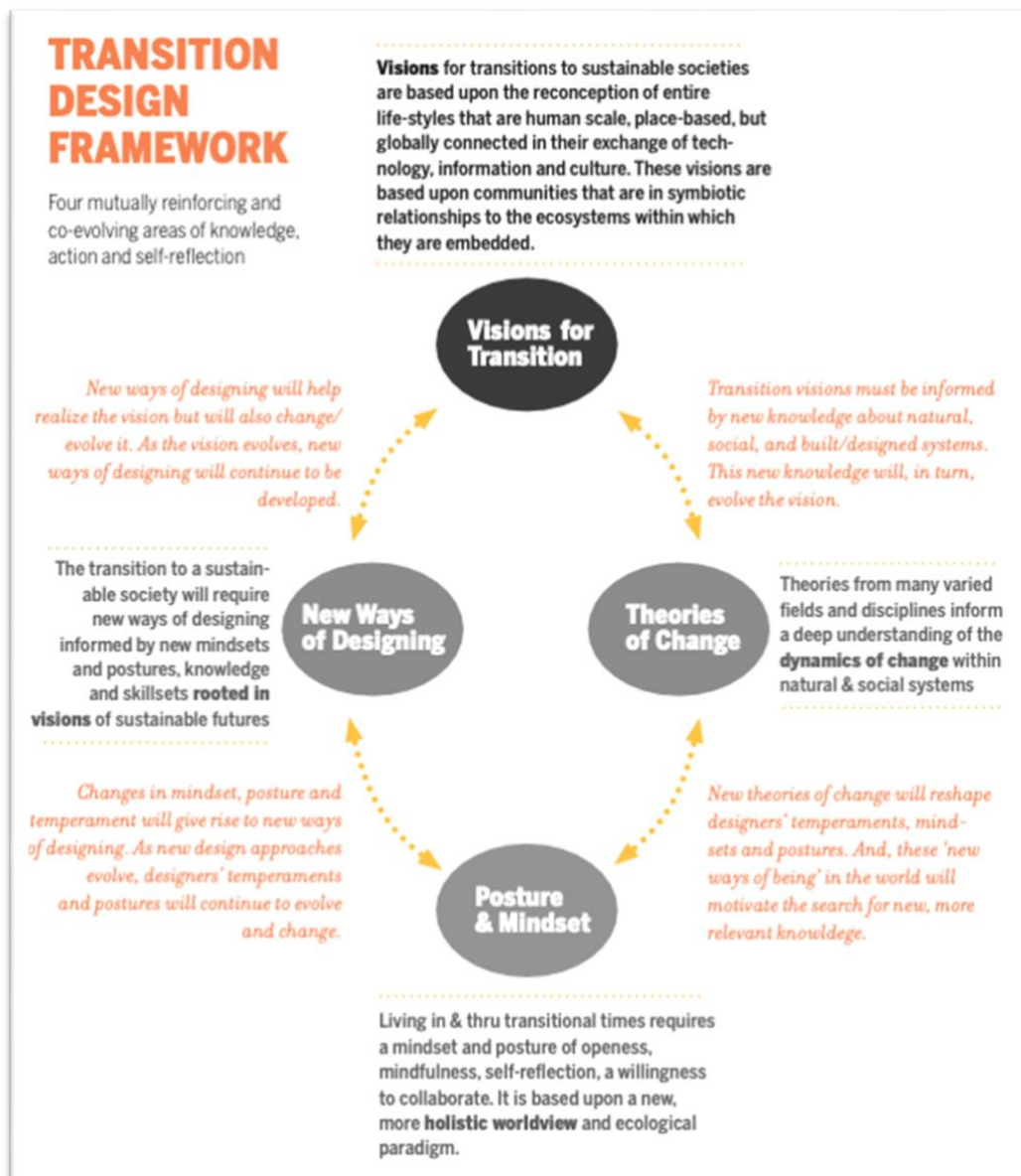


Figure 10: Transition Design Framework (Irwin, 2015b)

Let us explore these four elements: 1) Visions for Transition, 2) Theories of change, 3) Posture and mindset, and 4) New ways of Designing.

1) Visions for Transition

In Transition Design, it is suggested that we need inspiring visions of the future to guide our present projects. Design tools and methods can help create these visions. A vision in transition design is not a fixed plan or blueprint, but rather a flexible and adaptable idea that evolves as new information and insights are gained (Irwin et al., 2015). Visioning lets us discuss different futures and think about new ways of living. It asks us to forget how things are now and imagine how they could be. It provides a direction and purpose for the design process and sets a long-term goal for the transition toward a more sustainable and resilient future (Irwin et al., 2015).

2) Theories of change

In transition design, the theory of change is like a road map. It helps us see where we want to go and how to get there. This theory gives us a method to understand why problems happen and how to come up with solutions that work. Importantly, this roadmap is not fixed – it can change as we learn more, and the transition unfolds. It guides the design process to ensure we reach our desired goals. The theories of change in this framework are like treasure chests of different ideas and knowledge. They come from various fields, not just design, and they help designers think in new ways to create a more sustainable future (Irwin et al., 2015).

3) Posture, Mindset and Values

Living in times of change requires us to reconsider our perspectives and how we fit into the world. Our personal beliefs, values, ideas, and expectations are shaped by our life experiences, the culture we belong to, our religious or spiritual beliefs, and even the political and economic environment surrounding us. These ways of thinking significantly influence how we perceive problems and approach their solutions, especially in the field of design (Irwin et al., 2015).

Transition Design encourages designers to closely examine their own set of values and how these values impact their design work. It suggests that some of the most innovative solutions can arise when we embrace new ways of thinking and view the world from a fresh perspective (Irwin et al., 2015).

4) New ways of designing

Terry Irwin's innovative design approach, as seen in Transition Design, focuses on looking at the bigger picture, teaming up with different experts, and getting people involved in solving sustainability issues (Irwin, 2015). She believes in designing for profound changes in how things operate, not just making products or services better. This means looking at the whole system, understanding how society, the economy, and the environment are all connected. It also means bringing together different fields and viewpoints. Irwin also highlights the significance of participatory and co-creative design processes. Involving stakeholders and communities in the design process promotes ownership, empowerment, and shared responsibility for sustainability transitions (Irwin, 2015).

5.1.2 Research through Design (RtD)

“In Research through Design (RtD), researchers generate new knowledge by understanding the current state and then suggesting an improved future state in the form of design. It involves deep reflection in iteratively understanding the people, problem, and context around a situation that researchers feel they can improve” (Zimmerman & Forlizzi, 2014).

Research through Design (RtD) is all about creating things to make discoveries. It is like building stuff to learn (Gaver, 2012; Srivastava, 2017; Zimmerman et al., 2007; Zimmerman & Forlizzi, 2014).

In contrast, commercial design mainly aims to create successful products (Zimmerman & Forlizzi, 2014) in their paper, (Zimmerman & Forlizzi, 2014) suggest three strands of RtD, the first that they call the Lab (originating from experimental design), the Field (with participatory design origin) and the Showroom (speculative and critical strand of RtD). In my work I have mainly used the Field approach.

This model (Figure 11) highlights the importance of treating interaction design as a design discipline and has helped establish a common understanding of research in interaction design. It also supports three vital interfaces for interaction design: one connecting it to industry, another to academia, and the third to society. These interfaces enhance collaboration, academic traditions, and social contributions (Fallman, 2008). By combining these three aspects, interaction design research becomes a unique field, separate from related areas like Human-Computer Interaction (HCI), Computer-Supported Collaboration Work (CSCW), Informatics, Computer Science, Anthropology, Sociology and Philosophy. This model is a fundamental framework for interaction design research (Fallman, 2008).

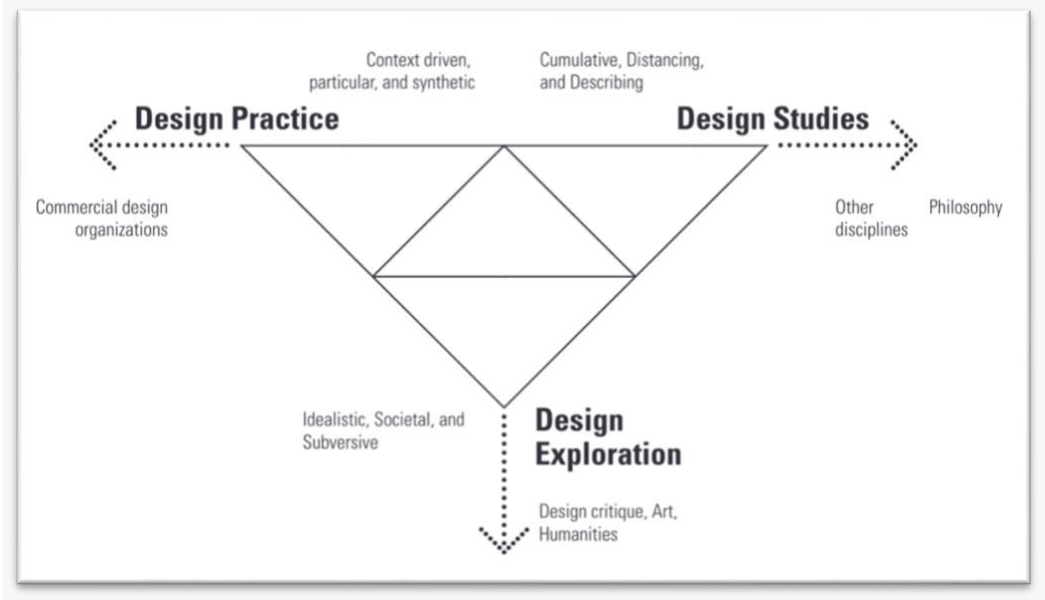


Figure 11: Fallman's triangle design research model (Fallman, 2008).

The interaction designs a research model shaped like a triangle (Figure 11), which can help us understand where research activity falls. They are defined by three main aspects: “design practice,” “design studies,” and “design exploration” (Fallman, 2008).

Design practice:

Developing a real artifact with useful components is a big part of design practice. The interaction designer actively participates in real-world design settings. They keep a clear research question in mind or make one as they work. This question can cover various areas, from design techniques to communication strategies. The research may take a reflective or proactive approach, leading to distinct collaboration methods. This mix of doing things in practice and thinking like a researcher is a key feature of this domain (Fallman, 2008).

Design exploration:

This means guessing how something could be used in different situations. In interaction design, design exploration is like breaking the rules and asking, “What if?” Researchers often start it themselves, experiment, and make things that make you think. This approach gets people talking, cares about how things look, and tries to balance creativity with science in research (Fallman, 2008).

Design studies:

Design studies in interaction design research are the academic side of the field. It is all about learning and creating a scholarly tradition. Researchers here analyse design theories, methods, history, and philosophy. They often borrow ideas from other fields. They systematically explore how designs lead to desired results systematically (Fallman, 2008). Design studies also connect with human sciences, looking at how social and historical factors affect design. It dives into how designers work, how things they create function, and what they mean in different situations. Unlike design practice that focuses on making things, Design Studies aims to understand and gather knowledge over time (Fallman, 2008).

5.1.3 Combining Transition Design & Research through Design

As an interaction designer, I view sustainability in the textile industry as the ability to make a change in the world. To address this “wicked problem” in the textile industry, Transition and Research through Design offer a valuable framework for placing my project within sustainable clothing consumption. The triangle (Figure 12) helps me understand the theoretical insights and practical changes (Culén, 2023). Both Transition Design and Research through Design can be combined as methodologies to address this issue.

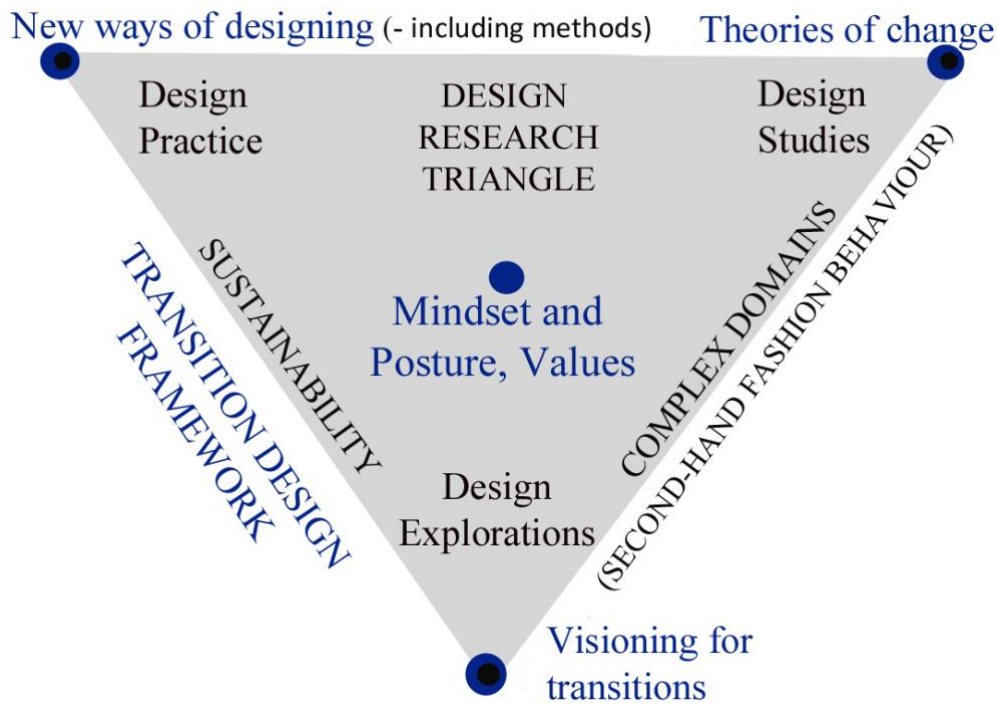


Figure 12: The framework integrating Fallman's (2008) design research triangle, Transition Design framework (Irwin, 2015b)
Source: (Culén, 2023)

This triangle combines Fallman's triangle (Fallman, 2008) in black, and transition design framework (Irwin, 2015a) in blue, and second-hand fashion behaviour as the specific complex domain (Culén, 2023). This explains the relationship between them and was useful in the communication of Research through Design and the main building blocks for designing for transition, new ways of designing, posture and mindset, theory of change and visions. This blending of second-hand fashion practices helps designers understand how technology, human needs, and social context work together for sustainable change. Key aspects of rethinking sustainability, like studying real-life situations, creating models for new technology and using creative methods such as drawings to explore design ideas, fit well with the core principle of transition design (Culén, 2023). These ideas also work together when designing sustainable fashion ideas. This shows that effective design relies on combining these elements. Leaving any of them out can lead to less successful design results (Fallman, 2008; Irwin, 2015a). In the following chapter 6, I clarify my application of Transition Design and Research through design.

5.2 Data Collection Methods

5.2.1 Research through Design (RtD)

In the context of Research Through Design (RtD), I used design methods and practices as part of the research process to explore possible interventions that might contribute to generating new knowledge concerning my research question: How can a second-hand store application be designed

to engage both store owners and users, at the niche level, to increase sustainability in the fashion industry?

While the specific methods used in RtD can vary based on the research context, the goals of the project, and the preferences of the design researchers, I have relied on interviews, observations, photo documenting, exploration of possible interventions (looking and searching for examples of similar work), sketching, and prototyping. I describe how I used interviews and observations next.

5.2.2 Interview

“The term ‘interview’ originates from the French word ‘entrevue,’ which means ‘interview,’ and those engaged in an interview aim to arrive at shared opinions (‘inter’ means ‘between,’ and ‘view’ denotes ‘opinions’). Knowledge is thus generated through the interaction between the researcher and research participants” (Postholm & Jacobsen, 2018).

I aimed to carry out semi-structured interviews, using an interview guide as an overall starting point (see Appendix 2). This approach offers flexibility in terms of question sequence and topics to explore (Johannessen, 2021). The selection of the research method is primarily guided by the research question. In this case, as I intend to delve into the experiences of shop owners regarding this phenomenon, interviews prove to be an appropriate choice. In this study, I conducted interviews with either business owners or general managers (five different stores) from various types of second-hand enterprises in both Norway and Sweden. Given the limited scope of my research involving physical stores, ensuring a diverse pool of participants was imperative. This diversity increased the likelihood of uncovering a broad spectrum of themes relevant to my research question. Engaging with knowledgeable informants offers the advantage of obtaining high-quality data in a relatively short period (Johannessen, 2021).

I prepared questions for a semi-structured interview to allow for the emergence of unexpected themes and to delve deeper into intriguing topics that the interviewees might introduce. Each interview typically spanned between 10 to 20 minutes, during which I aimed to gain insight into the store’s current utilization of technology. I inquired about their familiarity with existing technology and explored the prospects for future advancements. In addition, I also conducted interviews with my co-workers (approximately 40-50 participants), who are flight attendants, spanning a wide age range from 20 to 60 years. These discussions focused on the starting process, evaluating the usability of the application, and exploring possibilities for improvement.

Although I extended invitations to anyone interested, I deliberately chose individuals actively engaged in selling and buying used clothing. This variety of perspectives enables me to gain a

thorough comprehension of both the achievements and difficulties within the second-hand market. I aimed to closely capture the realities and the challenges in the second-hand market and technology.

5.2.3 Documentation

Observation

Observation is a method used in qualitative research where the researcher actively observes and records the behaviour, actions, and interactions of participants in a specific setting or environment (Christoffersen & Johannessen, 2012). The goal of observation is to understand the experiences and perspectives of the participants and to gain insight into the social phenomena being studied. In my research, I have employed both passive and active observation methods.

Passive (covert) participant observation (Figure 13), as described in Dawn Brancati’s article (2018), involves researchers observing and documenting the behaviour of their subjects in their natural environment without engaging or interacting with them (Brancati, 2018). The advantage of passive participant observation is that you will receive accurate and precise information about your subjects because you will not be able to interact with them to change their behaviour in any way (Christoffersen & Johannessen, 2012).

In active (overt) participant observation (Figure 13), researchers engage with their subjects and immerse themselves in the everyday life of the groups under study. The degree of researcher engagement can vary, with some opting for interviews as their primary interaction method, while others become more deeply involved in every facet of their subjects’ lives (Brancati, 2018).

	Active	Covert
Advantages	better access to certain activities of subjects experience activities as subjects would experience them	subjects do not alter behavior in response to researcher’s presence (no guinea pig effect)
Disadvantages	researcher’s presence may alter behavior of subjects practices that researchers participates in may be dangerous or illegal greater risk of losing objectivity	potentially violates privacy of subjects and denies subjects right to consent to be studied

Figure 13: Advantages & disadvantages of active and passive observation (Brancati, 2018).

In my research, I employed active and passive observation methods to gain a comprehensive understanding of the second-hand shopping concept. I conducted active participant observation

through interviews with the store manager and engaging in conversations with some consumers. For passive observation, my focus was on observing the store's operations, including the staff and customers. This approach aimed to provide insights into the technology requirements of second-hand shops and their customers to better comprehend their needs.

Photos

Photography and the use of photographs have long served as a tool for ethnographic documentation. Photographs offer a mediated representation of reality, and they allow researchers to visually capture and document the culture, behaviour, and practices of a particular group or community (Crang & Cook, 2007). I employed photography to document various stores, capturing both their interiors and inventory. It served as a valuable research tool, helping me identify their specific needs. During my planning phase, I considered what information would be beneficial for technology integration and contemplated innovative ideas to introduce.

In the next chapter 6, I will elaborate on my application of the integrated framework (see Figure 12) developed by Culén (2023). This framework serves as a fundamental tool that guided and structured my thesis. It is important to explore the specifics of how this framework was employed to gain a deeper understanding of its practical implications within the context of my research.

6. Applying the combined framework

In this chapter, I will elaborate on my application of the integrated framework (see Figure 13) developed by Culén (2023). This framework serves as a fundamental tool that guided and structured my thesis. It is important to explore the specifics of how this framework was employed to gain a deeper understanding of its practical implications within the context of my research.

6.1 Posture, Mindset and Values

In my role as a consumer, researcher, interaction, and fashion designer, I strongly advocate for environmentally friendly fashion practices. While sustainability may seem straightforward in theory, the modern fashion industry, driven by rapid consumer demands, presents a multitude of complex challenges. These challenges underscore the pressing need for durable, long-lasting products and innovative business models that counter the prevailing trend of disposable fashion.

As an interaction designer, I perceive opportunities within the fashion industry to promote sustainable practices. My focus lies in comprehending the dynamics of the second-hand market and the associated challenges. By leveraging technology, I aim to facilitate a more sustainable approach to clothing consumption. My proposed solution involves the development of a user-friendly application that simplifies the process of shopping for second-hand clothes. Such an application would encourage individuals to adopt a more sustainable approach to acquiring clothing.

My motivation to explore and create this application for the second-hand market stems from economic considerations. I am driven by the desire to support independent second-hand stores that often lack the financial resources available to large fashion houses or extensive marketing campaigns. Many of these businesses struggle to navigate the fast-paced, ever-evolving world and grapple with attracting customers. Additionally, I recognize the significance of consumer economics, as offering affordable alternatives to fast fashion is a key aspect of this undertaking.

6.2 Visions for Transition

Visions for transition and design exploration in Research through Design (RtD) involve using design as a tool to envision and bring about significant societal and environmental changes. In this process, I combined my creativity, innovation, and collaboration with store owners to address complex issues and transition to a more sustainable and desirable future. I had to begin with visionary thinking and as a designer and researcher, explore the possibilities that challenge the status quo and imagine an alternative future. How to “vision” easy changes for the second-hand industry in collaboration with the stakeholders (second-hand store owners) and receive information gained through observation and interviews to design a new product or service. After developing these visions, the next step is to

align them with the real-world insight gathered from the methods, and this helps ensure that the visions are not purely hypothetical but grounded in the context's realities. It may also require adaptations or refinements of the original visions based on the feedback and information obtained. Within RtD I used design explorations that involved creating prototypes, artefacts, and concepts that embody the envisioned future. Designers use their creative and practical skills to translate abstract ideas into tangible, visual, and functional representations. These prototypes can range from physical models to digital simulations.

In line with Research Through Design (RtD) and design exploration, my approach includes conducting literature reviews, and field studies through observation and interviews. Investigating already online second-hand shops or other relevant businesses will help me get a profound understanding of the problem space, and gain knowledge and the context in which the vision for transition will operate through my research.

Methods in use

Observation

Observation in second-hand shops provides valuable insights into consumer behaviour, store operations, and the factors influencing these stores' success or challenges. During this active and passive participant observation, I made several key observations:

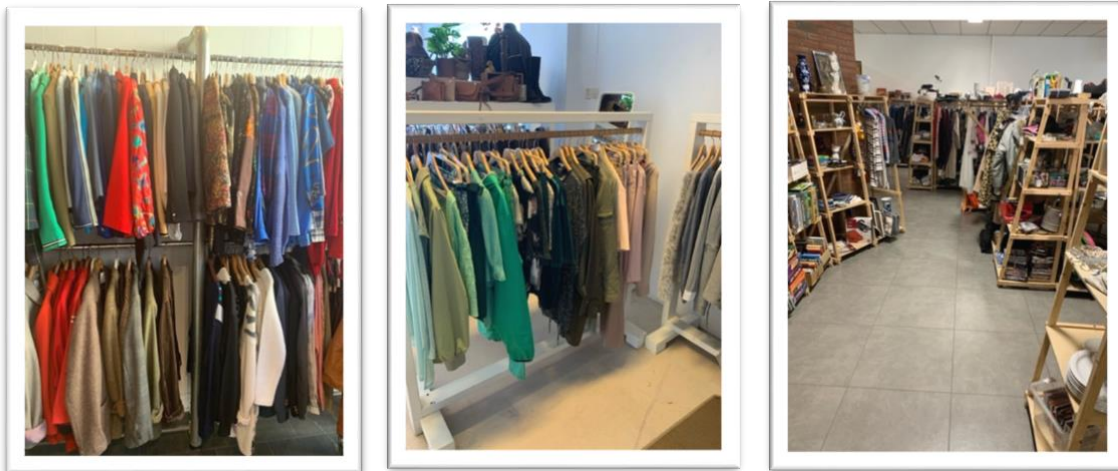


Figure 14: Second-hand stores and inventory.

Store Layout Importance:

The research revealed something important – where second-hand shops are located really affects how well they do. This means that being close to people, and easy to get to, is super important for these shops. Even if a shop looks nice or is well-arranged (Figure 14, middle picture), if it is not in the

right place, it might not get as many customers. This discovery inspired the idea of creating an application to help people discover hidden second-hand stores in convenient locations.

Customer Behavior:

This observation highlights an intriguing aspect of second-hand shopping that goes beyond mere consumption. For many customers, the act of visiting a second-hand shop becomes an experience. The stores have a special appeal to them, it is all about the fun of discovering hidden treasures and searching for one-of-a-kind items. Additionally, the preference for specific sections, such as tops and dresses, suggests that customers have areas of interest. These sections might hold a more prominent place in their fashion choices, reflecting their individual styles and tastes.

Brand attraction:

Active participant observation revealed a fascinating discovery: many customers came into the store with a clear mission to find items from specific brands. Customers were often in search of specific brands, influenced by outfits they had seen on the store's Instagram feed. This observation emphasizes the interconnectedness of online and offline retail experiences. It underscores the importance of a robust online presence and social media strategy for second-hand stores and the potential significance of incorporating such features into a second-hand fashion application. This insight highlighted the impact of social media in shaping second-hand shopping choices.

Pricing:

Observing and understanding how customers responded to the pricing, discounts, and promotions helped me understand the price sensitivity of second-hand shoppers. If they felt that they got value for their money, it was more likely that they would come back. They were all searching for bargains, and some were purchasing winter clothes in the spring. My observations underscore the significance of store location, the experiential nature of second-hand shopping, and the role of brand influence from social media.

Interviews

Interviews were carried out with a diverse range of second-hand business owners and general managers in both Norway and Sweden. A store owner in Sweden shared an interesting observation: they noticed an increase in customer visits after posting images of new items displayed in the store window on Instagram. Interestingly, these customers often came from other countries, such as Japan, in search of exclusive items from specific brands. This insight led the store owner to consider the potential benefits of creating a dedicated application for second-hand shops. Such an application could potentially attract a wider audience and boost sales for these businesses.

A general manager of a second-hand shop in Norway mentioned an interesting practice of advertising seasonal clothing sales on Facebook, including winter clothes in spring and vice versa. However, when we discussed their sales and events calendar for the year, she indicated that they did not have any additional promotions. She expressed concerns about the limited reach of their Facebook ads since users needed to be friends with the store or connected to people who liked the store's page to see the information. A different approach to this would be greatly appreciated.

Gathering knowledge

While exploring existing second-hand shop applications, I sought inspiration from platforms like Yelp.no, UNIQUE, Gullygarms and Newchic. A selection of these inspirational applications is depicted in Figure 15 below. My focus was on understanding their application structure, identifying intriguing elements, examining the categorization of item, and observing user-friendly navigation pathways. I would focus on identifying any sustainability-related features or initiatives promoted by the application. This included any information on the environmental benefits of buying second-hand. When presenting these applications to my users, I aimed to initiate a dialogue and gain insight into their needs for the development of a second-hand application.

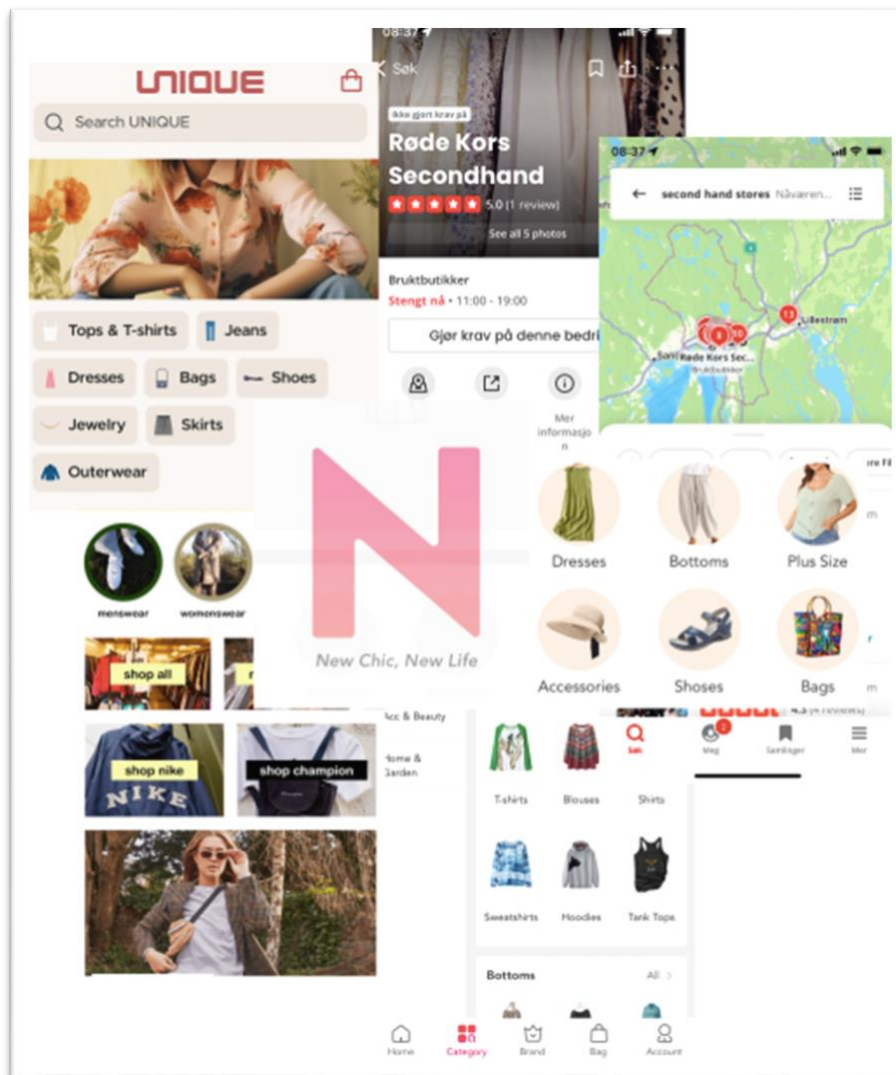


Figure 15: Inspiration from other second-hand applications.

6.3 New ways of Designing

New ways of Designing means looking at the whole system and how society, the economy, and the environment are all connected (Irwin et al., 2015). Throughout my research, I have delved into the understanding of customers of second-hand fashion, and our current economic situation. I have also explored the environmental impact of the fashion industry to gain a comprehensive understanding of the challenges we currently face. This requires a holistic approach, considering the entire system and acknowledging the interrelationship between society, the economy, and the environment. As discussed in the theoretical framework presented in Chapter Four, particularly drawing from social practice theory and the theory of needs, it is essential to gain a deep understanding of the individuals you are designing for and their lifestyles. This understanding should extend to how to fulfil the need

for clothing in a sustainable manner. By involving people, I aim to find ways to make it more convenient to purchase second-hand clothing. Developing an application that connects consumers with second-hand fashion, make it easy to find, buy, and sell used clothing items.

To generate new knowledge, I have used a research-oriented approach in a user-centered process, this involves creating low-fidelity and high-fidelity prototypes and developing artifacts that can be used to explore and understand a specific research question. Design practice in RtD often involves a user-centered approach. Designers create artifacts with the user in mind, aiming to understand their needs, behaviours, and preferences. I have investigated the needs for the stores in conducting observation and interviews, but also from literature and social practice theory.

Prototyping

I used prototyping to create a visual representation of the application's layout, user interface, and functionality. This allowed me to get a clear picture of the application's appearance. This involved both paper-based prototypes and digital simulations through Figma. Prototyping provides a tangible representation of the application that can be shown to potential stakeholders for feedback and validation.

Low-fidelity prototype

Low-fidelity prototyping is a design and development technique used to create simplified and basic representations of a product or system (Figure 16). These prototypes are typically rough, quick, and cost-effective, with the primary purpose of exploring ideas, concepts, and user interactions during the early stages of a design project.

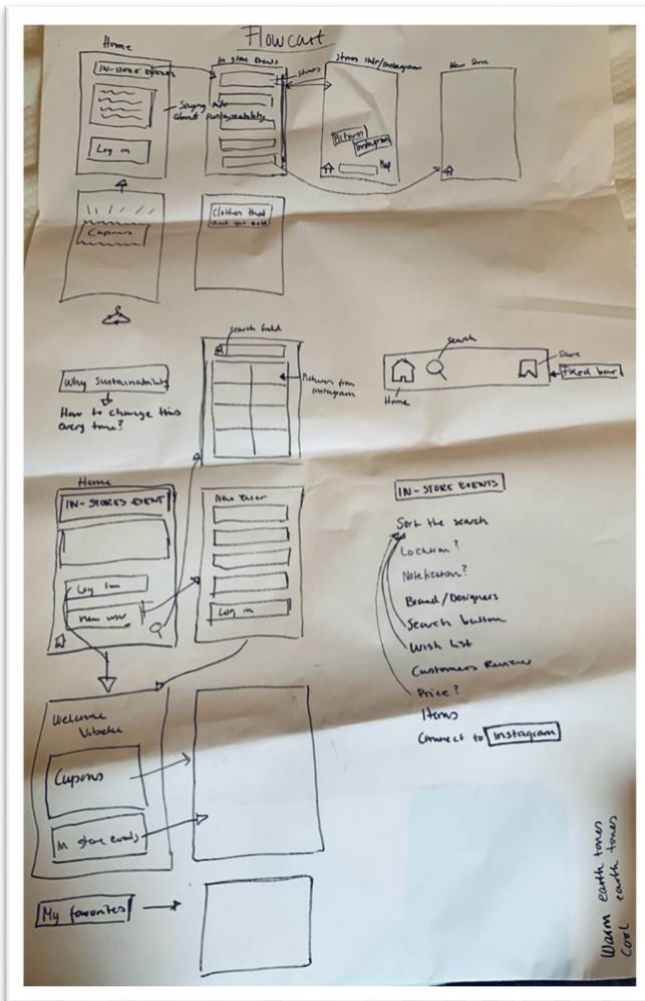


Figure 16: Low-fidelity prototype flowchart.

High-fidelity prototype

For my high-fidelity prototype, I opted for the design tool Figma.com.

This application is a good addition to the design tools for WordPress websites. The applications' main goal is to convert design into code, allowing web developers to directly access CSS and design assets. It combines features from different tools, streamlining your workflow, and it is excellent for creating websites or applications. It is a straightforward way to create web prototypes, and includes all the necessary design tools (*What Is Figma and Its Advantages?*, 2022). Figma allowed me to easily display the final interface on my phone for feedback. You can find the application showcased and described in Chapter Six.

6.4 Theories of change

The theory of change acts as a guiding roadmap, helping me to understand the root causes of problems and identify effective solutions, particularly in the context of sustainability within the

second-hand clothing industry. This roadmap is not rigid but adaptable, evolving as we learn more about the transition process. The significance of theories of change in design studies in the Research through Design (RtD) framework cannot be overstated. Designers are catalysts for significant societal and environmental changes. To achieve these changes, it is imperative to recognize the interconnectedness of society, the economy, politics, and the environment. Even when not explicitly articulated, a theory of change is inherently present in Research through Design.

The fundamental idea behind theories of change lies in the understanding our world is constantly evolving, and systematic transformations are essential for sustainability. To effectively steer and direct these changes, the integration of ideas, theories, and methodologies from various fields and disciplines is important (Irwin et.)

Among the diverse approaches identified as pertinent to Transition Design, I have focused on Social Practice Theory and Socio-Technical transition theory as discussed in the theory chapter. Social Practice Theory delves into how people engage in daily activities as a part of their social lives. Applied to second-hand consumption, Social Practice Theory focuses on the various social practices and behaviours related to acquiring, using, and disposing of second-hand items such as clothing. This concept is explored in-depth in Chapter Three, specifically addressing reacquisition and consumer behaviour. Socio-Technical Transition theory, on the other hand, focuses on making sustainable changes at different levels. My emphasis has been on the niche level, where small-scale changes and innovations within specific areas are occurring (Irwin et al., 2020). By introducing my application at this niche level, I can establish a dedicated user base and lay a robust foundation for potential expansion into broader markets. Figure 13 provides a preliminary depiction of the multi-level perspective, with a specific focus on an application design for the second-hand market. This model serves as an initial framework to explore the complex dynamics surrounding the development and implementation of such an application within the context of sustainable fashion. It visually outlines how various levels, including socio-technical niches, regimes, and landscape influence the potential success and impact of the second-hand application (Figure 17). Further development of this framework will provide a deeper understanding of the factors at play in promoting sustainable fashion choices within the niche level.

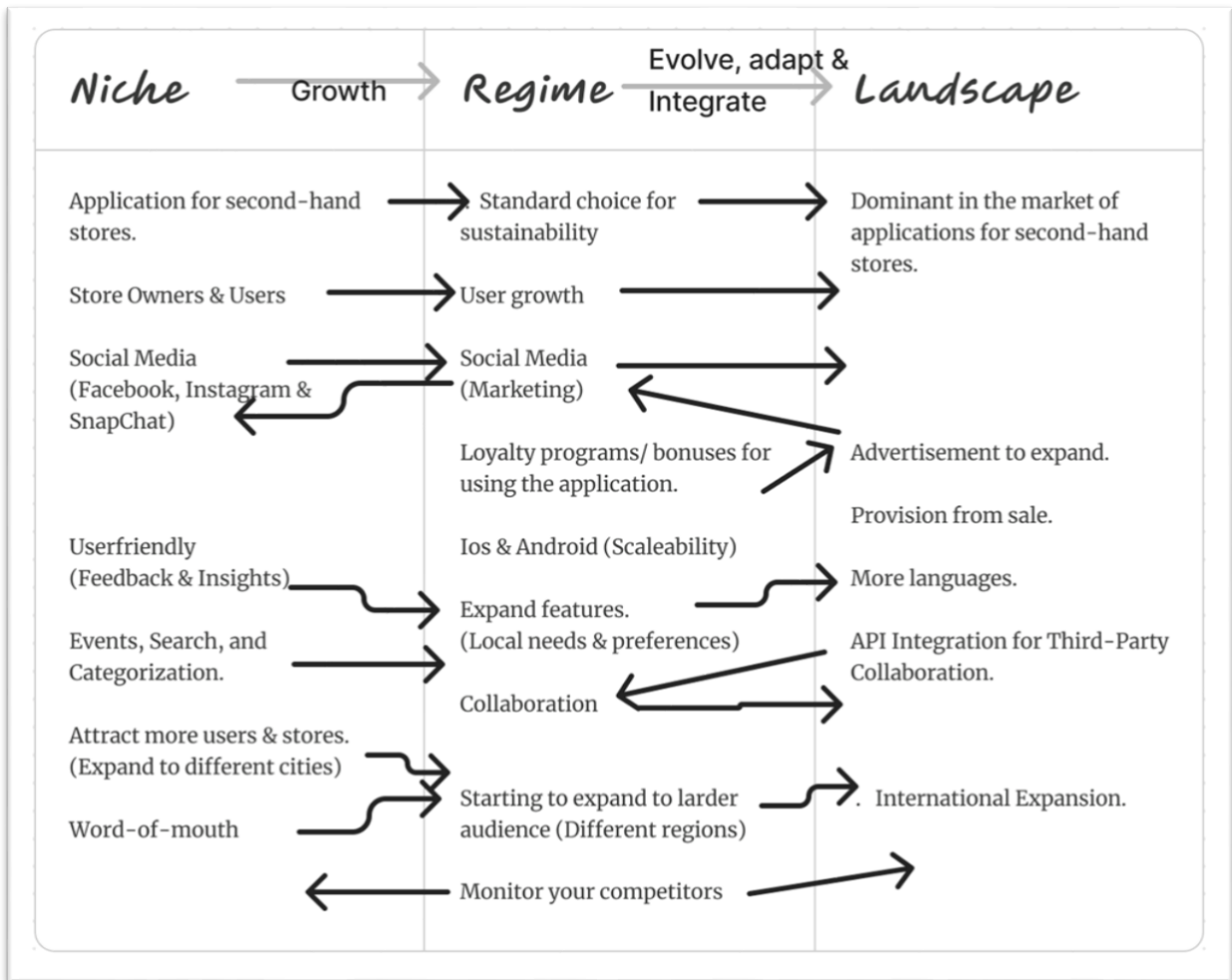


Figure 17: Model of the multi-level perspective of an application for second-hand stores.

To create a successful application for both second-hand store customers and employees, it is crucial to comprehend the unique characteristics of these user groups. This involves considering their demographics, interests, and behaviours. In the realm of design studies, I aim to gain a deeper understanding of how younger individuals interact with social media (SoMe) and various applications. Additionally, I need to acknowledge the technological challenges faced by employees in second-hand stores, many of whom may not be particularly tech-savvy. Given these factors, my top priority is to ensure the application's user-friendliness. It should be intuitive for both customers and employees, providing them with a seamless experience.

For this purpose, I must conduct thorough research to grasp the distinctive needs, challenges, and preferences of this specific audience.

The user insight will serve as a roadmap for customizing the application to meet their preferred needs, integrating features and design elements that connect with them. The user interface, functionality, and content should align with their preferences and expectations. To enhance

engagement, it is essential to provide content, services, or functionalities that truly matter to this specific audience. In Chapter 8 (Findings), I will explore the users' insights regarding the development of this application, highlighting specific area they emphasized, such as pricing, events, marketing strategies, visions, community building, and establish connections with online and offline communities and forums relevant to this user group.

7. Design Considerations Developing the Application and Its User Interface

In this chapter, I will explore the application's structure and explain why I chose this approach based on the data I gathered from my research methods. I will relate the discussion to this point and how the frameworks mentioned previously have guided my work. I will walk you through the step-by-step process, highlighting how the application's final design evolved.

7.1 Design concerns and framing

By creating sustainable design and using the framework provided in my research, with a focus on mindset, posture and values, my perspective towards second-hand clothing has undergone a profound transformation, especially in the context of global economic changes that heightened our sensitivity to prices. As a flight attendant with the opportunity to explore new cities daily, I have developed a habit of visiting second-hand stores in these cities. However, I consistently encounter a challenge when trying to locate and learn more about these stores online. Despite their ability on popular applications like "Yelp²", the information provided often left much to be desired, especially regarding the specific clothing items in their inventory. I started thinking about the spring flea markets I used to visit, where they sometimes had a "fill a bag" deal for clothes as the event ended. I found this idea fascinating and contemplated whether a similar event-style concept could work for second-hand stores. This led me to question how they could effectively communicate and involve customers in such an appealing offer and lead them to sustainable choices.

The dynamic interplay between design considerations influenced by transition design and research through design shaped the development of this application. This approach aligns the application with sustainability goals and leads to the creation that addresses user needs and contribute to a more equitable future. It is not just about designing an application; it is about crafting solutions that impact the world in a positive and meaningful way. To connect the design and the application development and theories related to needs, visions, and innovative design is about creating applications that are not only user-centered and functional, but also forward-thinking and aligned with broader societal and technological trends. By integrating these theories into the design process, developers can create applications that have a lasting impact and resonate with users.

² www.yelp.no

Users

The users (Coworkers and store management), play a central role in shaping its design and overall experience of a second-hand application. I have focused on my coworkers (mostly Gen z), to be the users of my application, but also discussed the application with anyone interested (Figure 18). Their preferences, needs, and behaviors are critical factors to consider. By understanding users' motivations, desires, and challenges, the application can be tailored to meet their specific requirements. Research through design methodologies, such as user testing and prototyping allows a user-centric approach. This helps in ensuring that the application's usability, and user-friendliness align with what the target audience expects. Users' experiences, feedback, and interactions with the application provide valuable insights for ongoing improvement. Transition design encourages a deep understanding of the cultural and behavioral aspects that influence users' choices. By integrating these insights into the application's design, it can better support users in making sustainable fashion choices, transitioning from fast fashion to second-hand alternatives.

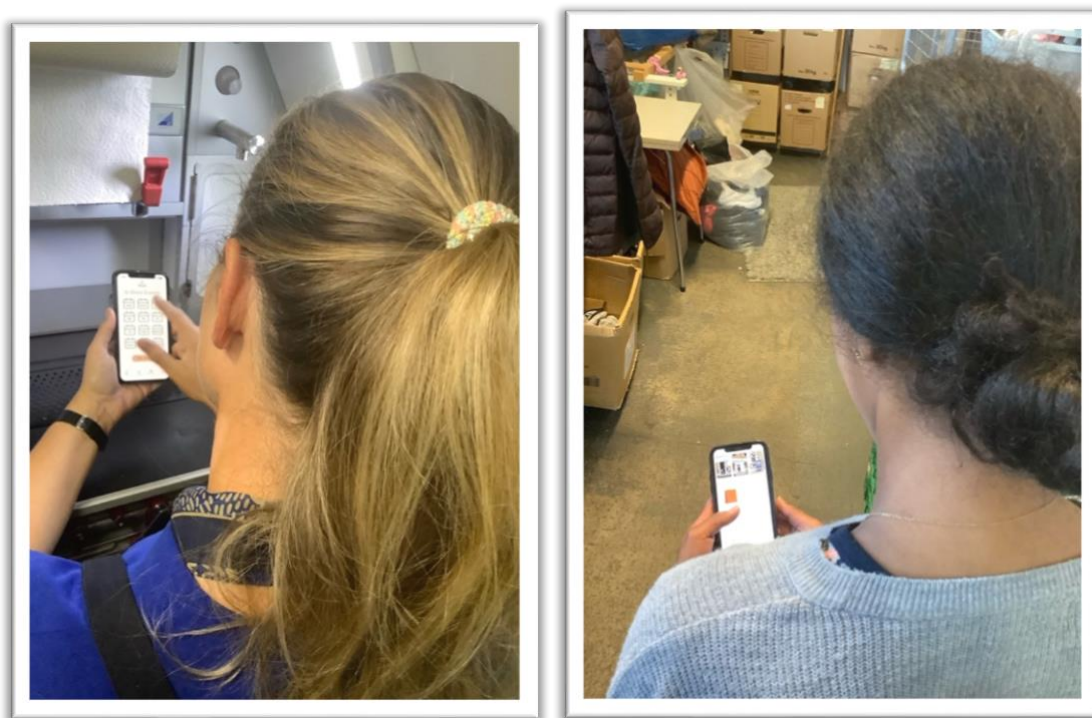


Figure 18: Air hostess & store employee testing the application.

7.2 Turning Methodology Insights into Creative Prototyping

A successful application often begins with a clear vision and purpose. The theories of vision play a vital role in shaping this aspect. As technology evolves, so does the ways in which the application is designed. Theories related to innovation and novel design approaches provide guidance for creating

applications that are ahead of the curve. By incorporating innovative design elements, developers can ensure that the application remains relevant and competitive in a rapidly changing digital landscape.

Affinity Mapping

Affinity mapping is a technique used to organize and group large amounts of information, ideas, or data into meaningful categories. It is often applied in brainstorming sessions or collaborative workshops where several individuals generate ideas. It can be challenging to step into users' shoes for a web designer. However, Affinity Mapping offers a valuable tool for gaining insight into user ideas (Hoepfner & Scharf, 2004).

By gathering all the ideas, information, or data related to a specific topic and representing them as individual notes (Figure 19), I could discern the crucial areas for application development. The objective was to make sense of the information provided and visually depict the landscape. This facilitated a deeper understanding of the user's perspective and helped inform the design process (Hoepfner & Scharf, 2004).

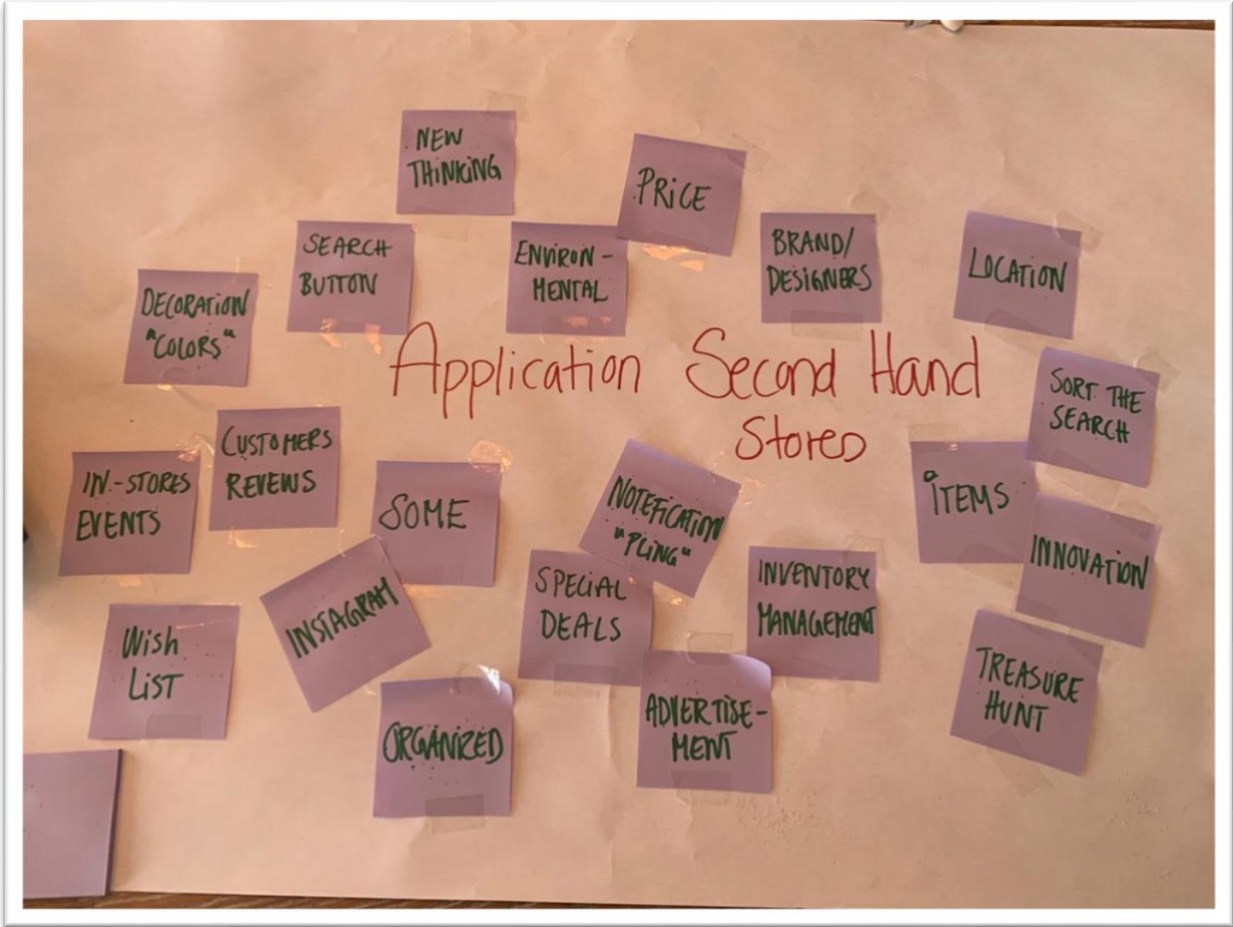


Figure 19: Individual notes of ideas.

After a discussion with my supervisor, we agreed to focus on the in-store events and supplement with many of the other categories. I would start making the prototype in figma.com, using components like figmacommunity.com, Iconify.design and unsplash.com.

Considering the framework of the triangle (Figure 11) in Chapter 5 and the social practice theory, when designing my application. Both transition design and research through design use a method called iterative prototyping. This means making test versions of the application to try out new ideas. Then you go back to see what works and what does not. This helps the application improve based on feedback from users and research. Transition design is oriented towards long-term sustainability, and this perspective influences design considerations for the application. This involves planning for the application's adaptability and relevance over time, accounting for changes in user needs, technological advancements, and environmental considerations. When considering "new ways of designing" I emphasize a shift from transitional, linear design process to a more integrated and sustainable approach. When developing an application for second-hand stores, this approach becomes a powerful driver for creating a product that not only meets the needs of its users but also contributes to broader social and environmental goals.

Human Computer Interaction (HCI) and sustainable Interaction Design (SDI) focus on the interaction between humans, sustainability, and technology. Design considerations should focus on the principles derived from HCI theories, ensuring that the application is intuitive, easy to navigate, and optimally responsive to user inputs. By using sustainability through design I try to encourage people to buy more used clothes through the integration of an application. In my design process for creating the application, my primary objective is to understand the users, and their challenges, and then prioritize and define the key areas of focus.

7.3 Application Development Research

In the application design process, I initiated by embracing simplicity. I began with sketching the mobile version and wireframing (see Figure 20) to visualize the connections between different elements. This initial groundwork serves as a foundation for the subsequent development phase in Figma. The choice of Figma for prototyping brings the advantage of flexibility and ease of adjusting based on feedback from potential users.

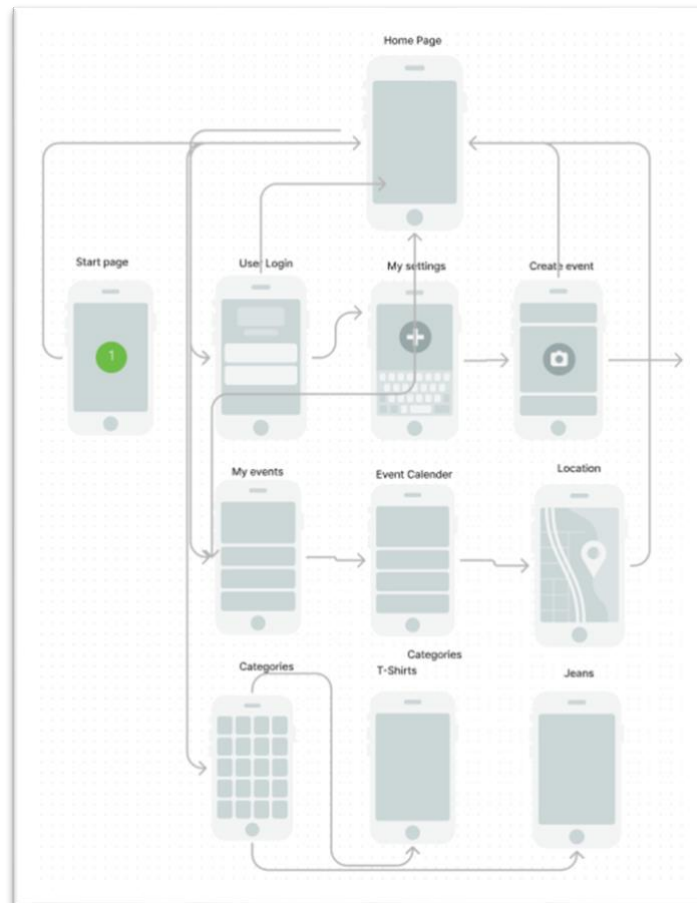


Figure 20: Wireframe of the application made in Figma.com.

Simplicity

“Make it simple but make it significant” (Hunter, 2019).

Keeping things simple is the most important principle that needs to be applied in the application. For the designer it is necessary to know how to produce simple and understandable designed app for users, moreover the designed application tends to focus on the needs and requirements of the user. By making the mobile sites with intuitive navigation, it will surpass the ease of use (Lashin & Helmy, 2021).

Analogous Color Scheme

Analogous colors refer to the colors that sit adjacent to each other on the color wheel, as depicted in Figure 21. These colors harmonize effectively, resulting in a tranquil and inviting design. Analogous color schemes typically incorporate three adjacent colors from the color wheel, and they feel pleasant to the eyes (Hunter, 2019; Lashin & Helmy, 2021).

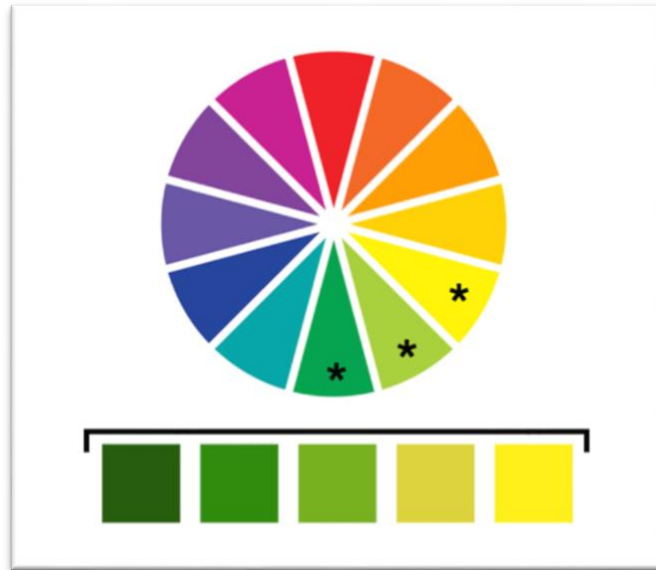


Figure 21: Color wheel, retrieved from(Hunter, 2019).

The designer should focus on the harmonic use of colors. The users' mood changes in relation to the applications colors. And try and use fewer colors in making the application, because this makes it attractive and elegant for users to engage with. If you use too many colors, it can reduce the mobile applications' sophistication and repel the users (Lashin & Helmy, 2021).

Aesthetic Consistency

Making it symmetrical is an important factor to consider, because the human mind naturally gravitates towards symmetry. Faces and objects that exhibit symmetry captivate the human brain, making it in harmony and balance. Utilizing a grid system is pivotal to prevent the application from descending into disorderliness. Grids offer a structures framework to ensure that elements are harmoniously and uniformly arranged, resulting in a visually pleasing design (Lashin & Helmy, 2021).

Polished & Consistent Icons

Iconography serves as a visual language for conveying the content, features, and functionalities of the application. Icons play a pivotal role in representing various elements, ensuring easy recognition and comprehension (Hunter, 2019). For instance, the house icon denotes 'home,' and the magnifying glass is recognized as the search symbol. The key to effective icons lies in their simplicity. Polished and consistent icons simplify user interaction by highlighting active components of the application (Hunter, 2019; Lashin & Helmy, 2021). They contribute to user-friendly navigation.

In crafting the mobile application, I as a designer play a pivotal role in delivering a seamless and pleasant user experience, in tune with the design principles of 2023 (Studio, 2023). The design

philosophy forms the foundation of my application’s structure, emphasizing the importance of clarity and simplicity in providing users with an intuitive and gratifying interaction.



Figure 22: Some of the icons used in my application.

7.4 The structure of the application



Figure 23: Front page of the prototype in Figma.com³.

³ My prototype in Figma: <https://www.figma.com/file/s9VHsGypbaU0gJR7SrMkzV/2Hand?type=design&node-id=0%3A1&mode=design&t=k6hBZkDnHTNW4kFK-1>

In-Store Events

Hosting in-store events can be a great way to drive traffic to a thrift store and engage with customers, that's why I wanted this to be a significant part of the application. The plan for hosting events in thrift stores is to promote the thrift stores to new customers. You can host many different types of in-store events in a thrift store. Some ideas include a clothing swap, a DIY workshop, a charity fundraiser, or a themed sale event. Choosing an event that aligns with your goal and your customers' interests is important. In my application, I have chosen to promote the in-store event on social media (SoMe) by connecting the in-store events to Instagram and Facebook. This will most likely increase awareness and engagement for the event, and drive traffic to the stores. By connecting the application to Instagram and Facebook (Figure 24), it can increase awareness and engagement, as well as build relationships with customers both online and offline.



Figure 24: Screenshot of instore events and the page on creating events.

You can advertise several deals from a thrift store, making it an attractive budget-conscious place for shopping. Some special deals that could attract customers could be seasonal discounts, offering discounts on summer clothes in the winter, and the opposite. BOGO (Buy One Get One), for example, buy one shirt get one free or Student or Senior discount. You can also offer a loyalty program or

donation incentives that reward customers for repeat business or discount on their next purchase. By offering special deals, thrift stores can attract new customers and retain existing ones while also encouraging sustainable and environmentally responsible shopping habits.

7.4.1 The design of the Application

Colors

My main goal with the colors for the application was to focus on earth colors. I wanted the application to represent how the clothes we buy come from the earth we live on and how to preserve the earth by buying used clothes. Earth colors are a group of colors inspired by natural elements, such as soil, rocks, and foliage. These colors typically include shades of black, white, brown, green, gray, and muted tones of red, orange, and yellow (figure 2). In fact, any color encountered in the natural world can be considered part of the earth tone color palette. By capturing the essence of nature, an earth tone color palette embraces the organic beauty of the world (artincontext, 2022).

Using earth colors in design is a popular technique to evoke a sense of nature, tranquility, and grounding. These colors, inspired by elements like soil, rocks, and plants, lend a natural and organic ambiance to various design contexts (Figure 25). Earth colors offer versatility, seamlessly blending into different design styles and contexts. They harmonize well with both modern and traditional aesthetics, allowing designers to convey a wide range of emotions and moods through their use (artincontext, 2022).

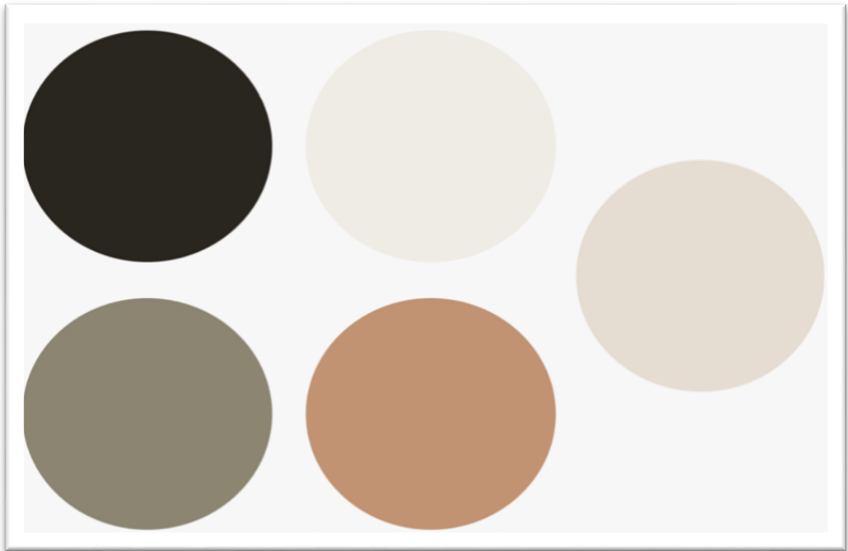


Figure 25:Color palette employed in the application.

Categorization

Categorization plays a crucial role in various applications, especially in the case of a second-hand store app, for several compelling reasons. The process of categorizing items within the app greatly enhances user navigation and facilitates finding specific items or locating stores that offer desired clothing. Proper categorization also enables users to stumble upon stores they might not have otherwise discovered. For instance, while browsing the "Jeans" category, users may unexpectedly come across a different store and be enticed to explore it further.

Given the potentially extensive range of items within the app, presenting everything without organization can be overwhelming for users. To address this, I have implemented a category navigation page with six elements and a search button (Figure 26). This deliberate organization of items into distinct categories provides users with a clear and structured browsing experience. By reducing user frustration and improving satisfaction, this approach encourages users to revisit the app and continue their engagement. Overall, categorizing items in a second-hand store app can help to improve the user experience, increase sales, and create a more organized and efficient browsing experience (Babich, 2020b).



Figure 26: The browsing experience.

Search Button

The search button enhances usability, information retrieval, customization, discoverability, and productivity within an application. It contributes to a positive user experience by enabling quick access to desired content and empowering users to tailor their interactions according to their needs (Babich, 2020a). The search button improves the overall user experience by providing a convenient and efficient way for users to find specific content or information within the application. It allows users to directly search for what they are looking for, saving time and effort compared to manually navigating through menus or categories (Babich, 2020a).

The search function in the app can be more precise and effective. Users can search for specific categories or subcategories and find exactly what they're looking for. The search button can also be used to search for specific stores or events. Users can input keywords, filters, or specific criteria to narrow down the search results according to their preferences, resulting in a more tailored and relevant outcome (Babich, 2020a) .

The search button also serves as a discoverability tool, allowing users to explore and find new content or features within the application. By entering broad search terms or browsing suggested search options, users may come across items or information they were unaware of, enhancing their engagement and expanding their knowledge of the application's offerings.

The Icon



Figure 27: The icon of the application.

A well-designed icon for the application is important because it enhances the visual appearance and serves as a first impression to represent the purpose of the app. This icon, Figure 27, representing the second-hand stores with the hanger as a number two (second) and hand inside, will hopefully capture users' attention and make them more likely to engage with the application. A carefully crafted icon that aligns with the application's branding elements, such as colors, typography, or visual style, helps users associate the icon with the specific application or company. A distinctive and

recognizable icon enables users to quickly locate and access the desired application among other icons. It improves the usability and accessibility of the app, particularly when users have multiple applications installed on their devices (Chen, 2015). This icon also serves as the home button when interacting within the application.

A unique and memorable icon can help an app stand out from the competition in a crowded marketplace with numerous applications vying for users' attention. It becomes a distinguishing factor that sets the application apart and increases its chances of being noticed and chosen by users. A good icon is important for displaying an application. It enhances visual appeal, promotes brand recognition, aids in navigation and findability, contributes to a positive user experience, and helps differentiate the app in a competitive landscape (Chen, 2015).

The Bottom Tab Bar (the navbar)

The bottom tab bar, also known as the navbar (Figure 28), makes it easier for users to switch between top-level views in a single tap. The navbar is a commonly used graphical user interface (GUI) element in a mobile application and is positioned at the bottom of the screen. It presents a row of clickable icons or text labels representing various application sections. Users can swiftly navigate to the corresponding pages or sections within the application by tapping these icons (Babich, 2020c).



Figure 28: The bottom bar.

As previously discussed in this chapter regarding the utilization of familiar icons, I have tried to incorporate easily recognizable symbols, such as the house, categories, the event represented by a date icon, and the profile denoted by the person icon. The primary purpose of the navbar is to provide users with effortless access to different parts of the app, eliminating the need for extensive menu navigation. With simplicity, intuitiveness, and user-friendly nature, the navbar has become a popular design pattern in mobile app development. It enables users to efficiently switch between essential areas of the app, such as the home screen, categories, saved events, or the account, resulting in a more convenient user experience (Babich, 2020c).

Following the completion of the application development phase, it is most important to shift my focus toward the insights and outcomes that were derived from user testing and observations. This transition marks a significant point in the design process because it lets us evaluate how the application functions in real-life situations. In the upcoming section chapter 8, I will discuss the research findings in more detail, exploring the user's needs, challenges, and preferences. This knowledge serves as a foundation for making informed design decisions and optimizing the application for its intended audience.

8. Findings

In this chapter, I present the analysis of the collected data. The material offers a concise overview of the observed phenomenon from the interviews and the observations by utilizing the application. The central research question investigated in this study is as follows; *How can a second-hand store application be designed to engage both store owners and users, at the niche level, to increase sustainability in the fashion industry?* The data comprises insights from store owners and customers, with the use of individual quotes.

I will explore the interesting things I have learned from store owners and users, focusing on how the methodology and the theory have influenced these discoveries. An evaluation of the results from user testing I will assess the outcomes of user testing and the subsequent adaptations made to enhance the application. The chapter commences with a summary of the key discoveries, divided into store owners and users, then followed by an exploration of the three secondary themes: second-hand fashion through social media, transformation in the second-hand industry, and opinions of the application design and functionality.

8.1 Presentation of the key insights

“It is not just about acquiring goods; it is about the journey of exploration and the joy of finding something special” (Customer of second-hand store).

Through various research methods, this study uncovered several key insights into the use of second-hand shopping application. Consumers prioritized their needs, and the application aimed to fulfill those needs by providing convenience rather than creating new ones. Many users were interested in the application for the value of making it easier to buy used clothes, accessibility, and convenient shopping experience. One user emphasized the importance of user-friendliness, stating, “if I were to use a second-hand application, it must be very intuitive, enabling me to quickly find the information I need.” Other potential customers expressed “I find locating specific items in the second-hand stores quite challenging.” Store employees saw the potential benefits of attracting more customers and using the application as a marketing tool. However, using second-hand application also posed challenges in term of adapting to digital tools and addressing user preferences and concern.

8.2 Store management

Store employees represent a critical component of the second-hand fashion ecosystem. Their participation and alignment with the application’s goals are important for success. Research through design involving store owners can uncover their unique challenges, opportunities, and expectations. Understanding store employees’ perspectives through transition design helps in creating a mutually

beneficial relationship. By addressing their concerns and needs, the application can empower them to embrace sustainable practices and enhance their role in the transition towards more sustainable fashion choices. I asked questions about their visions and the challenges the second-hand store faces to gain insight into their perspective regarding the transition.

8.2.1 Second-hand fashion through social media

As a store employee, do you believe that this application will improve and simplify the process of selling second-hand clothing?

When asking second-hand stores about their strategies they have used to make second-hand shopping more appealing and convenient for costumers in the digital age, most of them answered said, "We are promoting our shop on Facebook, where we are showing pictures of items and store openings." However, when it comes to questions about store affiliations and what happens to unsold clothing, it was evident that this information was not readily available on their online platform. Instead, it was typically communicated verbally within the physical store or by messages on Facebook. Other stores advertise on Instagram, "I take a picture of the manikin in the window and post it on Instagram, I do get people coming into the stores asking about the clothes on the manikin." Responses were somewhat unclear regarding digital strategies to enhance the second-hand shopping experience. Store owners conduct seasonal and in-store sales, but they primarily promote these events within the physical store. Additionally, they stock seasonal items like Christmas dresses when the appropriate time approaches to meet the specific needs and preferences of their customers. Store employees think they can benefit from the application as it can attract more customers to their second-hand shops. The application may simplify the process of listing items and events, making it easier for the employees to reach potential customers. It can also serve as a marketing and promotion tool, drawing more attention to their stores. When I asked the store employees about the application, they all believed it would serve as a marketing tool if used correctly.

8.2.2 Transformation in the second-hand industry

The store employees have noticed a significant increase in the volume of clothing donations in recent years. One employee pointed out "during summertime we receive over double the donation compared to previous year." This reflects a growing awareness of the importance of reducing and recycling clothing within the community. This specific store is part of a network that includes other stores and a designated location referred to as "the barn." The "barn" serves as a destination for items that may not meet the criteria for resale in the store. Instead of discarding these items, they are sent off to the barn, where they are made available at reduced prices in flea markets. Furthermore, if items remain unsold at the flea markets, the store's commitment to sustainability

extends further. Rather than disposing of the clothing, they are sent to countries in need, such as Lithuania. This demonstrates a strong dedication to reducing waste and supporting global efforts to address clothing needs in less fortunate regions.

Store employees can contribute to the application's development by sharing insights into pricing strategies, inventory management, and marketing efforts. When explaining their pricing strategies, one store employee mentioned, "I typically check other websites like Finn.no or Tise.no to see if I can find the same clothing and its price." Another store employee stated, "If I am familiar with the brand, I will search on Google and see what they charge for new items." However, due to the time-consuming nature of these methods, sometimes they would collaboratively determine a price within the store.

Store owners and employees actively discussed their stores' ongoing discounts and promotions. A significant portion of their conversation revolved around managing transitions between seasons, for instance, how to handle the sale of winter clothing as spring approaches, and vice versa. In these discussions one store employee proposed the idea of hosting special events during these seasonal shifts. Although she was unsure about the specific details of the proposal, she intended to introduce some form of sale or promotion. Additionally, she contemplated the potential of a student discount as part of their marketing strategy. These dialogues prompted a reevaluation of their store marketing strategies, emphasizing the importance of aligning promotions with seasonal changes and customer preferences.

The store employees had both a dystopian and utopian view of the second-hand application. At one store, I was talking to several employees, and they thought an application for the second-hand industry would be challenging and unrealistic. One employee said, "It will be a lot of work for us, and we like it kind of the way it is." In addition, the same employee added, "with an application it could turn out to be merely a trend, and we would never be able to compete with fast fashion." While another store employee, a younger generation, was more optimistic; this could make it easier to reach our customers, instead of just through Facebook." Furthermore, he/she said, "This could help us encourage the reuse of clothing and participating in the second-hand economy more easily."

Community Building

For many second-hand shop owners, their vision extends beyond just financial success. They prioritize the well-being of their employees, especially those who have faced unemployment due to health issues, and these concerns emerged in the interviews with some store employees. These stores often serve as important community hubs that provide job opportunities to individuals who may have faced employment challenges elsewhere. Their primary vision is to create welcoming and

inclusive spaces where customers not only come to shop but also connect, engage, and foster a strong sense of belonging within the community. During the interviews, a consistent theme that emerged was the importance of maintaining a balance between their vision of community-building and the financial sustainability of their business. While these shops place a significant emphasis on community and social goals, it became evident that the generation of sufficient income is essential to keep the business running and continue providing jobs. Furthermore, insights from store employees shed light on how smaller second-hand stores often focus on providing customers with a unique shopping experience. Their vision includes curating a selection of one-of-a-kind items, focusing on individuality and personal style in second-hand fashion. Store employees expressed the shop's goal of offering customers the opportunity to find distinctive pieces that help express their unique tastes and preferences.

How do you see your store engaging with the local community to promote sustainability in fashion? I had the opportunity to learn about a particular store that was part of a larger network of second-hand shops. The owner informed me that they were affiliated with a collective called Omatt, which brought together a total of 132 second-hand stores (as shown in Figure x). She said, "even though this collective it is relatively new, Omatt creates a supportive system for its member stores." Providing access to courses and assistance that local shops can utilize, and this support system can help promote sustainable practices in their communities.



Figure 29: Omatt poster in a second-hand store.

Participating in such a network allows stores to learn from each other, exchange best practices, and collaboratively work towards the common goal of making second-hand shopping more accessible and appealing to a broader audience. From a store employee's perspective, being part of this collective offers opportunities for skill development, knowledge sharing, and fostering a sense of community within the second-hand retail industry. The store owner emphasized, "being part of such a network allows us to learn from each other, share best practices, and collectively work towards a common goal."

8.2.3 Opinions of the Application Design and Functionality

Initially, the event calendar was designed in a particular way (refer to figure x). However, upon consultation with a store manager, interested in addressing the issue with events every week, month etc., a more efficient solution was identified. This involved incorporating a calendar box for each month of the year, simplifying the process of selecting and scheduling the events for the stores (see figure x). Many of the store employees in second-hand stores are not very familiar with the use of applications and technology, which is why the importance lies in ease of use. By a short introduction to the application, many of them understood the concept of using the application.



Figure 30: Old and new interface in the application.

Their preferences and feedback have played a big role in shaping the aspect of the application design. They all managed to navigate through the pages, and one employee said, “it seems like a very easy way to post an event, if this really works like this?”

Most users not only appreciated the icon but also immediately understood its meaning. According to the store employee, the hanger icon’s symbolism, representing clothing, perfectly aligned with the values and products of second-hand stores. They valued the icon’s simplicity in conveying the

application's dedication to the clothing industry. A store owner even commented, "This icon aesthetics appeal and professional look will attract customers to download the application."

8.3 Generation Z

This tech-savvy generation expressed a strong affinity for the application, finding its user-friendly design, the interface, and environmentally conscious approach highly appealing. They especially appreciated the application's intuitive navigation, easy access to event details, and support for making sustainable choices. Their valuable feedback has been valuable in shaping the application's features, ensuring alignment with their preferences and preferences. As I reflect on the early stages of application development, the central focus revolved around two key questions:

What will motivate you to use an application for second-hand stores, and how do you think the application can influence your shopping behavior? How do you envision information from the application being shared and in what ways can the application support your preferences for second-hand shopping? The feedback from this generation has been important in ensuring that the application is not only technologically seamless but also deeply attuned to their desires for a more sustainable and user-friendly second-hand shopping experience.

8.3.1 Second-hand fashion through social media

During our discussion, several users raised the issue of advertising, pointing out that the application primarily utilized Facebook and Instagram for promotion, whereas their favored platform was SnapChat. They emphasize the importance of social media to discover new trends, products, and brands. They suggested that stores should post cool and interesting content about second-hand fashion to get and keep users. They also shared insights on YouTube and TikTok, with the consensus being that TikTok was more popular among a younger audience than Gen Z. Some of the users were talking about the possibilities to share their second-hand fashion finds and experiences on social media. Users emphasized the importance of an in-application location feature, expressing a desire to avoid leaving the application to search for locations of the stores on external platforms like Google Maps.

During the research, users often expressed their preferences for second-hand shops located near their homes or workplaces. They stressed the convenience of being able to visit a shop during a lunch break or on their way home. One user mentioned, "I usually stop by a second-hand shop on my way home from shopping for other items, just to have a look if they have got anything new in the shop." Several users also shared how they discovered new second-hand shops while walking around new cities. One user recalled, "I stumbled upon a great little second-hand shop while I was out walking, just looking around, and I told all my co-workers about it." The feedback from users underscores the

importance of the location aspect. For those without access to a car, proximity, and convenience greatly influence their choice of which shops to visit. Additionally, the power of word-of-mouth recommendations becomes evident as it can significantly increase foot or online traffic in the stores.

Many consumers expressed their interest in using the application, depending upon its user-friendliness. They believed that the application could significantly enhance the convenience of shopping for second-hand clothes. It could be particularly useful when exploring new cities and searching for nearby second-hand stores, a scenario that sparked a discussion about integrating location-based features into the application. A store employee commented, “the application can be of substantial use for us if we want to expand beyond our physical location, an application can provide access to a wider marketplace, attract customers from different areas.” This would make their stores more accessible and potentially their preferred destination for second-hand shopping.

8.3.2 Transformation in the second-hand industry

One of the primary motivations for Generation z behind shopping for second-hand clothing is affordability. My research into well-known second-hand retailers like Fretex and UFF revealed that, in the users’ opinion, their prices are at the top end. When we talked about second-hand fashion, the cost was a key topic. Many users frequently seek cost-effective alternatives to pricey brand-new clothes. Second-hand applications offer them a chance to purchase trendy outfits at budget-friendly prices. By choosing second-hand clothing one user said: “I can save money and be sustainable at the same time.”

One user stated, “I would be motivated to use the application for second-hand stores only for the sustainability aspect.” Many users would like to use the application if it could help them save money. One said, “The use of the application can make my shopping behavior better by making second-hand more accessible.” Most of them are aware of the environmental impact the fast fashion industry is making but do think this could be enlightened in the application. “I believe the application can significantly influence my shopping behavior.” “By providing a convenient platform to explore and purchase second-hand items, it can encourage me to buy second-hand instead of fast fashion.”

In my interviews, some users told me why they really liked buying second-hand clothes. They wanted “unique fashion items you cannot find in regular stores.” They felt that second-hand clothes were a way to express their personal style and to discover unique and fashionable pieces that are not readily available in fast fashion stores. They value individuality and self-expression. Some users also really like vintage fashion and suggested adding sections for different vintage brands, along with information on stores offering high-fashion vintage styles.

8.3.3 Opinions of the Application Design and Functionality

What are your initial thoughts on the design and overall user experience, and how does this prototype compare to other similar applications you have used in the past?

Additionally, a user pointed out “I often judge an application’s quality based on its icon; a well-designed one creates curiosity, encourages me to download and engage with the application.”

The first impressions of the color combination used in the application were mostly appreciated by the users. They thought it was visually pleasing and conducive to their interaction with the application, and really liked the earth tones. Furthermore, users positively respond to the navigation. The navbar made it easy to find back home, with the home icon, and because of the writing underneath the icon they could understand what the icons meant, it was intuitive navigation. On the first page, some users thought it was hard to understand that you could scroll to the right to find more stores. The user-centric approach to color selection and navigation design has garnered positive feedback from users, enhancing their overall satisfaction with the navigation’s ease-of-use in the application.

Users were confused when navigating the first page, as they were unaware that more shops could be accessed by scrolling to the right. However, feedback regarding the first page was mostly positive. Users appreciated that events were displayed on the first page and that they could find all events at the bottom of the page. In discussions about events, some users shared their positive experiences at flea markets, where deals like “two for one” or “fill a bag” were offered. Users agreed that having more events in second-hand shops would be appreciated.

8.4 My Reflection

Store owners are vital to the success of the second-hand fashion application. They help set prices and organize events like discounts and special sales. They mostly use Instagram and Facebook for marketing but could improve their digital strategies. Some are unsure about the application’s impact, while others see it to connect with customers. Store owners have visions that prioritize community-building and offering unique shopping experiences. They also value reducing waste and recycling clothing, supporting global efforts. Feedback from employees highlights the need for user-friendly design, as many say they are not very interested in or good with technical innovations. Their insights and contributions are essential for the application development and alignment with the second-hand fashion industry’s needs.

Generation Z has shown a strong liking for the second-hand application. They appreciate its user-friendly design, sustainable approach, and easy-to-use interface. Their feedback played a big role in

shaping the application's features, ensuring it meets their preferences. They prefer social media platforms like SnapChat for finding trends and prefer in-app location features. Generation Z values unique, fashionable, and affordable pieces not commonly found in fast fashion stores. The application motivates them through sustainability and cost savings, influencing them to choose second-hand over fast fashion. Many of the users think the application can simplify the process of finding nearby second-hand stores, making it easier to discover nearby second-hand shops and their offerings. Additionally, it makes shopping for second-hand clothes easier by providing a comprehensive selection of second-hand items within various categories, saving them the trouble of visiting multiple physical stores.

These findings revealed some key insights. Consumers' focus was primarily on their needs, and the application aimed to provide a new way of meeting these needs rather than creating entirely new ones. Many users expressed interest in the application, provided it was user-friendly. They believed it could make shopping for second-hand items more convenient, especially in new locations. The application can improve the consumer experience by offering accessibility and convenience. Store employees also saw potential benefits in attracting more customers and using the application as a marketing tool. However, the use of second-hand applications is not without challenges. Store employees may need to adapt to digital tools and online retail, which may require additional effort and resources. Users may have varying preferences and concerns, and the application must address these to ensure a positive experience.

Chapter 8 presents the analysis of the data based on three central themes. The objective of the subsequent chapter is to integrate the findings from chapter 8 with the theoretical perspectives presented in chapter 4, with the aim to arriving at a conclusive answer to the research question.

9. Discussion and Conclusion

The aim of this study was to investigate second-hand stores and the ability to make sustainability through the consumption of fashion more available through the following research question; *How can a second-hand store application be designed to engage both store owners and users, at the niche level, to increase sustainability in the fashion industry?* In this chapter I will discuss my data in the context of the theoretical framework I introduced earlier. I will employ the two research questions I developed based on the main research question to shed light on the experiences of store owners and users with the phenomenon; (1) What are the preferences and criteria of store owners and users when it comes to a mobile application that helps showcase second-hand stores and promotes sustainable fashion? (2) How did the selected methodology influence the research to advocate a positive transformation, and encourage store owners and users, at the niche level, to support more sustainable fashion choices?

As the perspectives shared by the participants in the research project form the basis for my discussion and enable me to draw conclusions about the experiences of store owners and users regarding the phenomenon under investigation. The insights from the literature in Chapter 2 and 3, as well as the theoretical framework presented in Chapter 4, will be incorporated into the discussion. Finally, I discuss the study's limitations, and conclude the chapter by discussing suggestions for future research on the phenomenon of sustainable fashion and the ability to make this more available through technology.

9.1 Research question 1: What are the preferences and criteria of store owners and users when it comes to a mobile application that helps showcase second-hand stores and promotes sustainable fashion?

- *Second-hand fashion through social media*
- *Transformation in the second-hand industry*
- *The Application Design and Functionality*

The rise of mobile application has changes how people interact with things they want to buy and sell, especially in sustainable fashion and second-hand shopping (McCormick & Ram, 2022; Niinimäki, 2014). In this section I discuss how my first research question aligns with the three key concepts based on Chapter 8 findings and presented above. Expanding on these concepts, it is essential to

consider the specific preferences and criteria of both store owners and users in the context of the mobile application.

Second-hand fashion through social media

Discussing the preferences and criteria of store owners and users reveals that integrating social media is important, the seamless integration of the application with these social media channels can enhance visibility and engagement (admin_morningtrain, 2023). Currently, store owners primarily rely on platforms like Facebook and Instagram for digital promotion (Ch.8). However, there is a problem – important information, like which stores are connected and what happens to clothes that do not get sold is often missing. Despite having sales and events, store owners predominantly promote them within the physical store (Ch.8) rather than online. This signifies a missed opportunity to leverage digital channels for promoting sales and events more effectively.

In contrast, users (Generation Z) emphasize the importance of interesting and engaging content about second-hand fashion on platforms like SnapChat and YouTube over traditional platforms like Facebook and Instagram. The users emphasize the importance of social media in discovering trends and products, suggesting that the application should leverage these platforms to engage user effectively. They express a desire to share their findings and experiences on platforms like SnapChat, highlighting the potential for user-generated content to contribute to the application's success.

Social media ensures active engagement and sharing within a dynamic community, fostering a continuous loop of user reacquisition (Pierce & Paulos, 2011). Considering reacquisition, the application's ability to retain users is important, creating a compelling user experience that encourages repeated use and participation. Pierce & Paulos (2011) describes the casual reacquires view on second-hand fashion as more affordable option compared to conventional retail. This aspect might resonate with users of a mobile application, as cost savings is a significant criterium (Ch.8). For store owners targeting people who like new things but are not focused on being sustainable, the application should be easy to use and show trendy items that are also affordable. Store employees could also recognize the importance of pricing their second-hand products competitively to attract users (Ch.8). Critical reacquires do not have a strong commitment to reacquisition, which implies that for some users, convenience and ease of use is important. "The use of the application can make my shopping behavior better by making second-hand more accessible" (#User, Ch.8, page 87). A mobile application that simplifies the process of finding and purchasing second-hand items may appeal to users who do not have a deep commitment to sustainable fashion but are open to try it. User may prefer an application that makes second-hand shopping convenient and as appealing as purchasing new items. Despite the cost savings, casual reacquires prefer regular stores with new items. This

preference aligns with the need for a mobile application to offer attractive and user-friendly interface that can compete with fast fashion stores. In the context of store employees, understanding the mindset of casual reacquires can help them cater to the user base interested in cost-effective and sustainable shopping.

Transformation in the second-hand industry

The evolving landscape of the second-hand industry emphasizes a shift towards sustainability, influencing preferences for the application that align with sustainable practices. In this context, the application should align with sustainable practices to meet the changing demands of both store owners and users. Sustainable Interaction Design (SID) principles, as outlined by (Blevis et al., 2007), become essential in shaping the application's framework. These principles go beyond merely ensuring the functionality of the application; they emphasize actively guiding users toward sustainable choices. This involves integrating features (e.g. events and categorization) and mechanism (e.g. ease of use) within the application that contribute to positive individual behaviour changes concerning fashion consumption and, consequently, have a broader impact on the industry's sustainability (Ch.7).

In principles of Product-Service Systems (PSS) provided by Ceschin and Gaziulusoy (2016), it is important to view the application not merely as a transactional tool but as a seamlessly integrated service in users' lives. Going beyond the traditional model, both store owners and users seek applications that offer more than just a platform for buying and selling. Store owners value features that facilitate community building, collaborative initiatives, and events that go beyond the conventional retail model (Ch.8). For users, the integration of services that enhance their overall experience, such as event calendar (Ch.7), forums, and collaborative projects, becomes essential. The application's ability to align with PSS principles contributes to its attractiveness and utility.

For store owners, the application should facilitate not only the promotion of their products but also convey a commitment to sustainable practices. Revisiting some of the principles of Pierce & Paulos, (2011) in reacquisition it is important to highlight critical reacquisition (Pierce & Paulos, 2011). The critical reacquired mindset suggests that users with such orientations are likely to seek specific information and features from the application. Critical reacquires may prioritize products that align with their ethical values (Pierce & Paulos, 2011). They may expect the application to provide detailed information about the events and categorization about the items available in the second-hand stores (Ch. 8). The store owners may include details about the second-hand clothing's, the sustainability production around this in their online page. The users may value transparency and authenticity. They might prefer stores and products that align with their political and ethical values, and the second-

hand stores can provide inside information on their social impact. To satisfy users who care a lot about the ethical and sustainable shopping, the mobile application could refer to the stores that are part of the Omatt organization (Figure 29), and how they work towards a common goal of sustainability. This could give them information and tools that match their beliefs and choices.

The concept of necessary reacquisition (Pierce & Paulos, 2011) sheds light on the economic necessity of purchasing second-hand clothing, particularly in challenging financial situation. The economic challenges we are currently facing today may significantly influence user behavior and choices. Understanding the economic constraints faced by necessary reacquires can guide the developer of the application to create feature that cater to individuals with limited budgets. *Criteria of users* can include their economic constraints and the need for sustainable yet affordable fashion choices. The research question also encompasses the preferences and criteria of store owners who participate in the mobile application. These store owners may set reasonable prices for second-hand items (Ch.8), offer discount, or provide information about cost-effective and essential clothing items. The willingness to support users' financial constraints can influence the success of necessary reacquisition through the application. This emphasizes the need for a diverse set of options in the application, considering both who engage in second-hand shopping as a preference and those who do it out of necessity.

The Application Design and Functionality

Given the emphasis on sustainability in an application goes beyond merely functionality. They extent to the application's ability to actively contribute to positive behavioral change in users and foster a broader impact on the industry's commitment to sustainable practices.

Design and functionality play a significant role, with both store owners and users valuing applications that offer user-friendly interfaces, intuitive navigation, and visually appealing design (Ch.7).

Experiential reacquisition (Pierce & Paulos, 2011) offers insights into the mindset of users who are drawn to the aesthetics and experiential aspect of acquiring second-hand clothes. Individuals who engage in experiential reacquisition take pleasure in finding aesthetically pleasing second-hand items (Pierce & Paulos, 2011). This means that users who value the experience of shopping in second-hand stores and the process of discovering unique, visually appealing clothes may seek similar experiences in a mobile application. "Unique fashion items you cannot find in regular stores" (#User, Ch.8, page 87). Therefore, user engagement and providing an enjoyable an immersive shopping experience would be essential criteria for users. When examining store owners and users' preferences for a mobile application, the visual appeal of the application and the showcased products becomes important. Both groups are likely to prioritize a visually attractive and engaging platform. Store

employees who appreciate experiential reacquisition are inclined to create visually appealing displays in their physical stores. When transitioning to a mobile application, these store owners may seek features that enable them to maintain the visual merchandising of their second-hand items. This could include the ability to upload images and provide detailed descriptions that highlight the aesthetic qualities of the products.

A successful mobile application in the second-hand fashion and sustainable industry must holistically address the preferences and criteria of store owners and users. Integrating elements of social media, industry transformation, and design and functionalities. Such an application not only meets immediate needs but also actively contributes to the positive evolution of second-hand fashion space.

9.1.1 Summary

In the summary, I started addressing research question 1: What are the preferences and criteria of store owners and users when it comes to a mobile application that helps showcase second-hand stores and promotes sustainable fashion? Furthermore, the summary is structured based on three units of meaning derived from the results: engagement for second-hand fashion on social media, transformation in the second-hand industry, opinions of the application design and functionality.

In discussing the experiences of both store owners and users with the application, the importance of integrating social media stands out prominently. Relying on platforms like Facebook and Instagram presents challenges, especially with younger users such as Generation Z, who prefer engagement on platforms like SnapChat. It is important to ensure active engagement and user retention. Users prioritize cost saving and convenience, while store owners should align with sustainability goals. The application's success hinges on user-friendly interfaces and visually appealing designs. Examining reacquisition perspectives, including casual, critical, experiential, and necessary viewpoints, shed light on economic needs and diverse user expectations. Store owners are encouraged to communicate sustainability commitments and meet varied user needs, emphasizing transparency. The evolving second-hand industry places a strong emphasis on sustainability, guiding applications to adapt to changing demands. The integration Sustainable Interaction Design (SID) principles are important, actively guiding users toward sustainable choices, contributing to industry-wide sustainability.

9.2 Research question 2: How did the selected methodology influence the research to advocate a positive transformation, and encourage store owners and users, at the niche level, to support more sustainable fashion choices?

- *Methodology's Impact in the Research*
- *Promoting Positive Transformations*
- *Encouraging Sustainability at the Niche level*

Methodology's Impact in the Research

The combination of Transition Design and Research Through Design (RtD) has proved to be a fascinating blend of methodologies in my research (Ch.5). The selected methodology influenced the research in a way that promoted positive transformations by actively involving stakeholders, encouraging iterative design, fostering a long-term vision, and emphasizing collaboration. The iterative design process encourages ongoing feedback and improvements and enables positive transformations by allowing for continuous refinement of the application based on the evolving insights and need of store owners and users. The application caters to a diverse userbase, including Generation Z, and second-hand store management, each with distinct needs and expectations. This underscores the necessity for the application to be sustainable for users spanning at a significant age range. While it is important to note that Transition Design, with its emphasis on long-term thinking, have limitations in fully exploring substantial changes and transitions in my limited time but it can certainly serve as a starting point. Through these approaches, the methodology empowered store owners and users at the niche level (Figure 17) to support and advocate for more sustainable fashion choices.

Transition Design, at its core, seek to create societal change by transitioning from unsustainable systems to more sustainable ones (Irwin, 2015). It emphasizes the importance of systemic thinking and cross-disciplinary collaboration. Both methodologies provide valuable tools for addressing the complex challenges posed by our current consumers culture, where fast fashion (Bhardwaj & Fairhurst, 2010) and disposable products have become the norm.

The combined influence of the methodology and the theory in Chapters 4 and 5, led to a research methodology that was thorough, well-rounded, and suited to the specific situation. The plan helped me understand the social and cultural settings, the technology involved, and individual needs within the niche. Social transition theory helped guide the research in understanding the cultural, social,

and economic dynamics and navigating societal changes. Another essential aspect of this discussion relates to Transition Design and long-term visions. Which can change what society values, encourage the application to evolve and adapt over time, and keeping up with changing sustainability goals and user needs.

Promoting Positive Transformations

The theory of needs (Max-Neef, Manfred A., 1991), as an integral component, brought a human-centered approach to the research. By understanding the physiological and emotional aspect of individuals' need, desires, and motivation, the methodology aimed to tailor strategies that appealed to the intrinsic values of store owners and users. The methodology focused on a user-centered approach, involving store owners and users in the research and design process. This inclusive approach promoted positive transformations by ensuring that the application addressed the specific needs, preferences, and challenges faced by both stakeholders (Max-Neef, Manfred A., 1991). During my discussion with users, I noticed that they were primarily concerned with their personal needs and preferences. It was important to differentiate between needs and how those need is met when analyzing user behavior when using the application. Many of the participants expressed a desire for new clothing, not out of necessity, but because they sought something *new* to add to their wardrobe. Users were not increasing their need for clothing; rather, they were changing how they satisfied those needs. The goal of this application was to encourage users to choose second-hand shopping to fulfill these clothing needs, signifying a shift in their satisfaction approach (Max-Neef, Manfred A., 1991). This application would not create new needs, it just changes how people meet their existing needs.

This approach recognized that advocating for sustainable choices required addressing fundamental human needs, such as the need for self-expression, community, and a sense of belonging (Ch.8) By acknowledging the interconnectedness of various actors and systems, the methodology facilitated the identification of potential leverage points for instigating positive transformations. Focusing on collective efforts and systemic changes aligns with the overall aim of promoting broad backing for sustainable practices through a mobile application.

Encouraging Sustainability at the Niche level

Socio-transitional theory (Irwin et al., 2020) played an important role by recognizing the interplay between social and technological factors. By integrating socio-technical perspectives, the research sought to propose solutions that not only resonated with the social fabric of the niche but also aligned with technological advancement and innovations (Ch.4). Focuses on understanding the transitions and transformations in society, including shifts in cultural norms, values, and behaviors.

When I apply this theory to the fashion industry and the rise of second-hand shopping, there are several important aspects to address. Socio-transitional theory recognizes that societal changes are often driven by shifts in values and norms. The application's role in engaging both store owners and customers at the niche level is important. By facilitating interactions and transactions within the second-hand fashion niche, the application can encourage long-term engagement with sustainable fashion practices. This aligns with socio-transitional theory's focus on long-term societal changes. The fashion industry has long been associated with a disposability culture (Figure 2), where clothing is discarded after minimal use. Second-hand shopping disrupts this culture by extending the lifespan of clothing items. The application can further reduce the disposability culture by making it easier for consumers to find and purchase second-hand items, emphasizing the value and quality of used fashion. Socio-transition theory recognizes the importance of communities and social networks in driving societal changes. A second-hand store application can help build a community of like-minded individuals who value sustainable fashion.

The application is often developed in response to a specific demand or gap in the market, as in my case, second-hand stores. It is designed with specialized features and functionalities, events, and categories, to meet the specific criteria of the niche audience. Marketing efforts are focusing on reaching this niche audience and the application gains popularity within its niche, it starts to attract a broader audience beyond its initial target group (Local area of Oslo). As word-of-mouth recommendations and positive user experiences lead to an increase in users, the application begins to expand geographically. The application is designed with specialized features tailored to meet the target audience. For example, you can search for specific clothing in this category, or look for specific dates or stores related to events, among other options. By assessing the needs and desires of my specific target audience, I can gain insights into what they seek in second-hand stores and what holds the greatest value for them. The niche level is all about understanding and meeting the requirements of a specialized segment of the market, which, in this case, is individuals interested in second-hand and sustainable fashion. When developing a second-hand application, building connections with both online and offline communities and forums related to the target audience in a niche is a crucial aspect of the process. The strategic approach not only enhances the development and adoption of the application but also contributes to the overall success of the project. From the socio-technical transition theory in mind, the use of the application can be expanded from niche level to regime to landscape level (Figure 31).

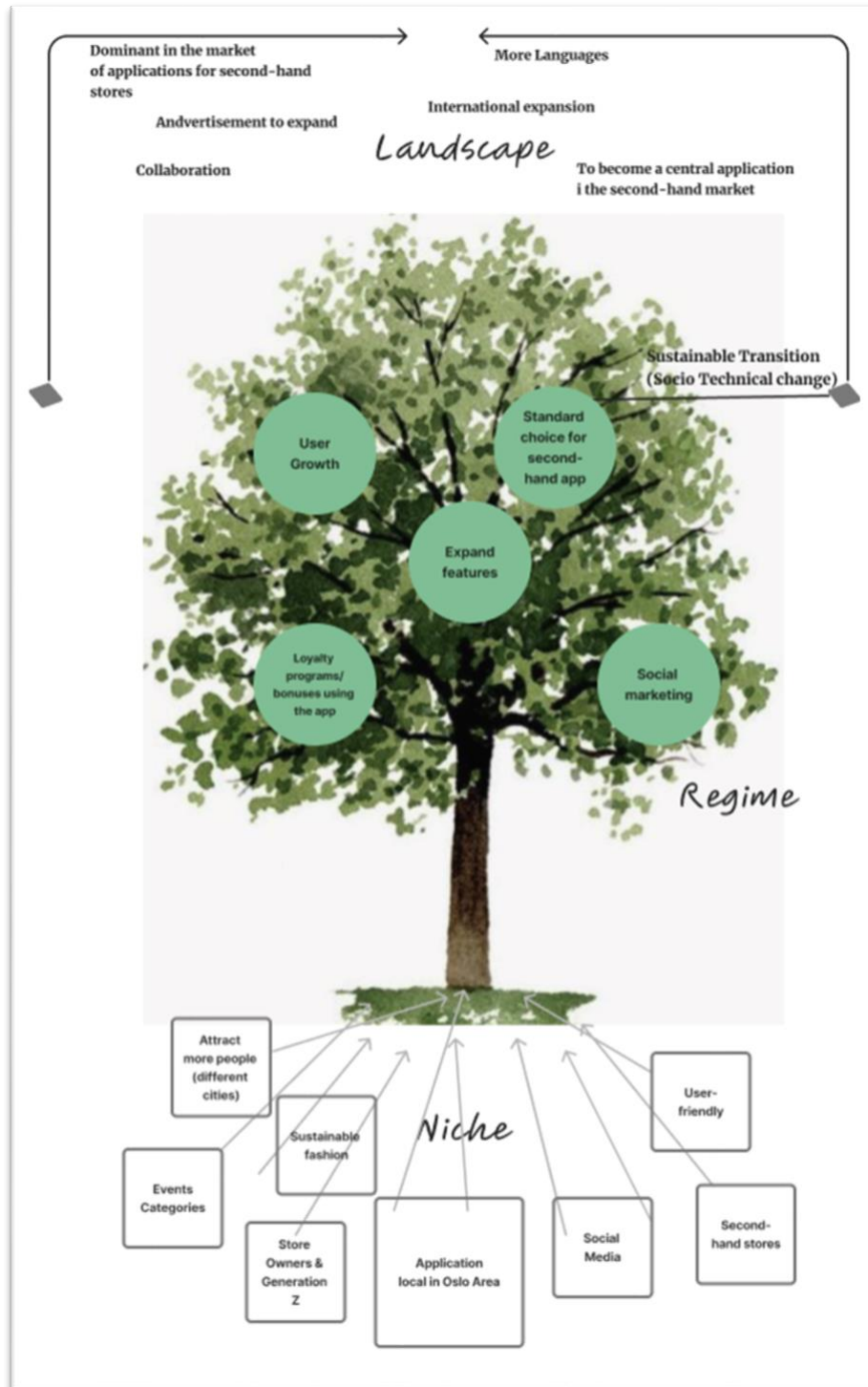


Figure 31: The multi-perspective level for a mobile application - symbolizing the growth of a tree.

The movement from niche to regime to landscape reflects the application's ability to evolve, adapt, and integrate itself deeply into the fabric of city life (Geels, 2002a; Irwin et al., 2020). The transition from the niche level to the regime level involves a shift from serving a specialized audience to appealing to a larger, more diverse user base. This evolution is driven by the application's success within the niche, user growth, diversification, increased marketing, iterative development, and

ultimately, the application's ability to influence the broader fashion industry towards sustainability. This transition often results from becoming sustained success, innovation, and the application's ability to address the changing need and preferences of city residents (Geels, 2002a; Irwin et al., 2020).

Scalability

The regime level is reached when the application has successfully transitioned from serving a niche market to a more extensive and established market presence (Irwin et al., 2020). This indicates a broader acceptance of second-hand fashion and sustainability in the fashion industry. At the regime level, the application can influence industry practices. It may inspire other businesses and applications to follow suit, promoting sustainability and ethical fashion choices. The application has now become a well-established and widely recognized platform in the local or regional market. To accommodate a wider audience, the application might expand its features, offering a broader range of services related to local needs and preferences. It is considered a standard or dominant choice for users seeking to buy second-hand clothes. The application has moved from serving a niche to becoming a standard regime that sets the benchmark for others in the same industry (Geels, 2002b).

At the landscape level stage, the application has achieved market dominance and is considered a fundamental part of the local landscape (Geels, 2002b). It is widely recognized and used by a significant portion of the city's population. The application often fosters the development of an ecosystem around it. This includes complementary services, businesses, and user communities that have formed based on the application's preferences and functionality. The application integrates with various aspects of city life, local businesses, events, and social interactions (Geels, 2002b; Irwin et al., 2020).

9.2.1 Summary

In the summary, I begin with addressing research question 2: How did the selected methodology influence the research to advocate a positive transformation, and encourage store owners and users at the niche level to support more sustainable fashion choices? Additionally, I structure the summary around three key elements drawn from the results: methodology's impact in the research, promoting positive transformations, encouraging sustainability at the niche level.

Transformations of our social values are perhaps the most profound goal. The methodology encourages the application to go beyond being a mere tool for buying and selling clothing. It can be a platform that educates, raises awareness, and influences users' attitudes and behaviors towards sustainable fashion. This could include information on the environment and social impacts of the fashion industry, as well as inspiring stories of individuals making a difference.

A second-hand store application that engages both store owners and customers at the niche level align with socio-transitional theory. It can help change how people think, keep them interested in sustainable fashion, cut down on waste, form a community of people who care about sustainability, and have good effects on the economy and environment. In the end, this application can make a big difference in making the fashion industry more sustainable.

Evolving from the niche level to the regime level involves a broader shift in focus and strategies. The movement from niche to regime to landscape reflects the application's ability to evolve, adapt, and integrate itself deeply into the fabric of city life. It transforms from serving a niche audience with a specialized focus to becoming a dominant and pervasive force that shapes the urban landscape. This transition often results from becoming sustained success, innovation, and the application's ability to address the changing need and preferences of city residents.

9.3 Implication and future perspectives

In this section, I explore future perspectives on the research, focusing on the themes like the rationale for choosing the methodology, study limitations, and suggestions for future research. This examination aims to offer insights into the ongoing trajectory of the study, providing valuable considerations for the evolution and expansion of the research framework.

9.3.1 Rationale for choosing the methodology

I employed Transition Design and Research Through Design (RtD) in my project due to their holistic and user-centric approach, addressing the intricate issues related to sustainable fashion and second-hand stores. Transition design, chosen for its adaptability, allows me to explore the broader societal changes necessary for mainstreaming second-hand fashion. This collaborative approach is important given the multifaceted nature of sustainable fashion involving designers, store owners, and users. Transition Design resonate with my research due to its distinctive focus on propelling sustainability changes and addressing the intricate nature of sustainable and societal transformation. Research Through Design places users at the forefront of the design process, which aligns well with application's focus on both store owners and users. Its iterative process ensures continuous improvement based on user feedback and industry trends, making it ideal for application development.

9.3.2 Limitations of the Study

There are limitations to consider in the context of this project. The research project primarily focuses on a specific niche level, and its findings may not be directly applicable to other contexts or geographical locations. The application's success in Oslo area may not guarantee success in other

regions or cultures. The research is conducted within a specific timeframe, which may not allow for an in-depth exploration of the long-term effects of the application on sustainability and user behavior.

A potential challenge of evolving from niche level to regime level, may be the challenge to encouraging people to use the application. To make the application effective, it is important to attract users who are genuinely interested in its features and benefits. The success of the applications heavily relies on users' engagement and participation. Therefore, strategies and marketing efforts will need to be carefully crafted to address this limitation and endure a sufficient user base to make the application impactful. Additionally, addressing factors that motivate users to download and actively use the application will be essential to overcome the challenge effectively.

Optimizing the application's use for store owners less inclined towards technology presents a challenge, and addressing these issues is important for enhancing the application's functionality. Ensuring the application's user-friendliness and providing comprehensive learning opportunities are important steps in overcoming potential obstacles faced by store owners.

Further research would be needed to assess the applications lasting impact. This research shed light on the experiences of the phenomenon as perceived by store owners and users. It is important to recognize that different users may have distinct perspectives and interpretations. While a larger sample in the study might have offered additional viewpoints on the subject, the study contributed with knowledge of technology within sustainability and fashion.

9.3.3 Suggestions for future research

Researchers could investigate how the application can integrate additional sustainable practices. This may include features such as a promoting sustainable brand, facilitating repair and alteration services, or enhancing initiatives for vintage fashion. Long-term adaption and success factors of the application should be explored to understand challenges and opportunities associated with its continued use. Insight into how the application can foster lasting positive change in consumer behaviour and industry practices would be important for shaping its sustained impact on sustainability in the fashion industry.

9.4 Conclusion

This research aimed to explore the role of a second-hand store application in promoting sustainability in the fashion industry at the niche level. The participants own experiences, and their understanding of the application is presented considering relevant theory, forming an opinion about the experiences of store owners and users have with the phenomenon under investigation. Two research questions guided the investigation, deriving from the main research question to be answered: *How can a second-hand store application be designed to engage both store owners and users, at the niche level, to increase sustainability in the fashion industry?*

In this research project I have explored the field of Transition Design and Research Through Design methodologies, and created a second-hand store application that caters both store owners and users, with a strong focus on sustainability fashion, representing a significant transformation. Discussing what store owners and users' have described and analyzing the findings alongside relevant theories the second-hand store application, guided by a comprehensive methodology, can contribute to make the fashion industry more sustainable. It can go beyond being a mere transactional tool, fostering positive transformations in societal values.

The application addresses the various challenges within the fashion industry driven by evolving consumer demands and the culture of disposability. It offers a compelling solution by promoting long-term engagement in sustainable fashion, countering the prevailing disposable culture, nurturing a community of sustainability-minded individuals, and contributing positively to both the economy and the environment. By aligning with Socio-transitional theory, this application operates as a catalyst for societal value shifts, urging the adoption of more sustainable practices and lifestyles. This research project is actively working to reduce the harmful effects of fast fashion on the environment and our unsustainable lifestyle. By supporting local and second-hand stores, it reinforces the commitment to sustainability.

The second-hand store application offers hope for a more sustainable fashion future. It is all about new ideas, building a community, and the chance for a positive change in the journey to a sustainable fashion industry. Even though I cannot say for sure that my application will make people buy more second-hand clothes based on the limitation of real-life tests, this research paves the way for future progress and studies in this area.

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Appendix 1: Information Sheet with Consent Form

Vil du delta i forskningsprosjektet

Hvordan kan vi fremme kjøp av bærekraftig mote ved hjelp av en applikasjon som viser bruktbutikker i ditt nærområde?

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å undersøke hvordan man kan gjøre det lettere å lokalisere bruktbutikker ved hjelp av en mobil applikasjon, for å fremme bærekraftig mote. Hvilke preferanser og krav har butikkeiere ved utvikling av en slik applikasjon. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål

Hovedtemaet vi ønsker å undersøke er overforbruket i tekstilindustrien, og hvordan man kan inspirere unge mennesker til å engasjere seg i bærekraftig motepraksis når de blir presentert med ulike muligheter. En applikasjon om lokalisering av bruktbutikker kan legge til rette for kjøp av mer bærekraftig mote ved å gjøre det enklere for forbrukere å finne og handle i butikker som spesialiserer seg på bærekraftige klær. Ved å tilby en plattform for kunder å kjøpe brukte klær, kan appen bidra til å redusere etterspørselen etter nye klær, som igjen reduserer bruken av ressurser og energi som kreves for produksjon, og reduserer mengden avfall som frembringes av industrien. Det er nå blitt billigere å kjøpe nye klær i vanlige butikker, såkalt «fast fashion», enn å kjøpe brukte tekstiler. Fretex er en bruktbutikk som har god reklame, og det er en kjent butikk for mange. Imidlertid er det mange flere lignende butikker som er ukjente for folk. Derfor vil det være interessant å utvikle en applikasjon for å få oversikt over alle bruktbutikker i ditt nærområde. Unge mennesker er engasjert i miljøet og de globale utfordringene vi står ovenfor, kan denne applikasjonen øke interessen og gjøre det lettere å kjøpe brukte klær? Denne applikasjonen vil også være til nytte for butikkeierne som reklame og vil være gunstig når de presenterer butikkene sine for fremtidige kunder.

Det er viktig å realisere de komplekse miljø- og bærekraftsspørsmålene vi i dag står overfor når det gjelder tekstilindustrien. Jeg, Vibeke, har mulighet til å bruke kreativiteten min sammen med teknologi til å skape noe innovativt for å bidra til en mer bærekraftig endring.

Ved å anvende teknologi i dag for å vektlegge bruken av mote, kan teknologien tilpasses ved å sette søkelys på bærekraft og en ny tilnærming til brukte klær.

Forskningsspørsmålet for denne oppgaven er: *What preferences and demands do storeowners have regarding an application for locating second-hand stores to enhance sustainable fashion? How can this application facilitate the consumption of more sustainable fashion?*

For å finne svar på forskningsspørsmålet så vil masterstudenten gjennomføre intervju av butikkeiere/ansatte av ulike bruktbutikker lokalisert i Oslo område. Aktuelle temaer som vil diskuteres er:

- Behov i applikasjonen
- Samarbeid
- Inventar/type butikk
- Kunder og hvilken kundegruppe de satser på
- Brukervennlig grensesnitt
- Tilkobling
- Fleksibilitet

Denne studien er en masteroppgave på studiet Informatikk: Design, Bruk & Interaksjoner ved Universitetet i Oslo. Masteroppgaven er på 60 studiepoeng og skal ferdigstilles i løpet av våren 2023. De innsamlede dataene skal brukes til å belyse problemstillingen i min masteroppgave.

Hvem er ansvarlig for forskningsprosjektet?

Forskeren/masterstudenten heter Vibeke Grødem Johnson

Min veileder heter Alma Culén og er professor ved Universitetet i Oslo.

Hvorfor får du spørsmål om å delta?

Vi spør deg om å være med, fordi du jobber/eier en bruktbutikk og har erfaring med salg av brukte tekstiler og kunder som handler brukt. Utvalget for undersøkelsen er gjort fordi

forskningsspørsmålet i denne undersøkelsen er ute etter erfaringer til dere som eier og driver bruktbutikker.

Hva innebærer det for deg å delta?

Hvis du har lyst å delta i forskningsprosjektet, vil masterstudenten gjennomføre et intervju med deg. I tillegg vil det også tas noen bilder av inventaret i butikken.

Det er frivillig å delta

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykket tilbake uten å oppgi noen grunn. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg. Å delta på dette prosjektet vil ikke påvirke ditt forhold til arbeidsplass eller arbeidsgiver ettersom det vil være anonymt.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.

- Informantene anonymiseres i oppgaven, og de som har tilgang til personopplysningene vil være masterstudent og veileder.
- I masteroppgaven vil alle personopplysninger, arbeidssted og annen gjenkjennbar informasjon anonymiseres.

Hva skjer med personopplysningene dine når forskningsprosjektet avsluttes?

Når masteroppgaven er levert og godkjent, vil lagrede personopplysninger, samtykkeskjema og transkripsjoner bli slettet.

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke.

Hvis du har spørsmål til studien, eller ønsker å vite mer om forskningsprosjektet, ta kontakt med:

- Universitetet i Oslo, avd. HIOA ved Alma Culén / almira@ifi.uio.no

- Masterstudent Vibeke Grødem Johnson / vibej@ifi.uio.no

Med vennlig hilsen

Alma Culén
Prosjektansvarlig
(Veileder)

Vibeke Grødem Johnson
Masterstudent

Appendix 2: Interview Guide (1)

INTERVJUGUIDE: NYTTEN AV EN APPLIKASJON SOM VISER LOKASJON AV BRUKTBUTIKKER I DITT NÆROMRÅDE, FOR Å FREMME BRUKEN AV BÆREKRAFTIG MOTE.

INTRODUKSJON (starter intervju med å lese høyt to første avsnitt her)

Jeg ønsker å utvikle en prototype av en mobilapplikasjon/app som viser de ulike bruktbuikkene som er lokalisert på den gitte adressen. Dette for å fremme enkelthet for salg av bærekraftig mote.

Fokuset for denne samtalen er å innhente informasjon og erfaringer fra personalet i butikkene. Hva som kan fungere og hvilken informasjon de vil fremvise kundene.

Målet mitt er å utforske hvilke kriterier og ønsker butikkeiere har for en slik applikasjon. Hva som kan fungere i praksis og hvilke funksjoner som er viktig ved en slik app løsning. Jeg er interessert i hva som kan fungere, samt innhold og funksjoner som vil være viktig i en slik applikasjonen.

TEMASPØRSMÅL (underpunkter etterspørres dersom de ikke kommer opp naturlig i samtalen)

Hva mener du/dere er viktig med utforming av appen?

- Hva vil butikken vise til sine kunder?
- Brukervennlig grensesnitt?
- Detaljert informasjon?
- Tilkobling?
 - Integrasjon av sosiale medier.
- Analyse?
 - Kundedadferd
 - Populære produkter
 - Besøkstall
- Fleksibilitet?
 - Oppdatere informasjon av butikk.
- utfordringer?

Etter intervju ved visning av (prototype) applikasjon:

- Hva er dine første tanker om designet og den generelle brukeropplevelsen?
- Hvilke spesifikke funksjoner skiller seg ut for deg og hvorfor?
- Er det noen områder av prototypen som du mener trenger forbedring?
- Hvordan er denne prototypen sammenlignet med andre lignende applikasjoner du har brukt tidligere?
- Er det noen funksjoner eller funksjonalitet du mener mangler?
- Hvordan tror du denne prototypen kan forbedres for å bedre møte behovene til den tiltenkte målgruppen?
- Hvor brukervennlig synes du applikasjonen er?

AVSLUTNING

Har dere noe dere vil tilføye?

Appendix 3: Interview Guide (2)

INTERVJUGUIDE: NYTTEN AV EN APPLIKASJON FOR BRUKTBUTIKKER, FOR Å FREMME BRUKEN AV BÆREKRAFTIG MOTE (Andre gangs intervju brukere).

INTRODUKSJON (starter intervju med å lese høyt to første avsnitt her)

Jeg planlegger å utvikle en prototyp av en mobilapplikasjon som vil forbedre kundens opplevelse når de handler i bruktbutikker. Dette initiativet har som mål å gjøre det enklere å kjøpe bærekraftig mote og promotere enkel tilgang til brukte klær. I denne sammenhengen ønsker jeg å samle inn informasjon og erfaringer fra butikkens kunder. Jeg er interessert i å forstå hva som kan være effektivt og hvilken type informasjon kundene foretrekker å ha tilgjengelig.

Hovedmålet er å utforske kundenes kriterier og preferanser for en slik applikasjon. Jeg er nysgjerrig på praktiske løsninger som kan fungere og hvilke funksjoner som er avgjørende i en slik applikasjon. Disse spørsmålene har som mål å utforske brukerens opplevelser, atferd og perspektiver når det kommer til bruk av en applikasjon for bruktbutikker med søkelys på bærekraft og miljøbevisst mote.

TEMASPØRSMÅL

Hva mener du/dere er viktig med utforming av applikasjonen?

- Hva motiverer deg til å bruke en applikasjon for bruktbutikker, og hva håper du å finne eller oppnå gjennom den?
- Hvordan kan en applikasjon påvirke ditt handlingsmønster, spesielt når det gjelder å velge brukt mote fremfor hurtigmote (fast fashion)?
- Føler du at utvikling av en slik applikasjonen kan bidra til en endring i dine valg av kjøp av mote mot mer bærekraftige alternativer? Hvordan?
- På hvilken måte kan man dele informasjon fra applikasjonen? Gjennom sosiale medier? Som deling av funn eller kontakt med andre brukere? Hvordan kan dette påvirke din opplevelse av å handle brukte varer?
- På hvilken måte mener du at applikasjonen kan bedre støtte dine preferanser og kriterier for bruktkjøp?

Etter intervju ved visning av (prototype) applikasjon:

- Hva er dine første tanker om designet og den generelle brukeropplevelsen? Kan du beskrive dine tanker rundt tilgjengelighet og kvalitet på informasjonen den gir?
- Hvordan er denne prototypen sammenlignet med andre lignende applikasjoner du har brukt tidligere?
- Hvilke funksjoner eller aspekter av applikasjonen finner du mest verdifulle, og hvilke kunne forbedres for å forbedre opplevelsen din?
- Har du støtt på noen spesielle utfordringer eller begrensninger med applikasjonen? Hvordan tror du disse utfordringene kan løses?
- Hvordan ser du for deg at applikasjonen kan bidra til en bredere kulturell endring mot bærekraftig mote valg?
- Kan du dele noen erfaringer eller innsikter ved test av applikasjonen som kan føre til mer miljøbevisste motepreferanser i din daglige praksis?

AVSLUTNING

Har dere noe dere vil tilføye?

INTERVJUGUIDE (andre gangs intervju butikker): VISER APPLIKASJONEN IGJEN & UNDERSØKER BRUKTBUTIKKEN I SAMMENHENG MED TRANSITION DESIGN RAMMEVERKET.

INTRODUKSJON (starter intervju med å lese høyt av første avsnitt her)

Disse spørsmålene er utformet for å finne ut mer av hvordan eiere/ansatte av bruktbutikker tenker i forhold til bærekraftighet. Målet mitt er å forstå deres perspektiver, strategier og visjoner når det gjelder bærekraftig mote og hvordan de passer inn i rammeverket for overgang (transition) design. Jeg ønsker å se hvordan designtenkning og teori om endring kan veilede deres tilnærming til denne overgangen.

TEMASPØRSMÅL

Hva mener du/dere er viktig med utforming av applikasjonen i forhold til bærekraftighet?

- Hvordan har du sett at bransjen for brukt mote har utviklet seg de siste årene, og hvilken rolle ser du at din butikk spiller i denne overgangen?
- Kan du dele din visjon for din bruktbutikk og hvordan den harmonerer med bærekraftig moteproblemstillinger?
- På hvilken måte mener du at konseptet om en sirkulær økonomi passer inn i din forretningsmodell?
- Har du vurdert å ta i bruk innovative forretningsmodeller som Produkt-Tjenester-Systemer (PSS) for å oppmuntre til tilgang framfor eierskap av brukte gjenstander?
- Hvordan ser du for deg at din butikk kan spille en rolle i å fremme en mer miljøbevisst kulturell endring innen moteindustrien?
- Hvilke utfordringer møter du i arbeidet med å fremme bærekraftig mote, og hvordan ser du for deg at designtenkning kan hjelpe deg med å håndtere disse utfordringene?
- Hvordan ser du for deg at din butikk engasjerer seg med det lokale samfunnet for å fremme bærekraftige moteproblemstillinger?
- Hvilke strategier har du iverksatt for å gjøre bruktkleshandel mer tiltalende og praktisk for kunder i den digitale tidsalderen?
- På hvilken måte vurderer du resultatene av din butikks innsats for å fremme bærekraftig mote, og hvilke endringer eller forbedringer har du observert?

AVSLUTNING

Har dere noe dere vil tilføye?