Onerva Lappi

Consumer attitudes towards circular fashion

A cross-national study of young European consumers

School of Marketing and Communication
Master's thesis in International Business

Vaasa 2021

UNIVERSITY OF VAASA
School of Marketing and Communication

Author:	Onerva Lappi
Title of the Thesis:	Consumer attitudes towards circular fashion
Degree:	Master of Science in Economics and Business Administration
Programme:	Master's programme in International Business
Supervisor:	Jorma Larimo
Year:	2021 **Sivumäärä:** 101

ABSTRACT:

Viimeisen vuosikymmenen aikana huoli tuotannon ja kulutuksen vaikutuksista ekosysteemiin on kasvanut huomattavasti. Muotiteollisuus kuuluu maailman saastuttavimpiin teollisuudenaloihin, ja sitä on kritisoitu mm. luonnonvarojen ylikulutuksesta, vesistöjen ja maaperän saastuttamisesta sekä valtavista hiilidioksidipäästöistä. Sen hiilijalanjälki on suurempi kuin kansainvälisen lento- ja laivaliikenteen yhteensä. Nykyinen muotiteollisuus perustuu pikamuotiin, jossa mallistot vaihtuvat nopeasti ja vaatteista tulee pian valmistamisen jälkeen jätettä. Muotiteollisuuden tuhoisat ympäristövaikutukset moninkertaistuvat tulevina vuosikymmeninä, jos nykyisiä toimintamalleja ei muuteta. Huolestuttava kehitys voidaan kuitenkin pysäyttää siirtymällä lineaarisesta taloudesta kiertotalouteen, jossa vähällä käytöllä olevia vaatteita vuokrataan ostamisen sijaan, vaatteet suunnitellaan kestämään pidempään, niitä kannustetaan korjaamaan ja kierrättämään, ja vanhojen vaatteiden materiaalit uusiokäytetään uusien vaatteiden valmistuksessa. Kuluttajat ovat ratkaisevassa asemassa vaatteiden kiertotalouteen siirryttäessä. Etenkin nuorten kuluttajien asenteiden ymmärtäminen on tärkeää, sillä Y- ja Z- sukupolven on arvioitu jo vuoteen 2025 mennessä kattavan 45% muotiteollisuuden kokonaiskulutuksesta. Tutkielmassa tutkitaan muotiteollisuuden mahdollisuuksia kiertotalouden hyödyntämisessä sekä nuorten eurooppalaisten kuluttajien asenteita kiertotalousvaatteita kohtaan. Teoreettinen viitekehys tarjoaa katsauksen kiertotalouteen, vaatteiden kiertotalouteen, kestävään kuluttajakäyttäytymiseen sekä kuluttajien asenteisiin vaikuttaviin tekijöihin. Empiirisessä osiossa tarkastellaan Y- ja Z-sukupolviin kuuluvien eurooppalaisten kuluttajien asenteita kiertotalousvaatteita kohtaan sekä tutkitaan, mitkä yksilölliset tekijät vaikuttavat näihin asenteisiin. Tarkasteluun on teoreettisen viitekehyksen pohjalta valittu kuusi vaatteiden kiertotalousmallia, jotka ovat relevantteja vaateteollisuuden ja kuluttajanäkökulman kannalta. Tutkimusdata on kerätty internet-kyselyllä, johon vastasi 112 eurooppalaista Y- ja Z-sukupolven kuluttajaa 18 eri maasta. Datan analysointi on toteutettu SPSS-ohjelmaa hyödyntäen. Ensin datasta on laskettu keskiarvoja, joiden perusteella arvioidaan yleisellä tasolla kuluttajien mielipiteitä ja asenteita esitettyjä kiertotalousvaatteita kohtaan. Lopuksi yksilöllisten tekijöiden vaikutusta kuluttajien asenteisiin testataan Kruskal-Wallisin testillä sekä havainnollistetaan pylväskaavioiden ja laatikko-viiksikuvioiden avulla. Tulokset osoittavat, että kiertotalousvaatteille löytyy jo suurta kysyntää nuorten eurooppalaisten kuluttajien keskuudesta, erityisesti kierrätysmateriaaleista tehdyille vaatteille. Sukupuoli sekä kansalaisuus osoittautuivat tutkimuksessa tärkeimmiksi yksilöllisiksi tekijöiksi, jotka vaikuttavat suhtautumiseen kiertotalousvaatteita kohtaan, joten erityisesti eri kohderyhmät suhteessa näihin tekijöihin tulee ottaa huomioon tuotteiden ja markkinointiviestinnän suunnittelussa ja kohdennuksessa. Muutoksen nopeus kohti kiertotaloutta tulevina vuosina riippuu siitä, kuinka suureksi kestävämpiä vaatteita vaativa kuluttajaryhmä kasvaa, ja kuinka paljon yritykset tarjoavat vaihtoehtoja nykyiselle pikamuodille. Muutosta tulisi lisäksi vauhdittaa poliittisin ja lainsäädännöllisin keinoin ja asettamalla sekä yrityksille että kuluttajille taloudellisia kannusteita, jotta kiertotalousvaatteiden tuottaminen ja ostaminen olisi entistä houkuttelevampaa.

KEYWORDS: Circular economy, sustainable development, fashion industry, circular fashion, consumer attitudes, sustainable consumer behaviour

Contents

Figures

Tables

1 Introduction

The aim of this chapter is to introduce the topic of the thesis. Firstly, the background of the topic is discussed in the light of existing literature and the research gap is identified in order to better understand the purpose of the study. Secondly, the research question and objectives of the thesis are presented and thirdly, the delimitations of the study are clarified. Finally, the key concepts concerning the study topic will be defined shortly to avoid ambiguity and the overall structure of the thesis is described.

1.1 Background of the study

During the last decade, concern over the impacts of the production and consumption on the environment has increased considerably. The fashion industry among the most polluting industries in the world. (Moorhouse & Moorhouse, 2017.) It is globally worth of nearly 1.5 trillion US Dollars and it employs more than 300 million people along the value chain. During the last 20 years, clothing production has more than doubled, yet at the same time clothing utilisation has declined by approximately 40%. This increasing consumption in the fashion industry is largely caused by the growing *fast fashion* business model that offers fast-changing, affordable fashion made of cheap materials. (Statista, 2020; Ellen MacArthur Foundation, 2017.)

This is a problematic and unsustainable phenomenon, since it leads to alarmingly growing amounts of textile waste. Furthermore, textile production itself has numerous environmental impacts, including overconsumption of natural resources, pollution of soil and the water system with chemicals, dyes and microplastic as well as greenhouse gas emissions (Vehmas, Raudaskoski, Heikkilä, Harlin & Mensonen, 2018, p. 286). It has also been criticised for labour exploitation and a carbon footprint that is bigger than the carbon footprints of international aviation and shipping combined (BBC, 2020). Because of these tremendous environmental and resource challenges, it is essential to adopt more sustainable behaviours in the industry (Ozdamar & Atik, 2015).

There is already an alternative for this prevailing “take, make, dispose” –model: the global problems of fashion industry could potentially be minimized by making a transition from the current linear economy towards a circular model. In March 2020, the European Commission acquired a new circular economy action plan for a cleaner and more competitive Europe. This plan is one of the key components of the European Green Deal, Europe’s new programme for sustainable growth. It presents a new sustainable product policy framework that introduces new strategies across the whole product lifecycle, focusing on the product design, promoting circular economy processes as well as sustainable consumption. The plan concentrates on specific industries that are considered as problematic and whose potential for circularity is especially high. One of these sectors is the fashion industry. (Koszewska, Rahman & Dyczewski, 2020, p. 327.)

In circular economy (CE), the materials and products remain circulating as long as they can bring value in some form. The products that are in the end of their life cycle are converted into resources that are used in other goods’ production. Hence, CE changes the traditional economic logic by replacing production with sufficiency: “reuse what you can, recycle what cannot be reused, repair what is broken, manufacture what cannot be repaired”. (Stahel, 2016, p. 435.) In this way, the circular model “closes loops” in industrial ecosystems, which minimises both waste and the use of virgin materials. Researchers and practitioners have become interested in CE because it takes social benefits into consideration while also enhancing environmental protection. A research of seven European countries even suggests that a change to a circular business model would decrease each country’s greenhouse gas emissions by as much as 70% as well as reduce unemployment by 4%. (Agyemang, Kusi-Sarpong, S., Khan, Mani, Rehman & Kusi-Sarpong, H., 2019, p.972.)

The concept of CE has gained a lot of attention recently. Previous studies on the topic have mainly focused on the production side, examining the implementation of CE through circular business models and product innovations, aspects of supply chain management, strategies to develop circular value propositions and the drivers and

barriers to implementing such models (Rizos et al, 2017; Lewandowski, 2016; Agyemang et al. 2019, Koszewska et al., 2020). Yet, although these solutions are essential in generating the required changes, the lack of demand for these offerings would be a major barrier for the fulfilment of circular economy (Camacho-Otero, Tunn, Chamberlin & Boks, 2019).

A long-term success of CE necessitates collaboration and coordination across various domains: governments and the policies they develop, companies and their practices, especially their supply chain and operations management, societal norms and finally consumer acceptance and action (Hazen, Mollenkopf & Wang, 2017, p.452). According to Kirchherr et al. (2017), the lack of consumer interest and awareness is actually the main obstacle for the shift towards a circular economy in Europe. Rizos et al. (2016) reported a similar challenge, as the small and medium sized enterprises in their study reported that a lack of support from demand networks is the main barrier in trying to implement green innovations such as circular solutions (Kirchherr et al. 2017; Rizos et al. 2016).

The implementation of circular economy is enabled by the collaboration of novel business models and the actions of responsible consumers, so a strong emphasis of research should also be placed on understanding consumer behaviours and attitudes as well as how different individual factors might affect these attitudes (Kirchherr et al., 2017, p.229). The number of papers analysing consumers' role in CE and their attitudes toward circular fashion still remains very limited. Hazen et al. (2017) proposed that the role of consumers in "migrating toward collaborative consumption activities, purchasing for long-term sustainment, valuating maintenance versus disposability" require more attention in future research (Hazen et al., 2017). The attitudes and opinions of young generations (Y and Z, born between 1980 and 2010) are especially important to take into account in order to create successful long-term strategies, since it has been estimated that they will represent more than 45% of total purchases by 2025 (Gazzola, Pavione, Pezzetti & Grechi, 2020).

Previous research on circular economy has been widely concentrating on recycling, putting little emphasis on the other circular solutions (Ionascu & Ionascu, 2018, p. 357). In addition, a number of authors have stated that more understanding is required towards demographic and cultural factors and their role in affecting the attitudes and adoption of circular solutions (Edbring, Lehner & Mont, 2016; Atlason, Giacalone, Parajuly, 2017). Joergens (2006) and Joy et al. (2012) point out a need of further research concerning the cultural differences in attitudes towards sustainable fashion. The increased textile waste globally makes it necessary to implement global strategies and add cross-cultural research. (Joergens, 2006; Joy et al., 2012.) According to Kirchherr & Santen (2019), there is also a lack of empirical work on CE. Approximately 45% of the articles on CE today are conceptual, although practitioners are not interested in the definitional nuances of CE but rather require understanding on how CE can be implemented in real life. (Kirchherr & Santen, 2019.)

1.2 Purpose of the study, research question and objectives

The purpose of this thesis is to develop an understanding of the possibilities of circular economy in the fashion industry and to analyse young European consumers' attitudes towards these different models of circular fashion. In addition, this thesis aims to discover how individual factors affect consumer attitudes towards circular solutions.

Thus, the thesis addresses the following research question:

What kind of possibilities does circular economy offer to address the growing sustainability pressures in the fashion industry and how do young European consumers of diverse backgrounds perceive these different models of circular fashion?

In order to answer this question, it is broken down into the following supportive theoretical and empirical objectives.

1. To review the concept of circular economy and its' role in attaining sustainable development

2. To identify how the circular economy can be implemented through different circular models and why it is especially important in the fashion industry

3. To develop understanding of sustainable consumer behaviour and attitudes as well as the factors affecting these attitudes

4. To examine young European consumers' attitudes towards different models of circular fashion and sustainability in general

5. To analyse how the study respondents' attitudes towards circular fashion are affected by individual factors.

To achieve these study objectives, a deductive research approach is used. This means that a theoretical framework for the study is built prior to the collection of empirical data. (Saunders, Lewis & Thornhill, 2009.) Earlier literature in the fields of circular economy, circular fashion, sustainable consumer behaviour and consumer attitudes is used in identifying theories and ideas that will build a basis for the empirical section.

This thesis concentrates on fashion industry, because it is the second most polluting industry in the world. Furthermore, clothes are among the biggest, and at the same time most polluting consumer goods categories in the world. Moreover, this thesis will concentrate on the attitudes of generations Y and Z, as they have been recognized to cover 45% of total purchases in the fashion sector already by 2025, and it is therefore essential for the companies and policy makers to understand them (Gazzola et al., 2020).

The study not only considers the question of whether or not consumers' attitudes are favourable towards different circular models of fashion, but also aims to discover what

are the most significant individual factors affecting these attitudes to develop understanding of what are the issues that have to be considered to create a growing demand for circular fashion in the future. This is an important topic to address because the long-term success of circular economy is strongly dependent on a deeper understanding of consumers' attitudes and behaviours. Consumers have a critical role in the final CE implementation as they decide whether to purchase new or remanufactured products and how often, and when and how to dispose of end-of-life products. Thus, a better understanding of consumers will help firms perform strategies to motivate eco-conscious fashion consumption and create circular offerings that better correspond to the demand. For example, questions about what issues should be taken into account in product design and their marketing communication, what kind of circular clothes should be offered to which target group and how should the marketing efforts be targeted should be answered. Furthermore, policy-makers need understanding of these issues in order to set incentives that promote sustainable production and consumption. (Moody & Nogrady, 2010.)

After building the theoretical framework, it will be used as a basis for the empirical study that will collect and analyse data about young European consumers' attitudes towards sustainable consumption and different circular fashion offerings, as well as the individual factors that might affect these attitudes. A survey strategy is used to collect these data that is analysed using quantitative analysis techniques. The methodological choices will be further discussed in chapter 3.

1.3 Delimitations of the study

As already discussed in the previous sub-chapters, this thesis has several delimitations that narrow its scope and sets boundaries for the study. Firstly, the implementation of circular economy is categorized in three different levels: macro (city, state, country and society), meso (industrial symbioses & eco-industrial parks) and micro (single firms & consumers) (Ghisellini, Cialani & Ulgiati, 2016). In this thesis, the circular economy is mainly explored at the micro-level, and the main focus is on the consumer perspective.

It is also acknowledged that consumer behaviour and attitudes is a broad area of study, but as the purpose of the study is to discover what are consumers' attitudes towards circular fashion, this paper concentrates on the consumer attitudes in a relatively general level without excessively deepening the psychological nor behavioural aspects of the topic.

The target population of the study is young consumers of generations Y and Z, thus born between 1980 and 2010 (PwC, 2018). Geographically, the study has been limited to cover only European consumers. Europe has been chosen as the regional focus of the thesis since the European Commission has acquired a range of ambitious CE policies, for instance the Circular Economy Package (initiated in 2015 and revised in 2018).

Moreover, as the CE in general is a very broad area to study, in this thesis it will be explored in the context of fashion industry as it is among the industries that would benefit from switching to CE the most. Furthermore, circular fashion is often confused with other forms of sustainable clothing, but this study focuses on circular models of clothing and other forms of eco-friendly clothing are purposefully ignored. Further, the emphasis is on clothing and fashion accessories, such as shoes and bags. Other types of textiles, such as home and interior textiles and industrial textiles are excluded from this study.

1.4 Key concepts and definitions

The central concepts used in this study will be briefly introduced in table 1 to provide a better understanding of the topics discussed in the forthcoming chapters. They will be further discussed in chapter two. These concepts are *circular economy, circular fashion, sustainable development, consumer attitudes and generations Y and Z.*

Concept	Definition
Circular economy (CE)	Circular economy is an economic system whose purpose is to fight against the exhaustion of natural resources and close loops of material and energy by reducing, reusing and recycling. (Prieto-Sandoval, Jaca & Ormazabal, 2018)
Circular fashion (CF)	"Circular fashion can be defined as clothes, shoes or accessories that are designed, sourced, produced and provided with the intention to be used and circulated responsibly and effectively in society for as long as possible in their most valuable form, and hereafter return safely to the biosphere when no longer of human use." (Anna Brismar, Green Strategy, 2017)
Sustainable development	"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations Brundtland Commission, 1987).
Consumer attitudes	Consumer attitudes can be defined as feelings of favourableness or unfavourableness that an individual has towards an object. Consumer attitudes consist of beliefs, feelings and behavioural intentions towards products.
Generations Y and Z	A generation signifies a group of people who are born within a similar span of time, share a similar life stage and who were

	shaped by a certain span of time including its events, trends and developments (McCrindle & Wolfinger, 2009). Generation Y (also known as millennials), refers to those born between 1980 and 1994. Generation Z are individuals born between 1995 and 2010 (PwC, 2018).

Table 1. Key concepts of the thesis

1.5 Structure of the thesis

This thesis is divided into five main chapters. The first chapter of the thesis is an introduction. The main goals of this chapter are to introduce the topic of the thesis to the reader by giving an overview of previous research done in the field and to express the need for the study by identifying the *research gap.* Further, the purpose of the study is presented by discussing the *research question and objectives, and delimitations* of the study are defined. Finally, the *structure* of the thesis is described along with the *key concepts* in order to better understand the upcoming theoretical part.

In the second chapter, the theoretical framework of the study is built. It consists of a comprehensive discussion of the existing theories of the study topic. The main theories to be reviewed are the theories of circular economy, circular fashion as well as sustainable consumer behaviour and attitudes. Also the role of individual and contextual factors in consumer attitudes will be discussed. Finally, these theories are summarised and combined in order to build the theoretical framework for the study.

The third chapter presents the methodology used to gather and analyse data for the study. It describes the research design and method for data collection. First, the research philosophy and approach will be discussed, as they provide a foundation for the selection of research design that will be discussed subsequently. The research design includes research strategy, choices and time horizons. Next, the data collection

techniques and the sample of the research were presented and finally, the credibility of the study will be assessed by separately evaluating the validity and reliability of the study.

The fourth chapter introduces the empirical findings. First, the findings of the respondents' general attitudes towards sustainability will be presented. Then their attitudes towards the chosen models of circular fashion will be discussed together with the most significant individual factors that affected these attitudes.

The final chapter is a *conclusion* that summarizes and evaluates the findings of the study, connecting the theoretical framework with the empirical knowledge gained from the conducted interviews. Furthermore, managerial implications are suggested. Lastly, limitations of the study are evaluated and suggestions for future studies within this field are given. The structure of the paper is summarised in figure 1.

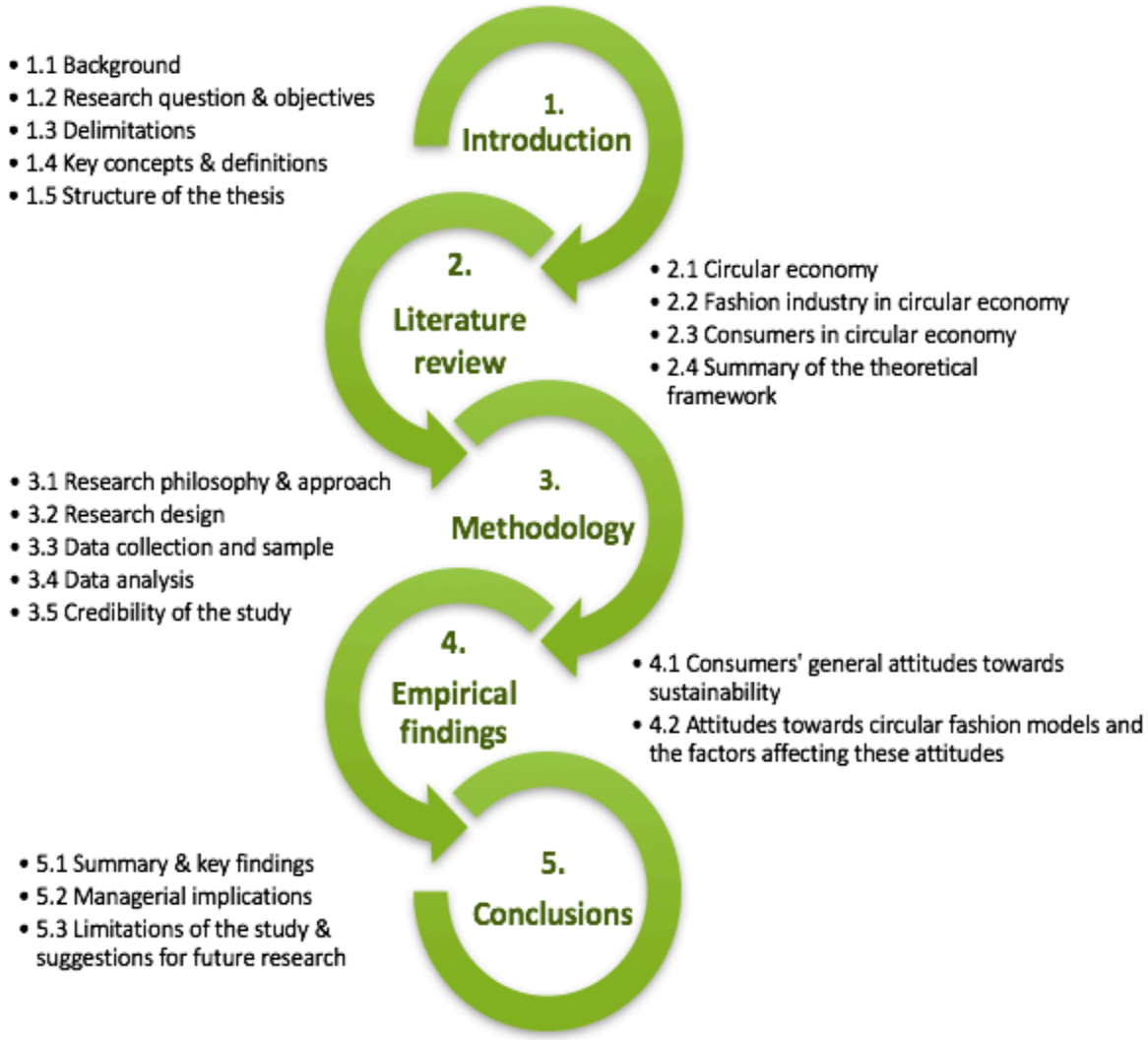

Figure 1. Structure of the thesis

2 Literature review

In order to understand circular fashion, it is first crucial to understand the concept of circular economy – it is the foundation of the circular fashion concept. In this chapter, the concept of circular economy will be introduced and its' background will be presented in order to understand the factors that have affected its development. Subsequently, the circular business models will be discussed to give an idea of the different options for CE implementation. Next, an overview of the fashion industry will be given and circular business model options in the fashion sector will be discussed. After that, consumers' role in circular economy will be explored as well as the key factors that influence their attitudes towards sustainable consumption. Finally, the literature review will be summarized to form the theoretical framework of the study.

2.1 Circular economy

Over the last decade, circular economy (CE) has received increasing attention worldwide as a better alternative to the prevailing production and consumption model that is based on continuous growth and increasing use of natural resources. The numerous negative impacts of the current linear economy are threatening the stability of natural ecosystems that are crucial for the survival of humanity. In response, CE seeks to increase the resource efficiency in order to reach a better balance between economy, environment and society, leading to sustainable development and harmonious society. (Ghisellini et al., 2016, pp. 11-12.) In order to better understand the circular model, the origins of the circular economy are first presented.

2.1.1 Origins of circular economy

CE has been developed from a multidisciplinary perspective: it includes approaches from sciences such as ecology, economy, engineering, design and business. Some of the relevant theoretical schools of thought that have influenced the development of CE are Cradle to Cradle design philosophy, industrial ecology, performance economy,

biomimicry and the blue economy systems approach. These schools of thought are complementary to each other and have built the foundation for the main principles of CE. (Lewandowski, 2016; Stahel, 2016; Ellen MacArthur, 2017.)

Society's route to circular economy can be broken down to three major stages. The first stage is the linear economy, illustrated in figure 2, which represents a traditional economy where natural resources, such as raw materials, are turned into base materials and products through a chain of value-adding steps. This model is traced to the industrial revolution in the 17th century, when new technological and scientific innovations paid no attention to the limits of the environment and started to cause long-term damage. (Prieto-Sandoval et al., 2018, p. 605.) In the linear model, the products are eliminated after use with a remarkable loss of value. This causes numerous negative impacts on the environment because of the ineffective use of resources and excess waste created along the value chain (Ionascu & Ionascu, 2018; Agyemang et al., 2019).

Figure 2. Linear economy.

The linear economy was boosted even more after the Great Depression in 1930's, when *planned obsolescence* was presented as a new strategy to stimulate the market. By 1950's, following the World War II, planned obsolescence was permanently acquired by various industries to design products that would become outdated quickly and be replaced by consumers with new products, helping companies to boost their profits. As the environmental consequences of these actions started to become clear, scholars and practitioners began searching for alternative design frameworks (Moreno, De los Rios, Rowe & Charnley, 2016). The linear model was first widely questioned in 1960's when a

significant interest towards environmental issues arose, mostly as a result of various publications that proposed recirculating the scarce natural resources in order to make them unlimited. (Prieto-Sandoval et al.,2018, p.609.)

The second stage began in the late 1960's when the concept of *industrial ecology* was introduced by Ayres and Kneese (1969). It is based on an idea that industrial activities could function in the same way as a metabolism, where different actors can be united through their wastes and resources that constantly circulate through the resource inventory of the system. Industrial ecology promoted the transition from open to closed material cycles and can be therefore perceived as a prototype of the CE. (Ghisellini et al., 2016.) In this stage, interest towards a greener economy appeared. Green economy has had a big role in the environmental strategies of governments and institutions and it can be defined as one that leads to increased human well-being and social equity while notably lowering environmental risks and ecological scarcities (UNEP, 2011). However, green economy was criticised for weak sustainability actions and for not aiming to change the linear production and consumption system profoundly (Prieto-Sandoval et al., 2018, p.609).

Finally, the third stage began in the early 1990's when Pearce and Turner (1990) primarily introduced the term "circular economy" to illustrate the possibilities of taking into consideration environmental awareness in economic flows by closing industrial loops. Even though circular economy concepts have been already applied successfully in small scales since the 1990's, it became a popular topic after it was presented to the public in 2014 by the policymakers from China and the EU as a solution that would allow states, companies and individuals to minimize the damage done to the environment and to close the lifecycle loop of products. (Stahel, 2016, p.436; Prieto-Sandoval et al., 2018, p.605.)

2.1.2 The definition and basic principles of CE

Although the concept of the circular economy is already widely used by academics and practitioners, there is no universal consensus on its' definition. CE has been probably first defined and conceptualised in the Ellen MacArthur Foundations' report as "an industrial system that is restorative or regenerative by intent and design" (Ellen MacArthur, 2013). Park et al. (2010) and Ma et al. (2014) focus on the role of CE as a policy and model that is designed for promoting economic growth in a sustainable and nature-respecting way. On the other hand, Yuan et al. (2008) and Haas et al. (2015) highlight the strategic value that CE has "by closing economic and ecological loops of resource flows". (Ellen MacArthur Foundation, 2013; Park, Sarkis & Wu, 2010; Ma, Wen, Chen & Wen, 2014; Yuan, Jiang, Liu & Bi, 2008; Haas, Krausmann, Wiedenhofer & Heinz, 2015.)

Later, Kirchherr et al. (2017) offered a definition based on their systematic analysis of 114 different definitions used in the scientific literature. Even though this definition certainly has its own shortcomings, it takes comprehensively into account all the layers of circular economy and is functional for the purpose of this study. Their proposal for the definition of CE is "an economic system that replaces the "end-of-life" concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes. It operates at the micro level (products, companies, consumers), meso level (eco-industrial parks), and macro level (city, region, nation, and beyond), with the aim of accomplishing sustainable development, thus simultaneously creating environmental quality, economic and social equity, to the benefit of current and future generations. It is enabled by novel business models and responsible consumers." (Kirchherr et al., 2017, p.229.) The different layers of CE mentioned in this definition will be next explored in more detail.

Circular economy is a holistic concept. Therefore, it conflicts with the silo structures of the academic world, companies and administrations that traditionally have seen materials as something to be continually consumed in order to create wealth and

increase the gross-domestic product (GDP). Today, concerns about the scarce resources, ethics, safety and greenhouse gas emissions are forcing us to change this approach and consider materials as assets to be preserved. (Stahel, 2016, p.436.)

The very idea behind the CE is to retain resources at their highest possible value at all times, eliminate waste and leave “enough for all forever”. In the context of CE, waste refers to more than just physical garbage: it also means end-of-life products and the under-utilisation of products and materials. In colloquial language, CE is often used as a synonym for recycling or using waste or side streams as raw materials to other products. Indeed, both of these are important aspects of the circular economy, but they only represent a small part of it. The basis of CE is the idea of preserving the value of products and materials for as long as possible with the minimum impact on the environment. (Fontell & Heikkilä, 2017, pp.21-22.)

CE improves the resource efficiency and restores the harm caused by the resource acquisition. Following CE principles, a minimal amount of waste is generated during the production process as well as throughout the whole product life-cycle because of the development of sustainable use of resources, sustainable recycling and closed-loop supply chains (Agyemang et al., 2019). The products in circular economy will be either retuned to a new economic cycle by repairing, refurbishing, reusing, rebuilding and recycling, or restored to nature after use as biodegradable materials. (Ionascu & Ionascu, 2018.)

Although there have been numerous divergent views on the definitions of CE, most researchers in the field agree on the fact that CE is an important tool for attaining sustainable development (Prieto-Sandoval et al., 2018, p.610). The most common definition for sustainable development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987). Sustainable development consists of three dimensions: economic, environmental and social dimension. According

to Korhonen et al (2018), all tree dimensions have to be involved in order to successfully apply the concept of circular economy (Korhonen, Honkasalo & Seppälä, 2018, pp.39-40). In practice, the circular economy prioritizes environmental sustainability while acknowledging the economic development, but the social objective is still mainly absent. However, it can be argued that if the CE principles are followed, also a general welfare improvement will emerge as a consequence. (Sauvé et al., 2016.)

In order to understand the circular economy cycle as a whole, it is visualized in figure 3. Firstly, companies take natural resources from the environment and change them into products and services. The circularity aspect must be taken into account already in this stage: circular design uses renewable energy in production, eliminates the use of toxic chemicals that might prevent the reuse of the materials and aims to remove the waste by using quality materials that last long and can be either reused or recycled after use. Systems thinking should be involved, so that designers could make informed decisions about which circular strategies to use in accordance with the business model and the socio-cultural aspects in which the circular model will be implemented. (Moreno et al., 2016.)

After that, the products or services are distributed to consumers or other companies, and they are consumed in the market. In this stage, the aim is to maximise the usage rate of the product as well as reuse and repair it until it is no longer sensible. The role of consumers in promoting CE will be discussed in the section 2.3. After this stage the circular economy intends to *close the loop* by recovering the goods so that they can be returned to the cycle as an alternative to simply disposing them after use (Prieto-Sandoval et al., 2018.) Ideally, the materials recycled from discarded products maintain their original quality and they can be used again to produce similar products. As a consequence, no new natural resources are required to produce materials, and disposed products do not become waste anymore. This so called *ultimate circularity,* in which the loop is completely closed, is at least not yet possible in practice but it is the ideal situation

at which the shift to CE is aimed to result in. (Potting, Hekkert, Worrel & Hanemaaijer, 2017.)

Figure 3. Circular economy cycle (Tandem Circular Consulting, 2020).

In the CE, there are various loops or cycles that symbolise different levels of efficiency. Most commonly, CE is depicted by means of four loops that also represent the key principles of CE: *product-life extension, redistribution/reuse, remanufacturing* and *recycling.* These loops are often also categorised to inner loops and outer loop. The inner loops are the "primary" loops, where design has an important role. Inner loops include remanufacturing and reuse, as well as maintenance and increased usage rate of a product. The outer loop, also called the "loop of last resort", is recycling. Although recycling can preserve the virgin materials that a product is made of, it does not preserve any other resources that were used in the production, such as labour. (Urbinati, Chiaroni & Chiesa, 2017.)

The implementation of CE can be categorized in three different levels: micro, meso and macro. The macro-level includes activities done at a city, province, region or national level as well as actions to encourage a circular economy oriented society. As for the meso-level, it describes an inter-firm level, including industrial symbiosis and eco-industrial parks. Finally, the micro-level, also known as enterprise level, focuses on activities of single firms or consumers. (Ghisellini et al., 2016, p. 12.)

2.1.3 Opportunities and challenges of CE

A shift from linear to circular economy has countless benefits and opportunities across society and environment. The potential macroeconomic benefits of this shift include economic growth through material cost savings and increased profits, job creation potential in e.g. remanufacturing and service sector and increased innovation. Again, the increased innovation leads to higher rates of technological development, improved materials, labour and energy efficiency, as well as reduced waste management and emission control costs. According to a report of McKinsey (2016), these developments could translate into 7% higher GDP increase by 2030, compared to the current development path (McKinsey, 2016). (Korhonen et al., 2018.)

Shifting their operations to follow the principles of CE, also companies would gain significant advantage. The benefits for businesses include new profit opportunities, reduced raw material and energy costs and demand for new business services. The economic value that is created in the production process using raw materials can be used multiple times through CE. By adopting CE principles, companies can also improve their image: they can emphasize sustainability in their advertising, which has proved to be appealing to customers. Furthermore, customer interaction and loyalty can be enhanced because of new business models that establish longer-term relationships, due to the increased number of touch points over the lifetime of a product. (EllenMacArthur Foundation, 2017; Korhonen et al., 2018.)

Obviously, the benefits of CE extend beyond the economy, to the natural environment. It is estimated that by 2030, a successful transition to CE could reduce carbon dioxide emissions by 48% in Europe. By 2050, the carbon dioxide emissions would drop as much as 83% from 2012 level. Also primary material consumption could be reduced by 32% by 2030. Additionally, CE reduces the usage of virgin materials and water, minimizes waste creation and eliminates existing waste. (Ellen MacArthur Foundation, 2017; Fontell & Heikkilä, 2017, p.47.)

It is worth acknowledging that the CE would not only benefit companies, the environment and the economy at macro level, but also the individuals. For example, a circular economy could increase the disposable income of the average European household, since the money invested in products and services would be reduced. It is estimated that by 2030, the average disposable income of European households could increase 11% more than following the current development path (EllenMacArthur Foundation, 2017). Further, the CE would promote sustainable consumption habits and the utility or benefit that consumers perceive could be improved by the increased customer choice and quality of the products that circular models offer. Also, the total ownership costs of products would be significantly reduced because of overcoming the premature obsolescence caused by poor quality or fast-changing trends. (EllenMacArthur Foundation, 2017.)

Despite its indisputable benefits and growing popularity among politics, businesses, academics and individuals, the concept of CE also has its challenges. It has been criticized for the lack of achievability, which refers to the difficulties in closing the loops indefinitely in certain sectors. For example, in paper recycling the number of cycles is very limited, and some hazardous waste cannot be recycled at all (Circular Academy, 2020). This might be true, but the CE should not be seen as an “all or nothing” –phenomenon but it should rather be adapted to the context and utilised as much as possible.

In addition to the achievability, CE has been criticized for the lack of desirability for firms. This concern arises from the fact that trying to reach a 100% recyclability might still turn out to be counterproductive in the current situation, if for example the price of recovery is higher than the value of the recovered materials. This could be solved by setting regulatory incentives that would make pursuing CE objectives more attractive than the traditional ones. Additionally, CE is criticised to often ignore social benefits – CE principles are mainly constructed from a business point of view that takes equally into account the environmental and economic dimensions, but the third dimension of sustainability is lacking. It is evident that the additional manufacturing processes in CE – such as refurbishing or recycling – create new employment opportunities. However, the jobs might not be created locally but centralized on the other side of the world. Additionally, abuse of power, unfair labour or living conditions and disrespect of human rights are not necessarily reduced by CE. Thus, the CE framework does not fulfil all the dimensions of sustainability (Circular Academy, 2020).

One more challenge in CE is the lack of strategic guidelines and standardisation. The CE framework does not yet offer any specific criteria to the choice of actions nor particular guidelines on the CE implementation. The implementation of CE differs a lot in different markets and products, and the demand for individualised approaches makes it complicated to offer any general guidelines. Moreover, the switch to CE might require controversial compromises: CE principles might exclude not fully recyclable materials in production, even though they could, in some cases, be more environmentally friendly than the fully recyclable ones. Therefore, the CE principles should not be always followed indiscriminately but the choices should be carefully weighed depending on the situation. (Ritzén & Sandström, 2017; Korhonen et al., 2018; Circular Academy, 2020.)

In addition to these challenges mainly related to the concept of CE, a number of studies in recent years have identified certain barriers that have frequently occurred in CE implementation (e.g. Pheifer, 2017; Rizos et al., 2015; Ranta et al., 2017; Jesus & Mendonca, 2018). These barriers can be categorised to financial, structural, operational,

attitudinal and technological barriers. The financial barriers include difficulties in measuring the financial benefits of circular economy, as well as concerns about financial profitability of the CE business models. The structural barriers refer to the missing exchange of information and unclear distribution of responsibility. The main operational barrier is the infrastructure/supply chain management that needs to be rethought in order to succeed in the transition towards CE. The attitudinal barriers are related to the perception of sustainability and risk aversion. The technological barriers include problems related to product design and the CE integration into production process. (Ritzén & Sandström, 2017.)

Moreover, Hazen et al. (2017) point out that one challenge of CE is that consumers tend to have a poor opinion of remanufactured or reused products and are therefore unlikely to adopt them (Hazen et al, 2017). Also, Kirchherr et al. (2017) reported that the lack of consumer interest and awareness is actually the main obstacle for the shift towards a circular economy in Europe (Kirchherr et al., 2017). Rizos et al. (2016) reported a similar problem, as the small and medium sized enterprises studied in their paper revealed that a lack of support from demand networks is the main challenge in trying to implement green innovations such as circular solutions. Indeed, the successful implementation of CE requires understanding consumers' attitudes. (Rizos et al., 2016.)

The above discussed opportunities and challenges of circular economy are summarised in table 2 by category.

	Opportunities	***Challenges***
Society	-Economic growth -Job creation -Innovation -Technological development	-Lack of focus on social issues -Centralised employment opportunities -Infrastructure
Companies	-Reduction of raw material and energy costs -New business and market opportunities	-Lack of achievability in certain sectors -Lack of standardised implementation guidelines

	-Improved image -Increased innovation -Enhanced customer relationships	-Short-term financial unprofitability -Unclear distribution of responsibility -Legislation and taxation -Supply chain management -Risk aversion
Environment	-Reduction of carbon dioxide emissions -Reduction of virgin material consumption -Minimization of waste creation -Elimination of existing waste	-Over-simplistic goals: blindly excluding not fully recyclable materials
Individuals	-Increased disposable income -Promotion of sustainable consumption habits -Increased customer choice -Enhanced product quality -Reduction of total ownership costs	-Lack of interest and awareness

Table 2. Opportunities and challenges of circular economy by category

2.1.4 Circular business models

The implementation of circular economy at the microeconomic level is done through circular business models (Ionascu & Ionascu, 2018, p.357). A business model refers to the organisational and financial architecture that defines how a company turns its resources and capabilities into economic value (Teece, 2010). With circular business models, companies create value restoring the value retained in existing products to create new ones. Based on a review of earlier definitions, NuBholz (2017) suggests the following definition: "*A circular business model is how a company creates, captures, and delivers value with the value creation logic designed to improve resource efficiency through contributing to extending useful life of products and parts (e.g., through long-*

life design, repair and remanufacturing) and closing material loops" (NuBholz, 2017, p.12).

Although there is still lack of consensus between different authors to understanding circular business models, there seems to be agreement on that circular business models contribute to: 1) Replacing virgin material input with secondary production, 2) Extending the useful lifetime of products by designing for longer lifespans and facilitating second life (e.g. repair, remanufacturing, shared use) and 3) Material recycling (NuBholz, 2017). Over the last decade, authors have suggested several different categorisations for circular business models. Three widely used categorizations are summarized in table 3 below.

Model & author				
ReSOLVE (McKinsey, 2016)	Regenerate, Exchange	Optimize, Loop	Share, Virtualise	
Five models driving the CE (Accenture, 2014)	Circular supplies		Product as a service, Sharing platforms	Product life extension, Resource recovery
9R's	Rethink, Reduce	Remanufacture Refurbish, Repurpose	Reuse, Repair	Recycle, Recover
Life-cycle stage	Material extraction	Production	Usage	End-of life

Table 3. Overview of circular business model categorizations. (Adapted from NuBholz, 2017.)

One of the most used categorisations is the ReSOLVE framework, developed by McKinsey & Company, that illustrates the major circular business opportunities. The ReSOLVE framework consists of six business actions: regenerate, share, optimize, loop, virtualize and exchange. (Lewandowski, 2016; McKinsey, 2016.)

Regenerate refers to a shift to renewable energy and renewable materials, reclaiming, retaining and restoring health of ecosystems and returning recovered biological

resources to the biosphere. One example of *regenerate* is the European power sector that is making a rapid shift into renewables.

Share refers to keeping the speed of the product loop slow and maximising the usage rate of products by sharing them between several users (either peer-to-peer sharing of privately owned products or public sharing of a pool of products), reusing them throughout their useful lifetime (second-hand), as well as lengthening their lifetime through maintenance, repair and designing for durability. Some good examples of *share* include the carpooling app BlaBlaCar and AirBnb, online marketplace connecting people who want to rent out their homes with people that are looking for accommodations. (Lewandowski, 2016.)

Optimize includes the actions of enhancing the performance/efficiency of products, removing waste in production and along the supply chain (e.g. in sourcing, production, logistics, use and end-of-life collection), utilising big data, automation, remote sensing and steering. These actions do not demand switching the product or technology, as demonstrated by the lean philosophy of Toyota.

Loop contains activities like keeping components and materials in closed loops and prioritising inner loops. For finite materials, this signifies primarily remanufacturing products or components and recycling as the last alternative. For instance, Caterpillar, Michelin, Rolls Royce and Renault are using this practice. In the case of renewable materials, this means anaerobic digestion and extraction of bio-chemicals from organic waste.

Virtualise refers to delivering services virtually. Services such as virtual books or music, online shops and virtual offices belong under this category. Also, for example Google and Apple are planning to launch driverless cars in the near future.

Exchange means replacing old materials with advanced non-renewable materials; applying new technologies, such as 3D printing and electric engines and opting for new products and services. (McKinsey, 2016.)

Another widely known list of circular business models is introduced by Accenture (2014). It specifies five main business models that are driving the circular economy:

Circular supplies: Supplies fully renewable, recyclable or biodegradable input materials, replacing the linear single-lifecycle inputs.

Resource recovery: Recovers useful resources or energy out of disposed products or by-products.

Product life extension: Extends working lifecycle of products through repairing, upgrading and reselling.

Sharing platforms: Facilitates increased utilization rate of products by enabling shared use, access or ownership

Product as a service: Offers access to products and retains ownership to internalise benefits of circular resource productivity. This business model can be applied to any part of the value chain. (Accenture, 2014, p.12.)

Furthermore, various **R-frameworks** have been widely used in academic literature and by practitioners. A particular starting point for these frameworks cannot be traced, but many authors consider the R-frameworks as the "how-to" of CE. (Zhu et al., 2010; Reh, 2013.) Scholars have proposed different frameworks ranging from 3R's (King et al., 2006; Brennan et al., 2015; Ghisellini et al., 2016) to 9R's (Van Buren et al., 2016; Potting et al., 2017) and everything in between, depending on the context and nuances needed for its' purpose. All the 9R's used in previous studies are *Rethink, Reduce, Reuse, Repair,*

Refurbish, Remanufacture, Repurpose, Recycle and *Recover*. (Kirchherr et al., 2017.) This framework will be further discussed in section 2.2.2 in the context of fashion industry.

2.2 Fashion industry and circular economy

Textiles and clothing are an essential part of everyday life for almost everyone and also an important part of the global economy: clothing industry is worth of almost 1.5 trillion US Dollars globally and it employs over 300 million people along the value chain (Ellen MacArthur Foundation, 2017, p.18). The production of textile fibres, consumption of textiles and, as a consequence, the amount of textile waste are constantly increasing globally. In the fashion industry, more styles at lower prices in shorter time cycles are offered and consumers are encouraged to change their styles frequently. (Dahlbo et al. 2017, Cao et al. 2014.)

The fashion industry has been linked with excessive consumerism, elitism and guilty pleasures (Gazzola et al., 2020). In the last 15 years, the production of clothing has approximately doubled because of an increasing middle-class population around the world and growing sales per capita in mature economies (Ellen MacArthur Foundation, 2017, p.18). The latter is largely caused by the so called *fast fashion* that has been a flourishing and increasingly widespread phenomenon during the past decades. It refers to a business model in which retailers produce low-priced and low-quality items and have numerous seasons per year in contrast with the traditional two collections per year. Spending little money to dress following the latest trends and in different ways has become the standard for most consumers; across almost every clothing category, consumers keep their garments about half as long as they did 15 years ago. (McKinsey, 2016.)

On the other hand, attention to sustainability and CE are becoming the most important changes affecting fashion demand. Consumers are to a greater extent interested in recycling and environmentally friendly lifestyle, and organic products and sustainable

brands are becoming increasingly popular. Especially the young generations, Y and Z, are more socially and environmentally conscious than the earlier generations. They value transparency and authenticity and expect the fashion brands to be sustainable and ethical in their production processes. Thus, sustainable fashion consumption is emerging as a megatrend, responding to fast fashion and traditional business models. (Gazzola et al., 2020.) Accordingly, numerous players in the fashion industry are already making an effort in differentiating their products as eco-fashion to get a competitive advantage. Despite the fact that consumers are becoming more eco-conscious and there is clearly a demand for eco-fashion, it is still not selling particularly well. Ethics and sustainability in fashion industry seem to be complicated phenomena, and an oxymoron within the fast fashion sector. (Vehmas et al., 2018.)

There are, however, a number of ways to reduce the contradiction between sustainability and fashion. The so-called slow fashion has started to become more popular as a response to the unsustainable fast fashion trend. It refers to a socially conscious movement that changes consumers' mind-sets from quantity towards quality. The idea of slow fashion includes slow production, fair salaries and consumption, and lengthening the lifespan of garments. The movement's purpose is to inspire consumers to purchase clothes less frequently but with a higher quality, so that they could be perceived as investments. (Jung& Jin, 2014.) For instance, the ability to utilise the same items of clothing in many different ways would encourage consumers to keep and use them for a longer time and buy fewer new ones (Cao et al., 2014). This philosophy is also in line with the principles of circular economy.

According to Gazzola et al. (2020), one of the most significant changes influencing fashion demand in the future will be the attention to circular economy and sustainability (Gazzola et al., 2020, p.3). The concept of circular fashion was first used in 2014 by Anna Brismar, owner of the consultancy firm Green Strategy. Brismar defined circular fashion as "clothes, shoes or accessories that are designed, sourced, produced and provided with the intention to be used and circulated responsibly and effectively in society for as

long as possible in their most valuable form, and hereinafter return safely to the biosphere when no longer of human use" (Brismar, 2017).

2.2.1 Why circular fashion

Sustainability pressures in the fashion industry have emerged in recent years because of several issues; global population growth, climate change and land and water shortage. The fast fashion phenomenon worsens these issues even more, as it causes high water consumption and huge greenhouse gas emissions, increases the amount of textile waste, releases hazardous chemicals and violates human rights. (Gazzola et al., 2020.)

The textile waste in particular is a huge global problem. According to Ellen MacArthur Foundation, the equivalent of one garbage truck of textiles is either landfilled or burned every second and more than 500 billion US Dollars of value is lost every year as a consequence of underutilization of clothing and insufficient recycling. In the last two decades, the average global consumption of textiles has almost doubled from 7 to 13 kilograms per every person on the planet annually. In Western Europe, an equivalent number is as much as 22 kilograms per user each year (Shirvanimoghaddam, Motamed, Ramakrishna & Naebe, 2020.) The global fashion industry still operates largely on a linear basis, which has countless negative impacts in the environment and society: the total greenhouse gas emissions from textile production alone are 1.2 billion tonnes per year, which is more than those of all international flights and maritime shipping combined worldwide (Ellen MacArthur Foundation, 2017, p. 3).

The fashion industry alone uses every year more than 98 million tons of non-renewable resources, such as oil to produce synthetic fibres, fertilizers for cotton plantation and different chemicals for producing, dyeing and finishing fabrics. In addition, 93 billion cubic meters of water is used annually and 500 thousand tons of micro-plastic are poured into the oceans, which has numerous effects such as damaging aquatic creatures and birds, and ending up in human digestion causing serious health problems, such as cancer. (Gazzola et al., 2020, p.6.)

Since 2000, clothing production has more than doubled, yet at the same time clothing utilisation has declined by approximately 40%. This development is illustrated in figure 4. If the demand for clothing keeps on growing as presumed, the total clothing sales will be 175 million tonnes by 2050, which is more than triple compared to the sales of today. This in turn would multiply the above discussed side-effects of clothing production, consumption and disposal. (Ellen MacArthur, 2017.)

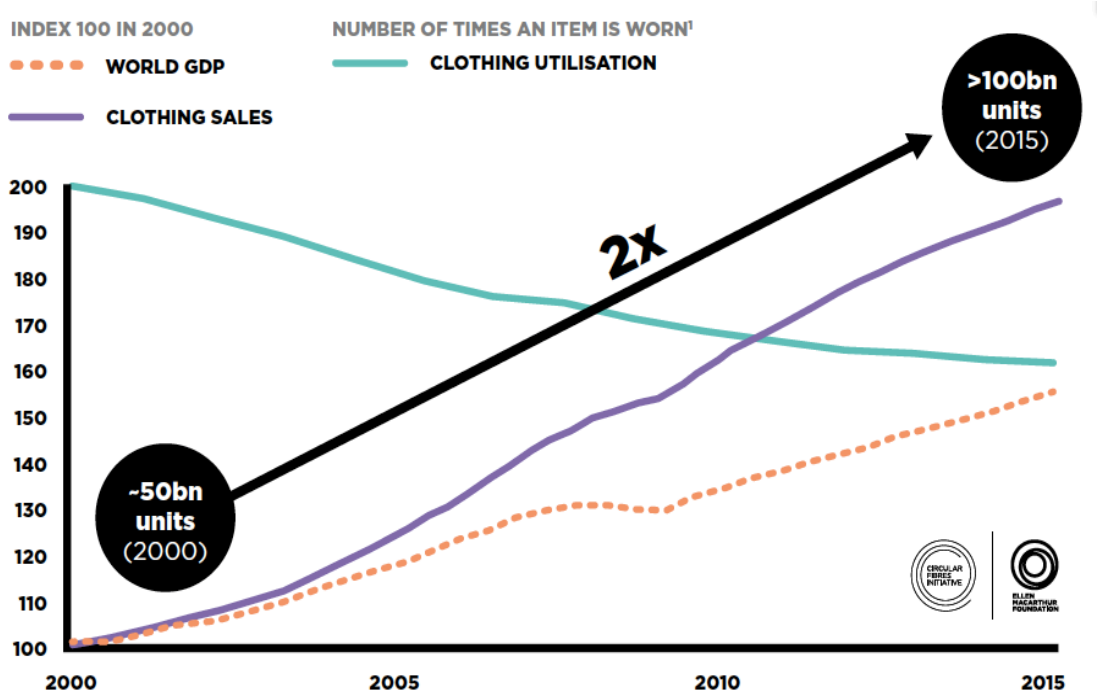

Figure 4. Growth of clothing sales and decline in clothing utilisation since 2000 (Ellen MacArthur Foundation, 2017, p.18)

Because of the current fast fashion culture, most consumers do not consider repairing or maintaining their clothes as worth the time and money and they rather just buy new ones. A growing number of people do not have the skills or equipment, like sewing machines, to do even small repair tasks by themselves. This leads to perfectly usable clothes being discarded unnecessarily. Currently, more than two thirds of textiles go to landfill when they are no longer used, and only 15% of them are recycled in some form. (Fontell & Heikkilä, 2017, p.23; Shirvanimoghaddam et al., 2020.)

Circular economy concerns all sectors of economy, and its' earlier discussed benefits are also applicable to the fashion industry. Thus, most of the challenges in the current fashion industry could be tackled by making a shift towards CE. For instance, textile reuse, recycling and remanufacturing could be sustainable solutions for decreasing the amount of textile waste in landfill and for reducing the need of virgin materials as well as energy and water consumption in the production process. (Shirvanimoghaddam et al., 2020.) In the next section, circular business models for fashion are explored more closely.

2.2.2 Circular solutions in the fashion industry

As the basis of the CE is the idea of maintaining the value of products and materials for as long as possible with a minimum impact to the environment, the principal goal of circular fashion is to be able to use garments in their original form for the maximum time (inner loops). This is the preferred alternative when the clothes are still in a good condition but for some reason no longer used. Creating a fully circular fashion industry demands massive changes along the fashion supply chain, from the initial designs to the end of the garments' life. Circular garments should be designed from resource-efficient and good-quality materials that last. Further, it should be biodegradable or recyclable so that it can be regenerated back to the system when no longer used.

The R-framework, discussed in section 2.1.4., is next used to discuss different types of circular fashion strategies more deeply. For the purposes of this thesis, a 6R framework was chosen as it illustrates a suitable amount of nuances for the context of circular fashion and the consumer perspective. These 6R's are Rethink, Remanufacture, Rent, Reuse, Repair, and Recycle. (Potting et al., 2017.) The 6R framework of circular clothing is illustrated in figure 5.

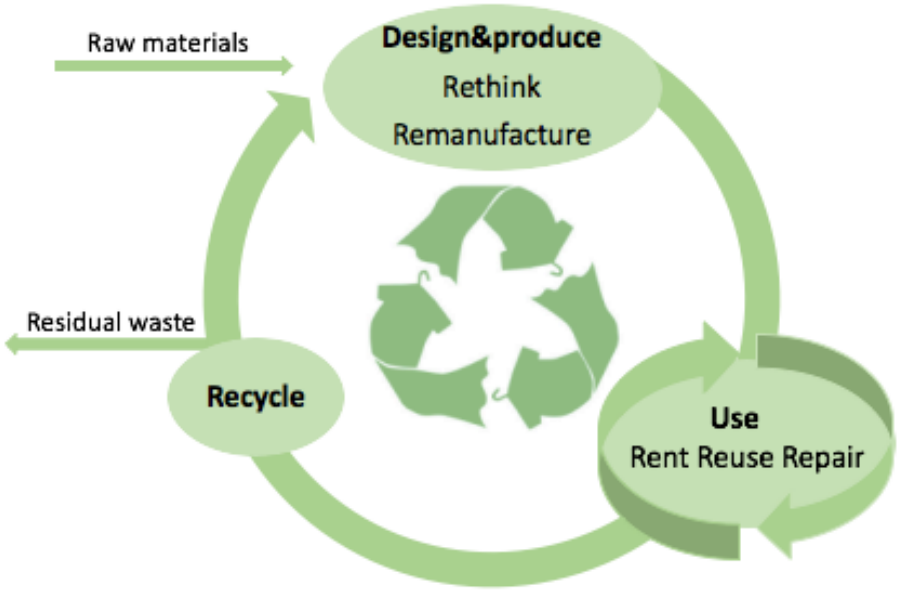

Figure 5. 6R Framework of circular fashion (adapted from Potting et al., 2017).

Rethink. This model of circularity is actually required to enable all of the other circular strategies, and has potential for making the economic system truly circular if applied comprehensively. It refers to rethinking the whole lifecycle loop of the product in the design and production phase in order to enable circularity. For instance, rethink considers utilisation of renewable resources and fully biodegradable or recyclable materials in the production of new garments. Raw materials in fashion industry that have less environmental impact include e.g. bamboo, silk and hemp. (Shirvanimoghaddam et al., 2020.) The recycling and remanufacturing of the end-of-life products is enabled when the circularity aspect has been taken into account already in the design and production stage. One efficient solution is to lengthen clothes' useful life. This would happen by designing durable clothes that are of higher quality. People use their favourite clothes until they break down, become shabby or unfit. The good quality of materials enables much longer usage time and more efficient re-use of clothing, either as a product or material. (Fontell & Heikkilä, 2017, p. 22.)

Remanufacture. This model refers to clothes made of used fibres or materials. The quantity of new textiles produced from virgin materials can be decreased by increasing recycling of existing textiles. This would also reduce the use of water, energy and chemicals during the production (Dahlbo et al., 2017). In this model, recycled clothes are not sold as such, but they are upcycled in order to have a new look and feel, or only some parts of the fabrics are re-used. Another option is to use new fabrics that are made from recycled fibres. This CE business model is estimated to have a significant growth potential and even large-scale recycled textile production is expected to emerge as soon as the supply of recycled raw material becomes more stable and financially viable. Some examples of global brands that have taken steps towards circularity through remanufacturing are Adidas with their training shoes made from reclaimed marine plastic waste, Patagonia's collection of jackets, fleeces and shorts made of recycled plastic bottles and Viktor and Rolf's collection that uses recycled fabrics from their earlier collections. (Moorhouse & Moorhouse, 2017; Fontell & Heikkilä, 2017.) There is also a growing number of small innovative companies utilising this business model, such as a Finnish brand called Lovia, whose entire business is built upon circularity. They make for example hand bags and wallets out of food industry waste, such as salmon skin, or out of cutting waste from furniture industry. (Lovia, 2020.)

Rent. This strategy refers to a clothes as a service- business model that could significantly increase the usage rate of clothes and accessories by providing temporary access to them through subscription services and clothing rental. There is no need to own all of the garments you need: rental models could give consumers access to a wide selection of clothes but at the same time reduce the demand for producing new garments. Short-term rental services would also resolve problems related to unnecessary clothing disposal: earlier studies suggest that 26% of clothing is thrown away simply because the owner no longer likes it, and 42% is disposed of because it doesn't fit anymore. Additionally, rental services could be also used to meet the short-term needs for pieces that are used rarely such as formal clothing and special sports and outdoor clothing, or only for a short period of time, such as maternity clothes. Some examples of such rental

services operating in Europe are Endless Wardrobe in England, and Finland-based Clozeta. (Ellen MacArthur, 2017, p.78.)

Repair. Repairing and maintaining the existing garments have potential to extend the clothes' useful life considerably. However, as discussed in the previous section, an increasing number of consumers do not have the skills or equipment to do even the smallest repair tasks. Helping people to relearn these skills could offer new business opportunities, along with the repair services currently available. One way to encourage and facilitate the repair and maintenance of the clothing is to provide clear repair and maintenance instructions that would come with a new garment. (Fontell & Heikkilä, 2017; Niinimäki, 2017.)

Reuse. Reuse is currently the most common type of circular fashion and often called second-hand fashion. Second-hand fashion refers to clothes or accessories that before belonged to someone else. It may have had many years of use already or may have been produced only recently. There are various reasons that motivate consumers for second-hand buying. The market for second-hand clothing is powered by low prices as well as the potential to decrease the amount of disposed clothing and environmental pollution. (Farrant, Olsen & Wangel, 2010.)

Indeed, financial reasons are the primary motivation for second-hand buying because second-hand fashion tends to be fairly priced, and second-hand also gives an access to branded products with reasonable prices. Secondly, quality and durability of the second-hand products motivate consumers. The garments and accessories that are sold second-hand can be assumed to be of good quality if they still look good after the usage of the previous owner(s). Thirdly, the environmental and ecological awareness, such as the reduction of the use of natural resources and the minimisation of waste can be a motive the purchase of second-hand clothing. (Cervellon et al., 2012.)

When the quality and durability of clothing increase, new opportunities for capturing its value through new business models will emerge. Resale of clothing is already broadly adopted globally: according to ThredUp Resale report (2019), resale has increased 21 times faster than retail within five years. However, opportunities are being missed since in the regions with low clothing utilization rates the collected clothes are typically sent overseas. This would call for introducing new attractive and innovative resale models and partnerships that would be more focused on local resale. These models could notably improve the clothing utilization rates. (Ellen MacArthur, 2017; ThredUp, 2019.) In addition to the traditional second-hand stores, new online platforms for selling and purchasing second-hand fashion have emerged. Examples of this are United Wardrobe, available in the Netherlands, France, the UK and Germany and Finland-based Zadaa company that operates also in Germany and Denmark.

Recycle. As discussed, the aim of CE in the fashion industry is to develop a sustainable closed-loop system, where clothes are either reused or non-reusable items are recycled into new fibres that can be used as raw material (Niinimäki, 2017). To achieve this, a separate collecting and sorting is required, which is still unavailable on a larger scale in many countries. In the EU, only about 30% of discarded textiles from households are currently collected, and approximately 15% of collected consumer-used clothing is currently recycled, of which only a tiny proportion is made into new clothes. However, the new EU circular economy action plan requires all member states to ensure separate textile waste collection systems by 2025. (CBI, 2020; European Commission, 2020.)

Any type of separate textile colleting system demands participation from consumers as well as willingness to return materials into these systems. Consumers' participation in these material loops are affected by their attitudes, and it is possible to guide their behaviour towards stronger involvement in returning disposed clothes either to reuse or to recycling. (Fontell & Heikkilä, 2017.) This could happen e.g. through setting financial incentives for returning the clothes to be reused or recycled, and through understanding how and where they usually recycle and what are the challenges they are currently

facing and solving those (SustainAbility Institute, 2020). Some multinational clothing retailer chains, such as Mark&Spencer, H&M and Levi's have started to participate in the take-back actions that encourage consumers to bring their old clothes to retail stores in order to be further used as such, or as recycled fibres in remanufactured textiles (Morgan and Birtwistle, 2009).

The collection of used clothing is a challenging issue as currently there are no municipal collection systems for them and no obligations for consumers to handle their discarded materials. Luckily a large number of consumers are voluntarily delivering their used clothes for reutilization. Even though consumers' purchasing behaviour in many cases still contradicts with their values, they have been found to be more interested in taking care of the end of the garment lifecycle than the beginning of the life cycle. (Bianchi & Birtwistle, 2012; Vehmas et al., 2018.)

However, a majority of post-consumer textiles are still going to mixed waste and consumers are not able to correctly separate re-usable clothes from non-reusable clothes. Thus, the collection methods should be made as easy as possible for consumers. In earlier studies, it has been found that consumers would prefer separate collection points nearby or pick-up from home. In addition, the already existing take-back systems offered by retailers and brands are seen as user-friendly options. These can include for instance drop off points at stores and also collection of textile waste that are not suitable for re-use. (Fontell & Heikkilä, 2017; Vehmas et al., 2018.)

Circular model	*Explanation*	*Example*
Rethink	Rethinking the whole lifecycle loop of the product in the design and production phase in order to enable circularity	Designing durable clothes of high quality and reusable materials
Remanufacture	Clothes made of used materials or fibres	Lovia's handbags made of food industry waste or cutting waste from furniture industry
Rent	Short-term clothing rental and regular subscription	Endless Wardrobe, Clozeta
Reuse	Flea markets and peer-to-peer sharing platforms	Zadaa, United Wardrobe
Repair	Extending clothes' useful life by proper maintenance and repairing of existing garments	Patagonia offering their customers product care guidelines and repair instructions
Recycle	Resource efficiency and recycling	Take-back actions of H&M, Marks & Spencer & Levi's

Table 4. 6R's of circular fashion summarised

It is evident that the current fashion industry is still far away from being a circular system where materials would be designed and recycled to create additional value instead of additional waste. The transition from traditional economy is slow because of earlier discussed barriers to circular economy, but the shift to circular fashion system has inevitably begun – in 2018, 12.5% of the fashion industry had already committed to circularity, and many leading fashion retailers have set bold objectives regarding a sustainable future. (Gazzola et al., 2020.)

2.3 Consumers in circular economy

The much needed shift from the linear to the circular economy requires knowledge, awareness and engagement from all actors in the market: manufacturers, technology-

and product designers, government and consumers. Clothes and textiles are among the biggest consumer goods' categories in the world, and thus consumers have a significant role especially in closing the loops in this sector but also in the whole society's transformation to CE. Since a strong consumer commitment is needed, the speed and success of the required changes is strongly dependent on a deeper understanding of their attitudes and behaviour. (Koszewska et al., 2020.) In the end, they decide whether to buy new, remanufactured or second hand clothing, where and how often, and also when and how they dispose of end-of-life garments (Moody & Nogrady, 2010).

Yet, too little attention in the earlier studies has been paid on how consumers would affect or be affected by the circular economy, and what are their attitudes towards it. According to Koszewska et al. (2020), understanding is needed especially concerning the demographic and cultural factors and their role in adopting circular products. (Guide & Van Wassenhove, 2009; Koszewska et al., 2020). The transition to a circular economy requires re-orientation of consumer thinking towards alternative products in terms of functionality as it means significant changes in peoples' everyday lives, such as the need to give up the requirement for ownership or newness, and engaging in behaviours like repairing and returning products (Hobson & Lynch, 2016; Camacho-Otero et al., 2018).

The four loops in CE (discussed in chapter 2.1.) all start from users, as they are the key enablers of all of those steps. Firstly, appropriate user behaviour, such as proper maintenance and repair, lengthens clothes' useful life. Secondly, when the user for some reason wishes to dispose of clothes that are still in good condition, they should choose to redistribute them to other possible users to be re-used as products. Thirdly, if the clothes are not suitable for re-use anymore as such, they should be re-used as textile materials. The last option, only when the quality of fabric is no longer suitable for re-use as a product or material, is to be recycled. In addition, consumers along with other end-users have an important role in creating a growing demand for second hand and remanufactured products, as well as durable high quality products. (Fontell & Heikkilä, 2017, pp.21-22.)

2.3.1 Consumer attitudes towards sustainable clothing

Attitude refers to individual's favourable or unfavourable feelings, evaluations and tendencies toward objects or ideas (Kotler & Armstrong, 2012). The attitudes and opinions that consumers have influence their purchase intentions and behaviour. Thus, firms need to understand consumers' attitudes and discover ways to influence them so that consumers acquire more positive attitudes towards their offerings. (Kapoor & Madichie, 2012.) This applies also to circular products, as attitude has been found to be an important predictor of consumer adoption (Jimenez-Parra et al., 2014). In previous studies, the general attitude towards circular fashion is found to be positive. Consumers perceive for example remanufactured clothing basically as new and therefore even those who would not be willing to wear second-hand clothes could buy clothes made from recycled materials. (Vehmas et al., 2018, p. 296.)

Next, the factors affecting consumers' attitudes towards circular fashion will be discussed. Since there are very few studies concerning consumer attitudes towards circular clothing in particular, a more general perspective is adopted and some of the following determinants concern sustainable apparel in general. Factors that affect sustainable consumer attitudes are here classified into individual related factors and context/situational factors.

2.3.2 Individual-related factors affecting consumer attitudes

Individual-related factors consist of a wide range of factors related to the consumer. The factors discussed next are gender, age/generation, nationality, education, income, education, locus of control, knowledge, trust and social influence.

Gender. Lai et al. (2017) found that the consumer's gender affects the attitudes towards circular clothing. Women tend to perceive circular clothing as unique and fashionable, while men are likely to think the opposite (Lai, Henninger & Alevizou, 2017).

This is also a wider phenomenon, as prior research indicates that compared to women, men are less likely to be eco-friendly in their attitudes, choices and behaviours in general: they recycle less, have a larger overall carbon footprint and feel less guilty about living a non-green lifestyle (Davidson & Freudenburg, 1996; Lee & Holden, 1999; Tiller, 2014). Similarly, Gazzola et al. (2020) argue that women, particularly in the age group between 18 and 34 years, with a higher qualification are usually more aware and passionate about sustainability issues than men and are willing to take action to help the environment. This effect has been found to be robust across countries and age groups. (Brough, Wilkie, Ma, Isaac, Gal, 2016; Gazzola et al., 2020.) In the light of this information, it can be assumed that the same attitudes can be translated to concern circular fashion. Prior research has mainly explained this gender gap with personality differences between the genders: typically, women tend to be more altruistic and empathetic than men, and they also show stronger ethic of care – these have been all linked with environmentalism. Moreover, women tend to adopt a future time perspective, which is also linked with environmental commitment. (Eisler & Eisler, 1994; Lee & Holden 1999.)

In addition, more recent studies suggest that the gender gap could be partially explained by the common association between green behaviour and femininity, which leads to labelling green consumers as more feminine. Prior findings propose that men tend to be more concerned than women about maintaining their gender-identity, so the green-feminine stereotype might motivate some men to avoid green behaviours. If this is true, a masculine affirmation and a weakened association between greenness and femininity through masculine green branding could motivate men to change their attitudes and engage in green behaviours. (Brough et al., 2016.)

Age & generation. Gazzola et al. (2020) discovered that the new, wealthy generations, such as the Millennials are more socially and environmentally conscious than the previous ones, and want their favourite apparel brands to be involved and to give their positive contribution to the ecosystem with practical acts (Gazzola et al, 2020). The PricewaterhouseCoopers (PwC) report “Millenials vs Generation Z” suggests the same,

and affirms that Millenials (born between 1980 and 1994) and Generation Z (born between 1995 and 2010) are the biggest supporters of green models of fashion (PwC, 2018). Kanchanapibul et al. (2013) point out that this could be due to their ability of using newest technology to communicate and exchange information rapidly. Moreover, the social network of young consumers tends to dominate their perceptions and attitudes, which strengthens their belief of being an essential part of the society and making a difference. (Kanchanapibul, Lacka, Wang & Chan, 2013.)

Young generations would also be ready to pay additional price for sustainable products. They appreciate transparency and authenticity, and expect also their favourite brands to reflect their own values. If these findings prove to be true, they offer an important lesson for fashion manufacturers and retailers whose objective is to attract and hold on to this market segment: in order to create successful long-term strategies, they have to pay attention to the opinions and attitudes of these under 40-year-olds and thus evolve towards new business models that are based on sustainable or circular fashion. It has been estimated that already by 2025, this consumer group will cover 45% of total purchases in the fashion sector. (Gazzola et al., 2020.)

Nationality. Consumer attitudes towards ethical issues, such as fair trade consumption and green energy alternatives differ between countries. Some studies suggest that the cultural dimension of long-term orientation is positively related to sustainable consumption, which might be related to the perception of saving money and conserving the environment in the long run (Hofstede, 2001; Chekima, Chekima, Syed Khalid Wafa & Igau, 2016). However, little cross-cultural research has been carried out comparing consumers from different countries in their attitudes towards ethical fashion. Some studies have been conducted on attitudes towards ethical fashion in single cultural context or comparing a few countries. For instance, Carey and Cervellon (2014) investigated attitudes towards ethical fashion of consumers in Canada, France and the UK. They state that cultural differences do influence consumers' attitudes towards ethical fashion. In the UK, a higher price of clothing indicates a higher quality, whereas

in France it represents a search for a higher social status. Also, the perception of the appeal of circular fashion differed notably by country: The Canadian consumers thought ethical fashion as cool and trendy, whereas the French consumers thought the opposite. Remarkable cultural differences were also noted in the attitudes towards consumption of second-hand clothing. In addition, the availability of ethical fashion was perceived unequally between the countries. (Carey & Carvellon, 2014.)

Moreover, Xu et al. (2014) found out that in the USA, the majority of consumers have bought second hand clothing, whereas the same number in China is only 10 per cent. Nevertheless, they also discovered that there was no significant difference in the second-hand buying behaviour between young consumers in these two countries. (Xu, Chen & Burman, 2014.) Thus, young consumers could perhaps be seen as the key target market for second-hand clothing across countries. Gazzola et al. (2020) found that the young generations would be also willing to pay more for responsible products (Gazzola et al., 2020, p.8).

Further, Gazzola et al. (2020) found that in Southern European culture, buying from second-hand stores is a practice made typically only by consumers who cannot economically afford buying new clothes. Southern European consumers are also not likely to buy their clothes second-hand because they consider used clothes to not be in line with current fashion trends. (Gazzola et al., 2020, p.13.) Currently, Northern European consumers are conscious in their garment disposal and actively return their old garments to reuse, thus it can be presumed that they would also have more positive attitudes towards using clothes made of recycled materials and recycling their textile waste (Vehmas et al., 2018, p.296).

In the extant literature, there are uncertainties concerning the importance of culture in affecting consumers' ethical attitudes: some studies suggest that culture does not have a significant influence on the ethical involvement of consumers (Belk et al., 2005; Auger et al., 2007), whereas others propose that nationality is one of the most significant

predictors of individual attitudes towards ethical purchasing (Babakus, Cornwell, Mitchell & Schlegelmilch, 2004). There is a gap in research concerning the effect of culture on the attitudes towards circular fashion. A close connection between consumption and the cultural context has been recognised, so further investigation is needed especially involving international comparisons (Carey & Cervellon, 2014).

Education & income. A variety of studies have investigated the role of education and income in sustainable consumption. Blend and van Ravensway (1999) and Hockett et al. (2004) point out that consumers with higher income are significantly more willing to buy sustainable products. A positive relationship has also been found between education and sustainable consumer behaviour (Chekima et al., 2016). This could be explained by the environmental knowledge acquired in the university, which in turn leads to higher awareness of the need for change.

Laroche et al. (2001) similarly suggest that highly educated, wealthy female consumers are the most likely to consume sustainably (Ravensway, 1999; Laroche et al., 2001). Nevertheless, these findings are not necessarily applicable to fashion consumption, since the wealthy female consumers are often also the biggest fashion consumers who follow latest trends. Further, the motives for sustainable consumption might vary depending on the education and income. Machado et al. (2019) state that consumers from higher social classes buy second-hand fashion because they want exclusive products, whereas the motivation of consumers from lower social classes is mainly financial (Machado, Ordovás de Almeida, Bollick & Bragagnolo, 2019, p.382).

Locus of control. In addition, the feeling of inadequacy is also affecting the purchasing decisions. A number of consumers perceive the impact of their own deeds meaningless and do not see any idea in trying to change their own habits as long as the vast majority is still purchasing from fast fashion brands (Wiederhold & Martinez, 2018). This finding reflects the degree of locus of control, a concept presented by Rotter (1954). Individuals with an external locus of control believe that their actions do not make difference and

that change can only be made by others with more power. Individuals with an internal locus of control think the opposite, and thus tend to make more ethical choices. (Kollmuss & Agyeman, 2002.)

Knowledge. The amount of the information available affect consumers' decisions. Previous studies reveal that consumers have very low level of knowledge about circular clothing options and therefore do not consider it as an alternative to traditional clothing (Papaoikonomou et al., 2010; Wiederhold & Martinez, 2018). Also the amount of environmental knowledge in general influence the consumption: the more aware the individuals are about the environment, the more knowledge they have about the consequences of human actions towards the environment, and the more they are expected to make sustainable choices (Chekima et al., 2016). In contradiction, Boulstridge and Carrigan (2000) state that consumers tend to be overwhelmed and confused by the amount of existing information about ethical alternatives and thus find it difficult to make good choices (Boulstridge & Carrigan, 2000).

Trust. According to various studies, the amount of information is not necessarily the main challenge, but rather the credibility and transparency of existing information. The hesitancy of buying sustainable apparel seems to be often justified by scepticism about retailers' ethical claims. In the study of Wiederhold & Martinez (2018), the respondents expressed suspicion of companies using ethical claims solely for marketing and that the garments would be produced only partially under sustainable conditions (Wiedershold & Martinez, 2018). Similarly, Carey & Cervellon (2014) found that mistrust towards the retailers was a significant barrier for buying ethical apparel: the study respondents were unsure whether the extra money paid for ethical garments actually went where it should have (Carey & Cervellon, 2014). These findings call for more transparent communication about all levels of production, as well as more standardised ethical labelling schemes.

Social influence. The social influence on consumers' attitudes and behaviours has been recognised by a vast amount of consumer studies. Various peer groups, such as

colleagues, family and friends, have a significant effect on the decision to choose environmentally friendly products instead of traditional ones. Consumers might decide to buy a certain product in order to differentiate themselves from others, to express that they belong to a certain group or to meet the expectations of a reference group. (Salazar, Oerlemans & Stroe, 2013.) For example, Chi (2015) found that consumers believe that buying and wearing circular fashion could support them in gaining social approval and making a good impression on others (Chi, 2015).

2.3.3 Contextual factors affecting consumer attitudes

The contextual factors include external forces that might affect the consumer attitudes in a positive or negative way (Kostadinova, 2016). The contextual factors discussed next are price, style, comfort and availability of the product.

Price. Indeed, one of the most critical factors in buying decisions has been the price. By nature, individuals act principally considering the greatest advantage for themselves, thus at the point of purchase they tend to keep aside their desire for ethical decisions and favour lower prices instead. (Grasso et al. 2000; Bray, Johns & Kilburn, 2010.) Earlier studies have found that consumers are not willing to pay more for clothes produced from recycled materials than the clothes made of virgin materials. Especially young consumers with limited budgets often do not even consider ethical clothing because they assume that they cannot afford it (Wiederhold & Martinez, 2018). Most of consumers interviewed in previous studies understand and justify the higher prices of circular garments with natural materials and fair production. Nevertheless, some consumers even assume the clothes made from recycled materials to cost less than the ones made of virgin materials. Locally produced products receive a higher appreciation, since the consumers understand the justification for higher prices better. (TEKI, 2016; Vehmas et al., 2018.)

Style and comfort. In their study, Vehmas et al. (2018) found that the style and comfort tend to be major concerns regarding circular clothing, as consumers expect as high

quality and fashionable style from circular clothing as from new clothes made from virgin fibres (Vehmas et al., 2018). Gam (2011) suggests that the visual appearance of a garment is the strongest predictor of purchasing intention (Gam, 2011). It was also discovered that consumers often feel that there is a lack of stylish clothes that are produced ethically. Wiederhold and Martinez (2018) reported a similar finding; their study respondents, young German consumers, perceived ethical apparel as old-fashioned and hippie-looking (Wiederhold & Martinez, 2018).

This is probably a more universal finding, as Carey and Cervellon (2014) found that their respondents from UK and France also thought ethical fashion as something dull and unfashionable (Carey & Cervellon, 2014). In general, consumers do not want the circular garments to look very different from the ones manufactured from virgin materials and wish that the ethical fashion would better appeal to their personality and taste. As for comfort, the consumers were worried about the softness and breathability of the circular materials and how they would feel on the skin. (Vehmas et al., 2018, p. 293.)

Ease and availability. Ease and availability are found to be crucial in increasing consumers' motivation to make more sustainable purchase choices and to bring their old garments for reuse. Even though consumers would initially be willing to make sustainable choices, they end up purchasing unsustainable products because they are more easily available. Even in urban areas, the presence of stores that offer circular or other ethical clothing still remains very small (Wiederhold & Martinez, 2018). Commonly, consumers donate their old clothing to charity, give them away to family of friends or sell them at flea markets. However, there are no large scale channels available for recycling garments that are too worn out or stained for reuse. These findings call for easier ways for recycling old garments: for example, Finnish consumers would be willing to bring their textile waste to a separate bin, as they already do with paper, metal and glass. (Vehmas et al, 2018.)

2.4 Summary of the theoretical framework

This chapter summarizes the theoretical framework and presents a theoretical model to study consumer attitudes towards circular fashion and the factors that possibly affect them. This model is also used to set a foundation for the following empirical part and was developed using existing literature in the fields of circular economy, circular fashion and consumer behaviour and attitudes.

The theoretical framework is principally built upon the concept of circular economy (CE), that is defined by Ellen MacArthur Foundation (2013) as "an industrial system that is restorative or regenerative by intent and design, includes approaches from various sciences such as ecology, economy, engineering, design and business (Lewandowski, 2016). It has received increasing attention worldwide since 2014, and was developed as a response to the linear economy model that threatens the stability of natural ecosystems because of the ineffective use of resources and excess waste created along the value chain (Agyemang et al., 2019).

The aim of CE is to attain sustainable development that simultaneously preserves the environment and creates economic and social equity to benefit both current and future generations. In CE, the value of products and materials is preserved for as long as possible with a minimum impact to the environment (Fontell & Heikkilä, 2017, pp.21-22). To succeed, the circularity aspect must be taken into account in every stage of the product life-cycle (Moreno et al., 2016). A minimal amount of waste is generated during the production process and the whole product life-cycle because of the sustainable use of resources, maximised usage rates of the products and closed-loop supply chains, meaning that the end-of-life products will be recovered so that they can be returned to the cycle as an alternative to simply disposing them after use (Ionascu & Ionascu, 2018; Prieto-Sandoval et al., 2018). CE operates at the micro, meso and macro levels, from which this thesis concentrates on the micro level that focuses on the activities of single firms and consumers (Ghisellini et al., 2016).

The implementation of CE in the microeconomic level is enabled by circular business models. The most used categorisations of circular business models were presented in chapter 2.1.4: McKinsey's ReSOLVE-Framework (2016), Accenture's list of business models driving the circular economy (2014) and the R-frameworks. A 6R model was chosen to categorise the business models explored more in detail in this thesis, as it was considered the most suitable model for the consumer and fashion industry perspective. These chosen 6R's are Remanufacture, Rethink, Reuse, Repair, Rent and Recycle. These were summarised in table 4 in section 2.2.2 and presented in the context of circular fashion.

In chapter 2.2, CE in the context of fashion industry was discussed. The implementation of circular economy in fashion industry is especially important since it is the second most polluting industry in the world and the production and consumption of clothes and the amount of textile waste are constantly increasing (Dahlbo et al. 2017, Cao et al. 2014). During the last 15 years, clothing production has doubled, but at the same time the usage rate of clothes has been reduced by half (MacArthur Foundation, 2017). This is largely caused by the widespread and growing *fast fashion* phenomenon, a business model that encourages producing and buying cheap, low-quality items and always dressing following the latest trends and in different ways (McKinsey, 2016). As a counter reaction, sustainable lifestyle has begun to gain popularity in recent years and sustainable fashion consumption is now emerging as a megatrend, responding to fast fashion and traditional business models (Gazzola et al., 2020). Especially the young generations, Y and Z, value transparency and expect fashion brands to be sustainable in their production processes. Numerous players in the fashion industry have already answered to this trend, but sustainable fashion is still not selling particularly well; sustainability in the fashion sector seems to be complicated phenomena and calls for further investigation (Vehmas et al., 2018).

The shift to CE requires actions from all players in the market: manufacturers, technology- and product designers, policy-makers and consumers. As clothes are among

the biggest consumer goods' categories in the world, consumers have an especially important role in the fashion industry's transformation to CE. It is therefore crucial to understand their attitudes towards circular fashion and what are the most important factors affecting these attitudes.

Consumer attitudes and behaviour in the context of circular fashion in particular have not yet been researched much. However, as circular fashion is a type of sustainable fashion, the findings about sustainable consumer behaviour and attitudes in general and the factors affecting them were applied. Most of the factors affecting consumer attitudes and behaviour in sustainable fashion consumption were classified into two categories: individual-related factors and contextual factors. Individual-related factors include consumers' gender, age/generation, nationality, level of education and income, knowledge, trust, locus of control and consumption habits. Contextual factors include factors related to the product, such as price, style, comfort and availability, as well as situational factors such as social influence.

The extent to which these factors affect consumer attitudes and behaviour in the context of circular fashion is still unclear and the previous findings are partly conflicting. Therefore, consumers' attitudes towards sustainability and the chosen six circular offerings as well as the influence of individual-related and contextual factors will be examined in the following empirical part using an online questionnaire and quantitative data analysis techniques. The connections between the main themes discussed in the theoretical framework are presented in figure 6.

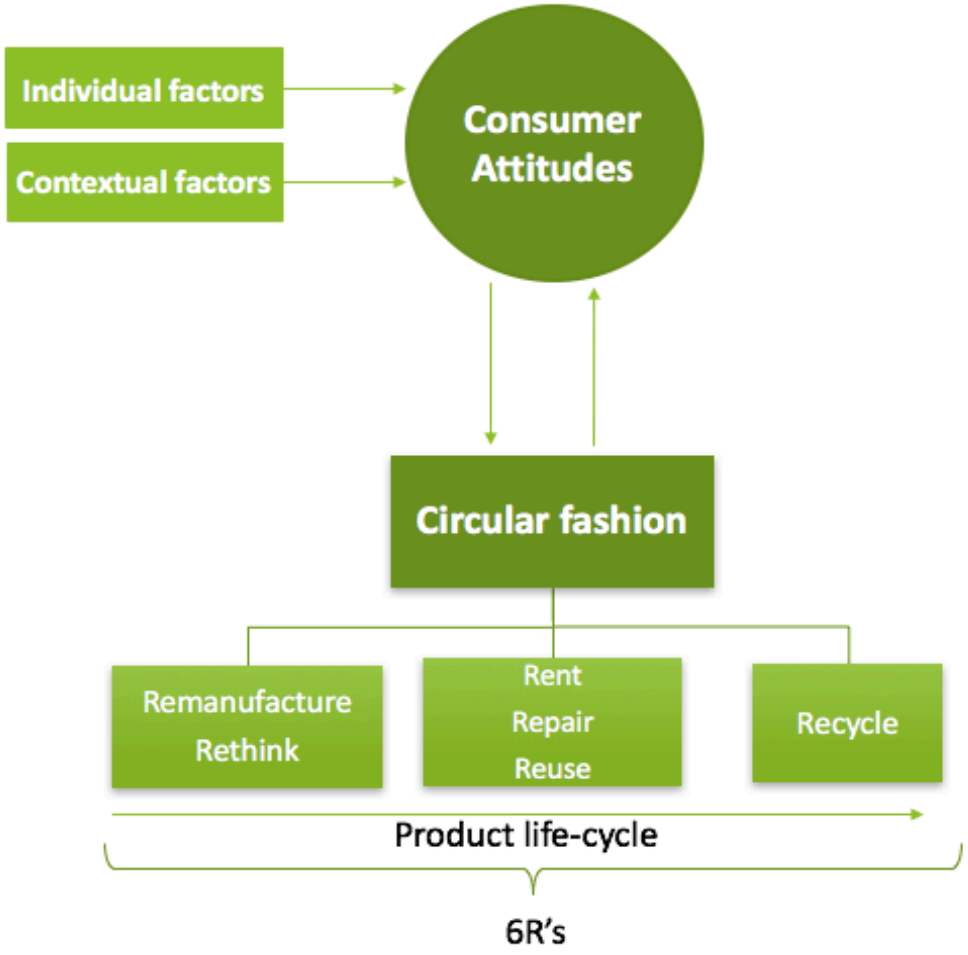

Figure 6. Theoretical framework of the study

3 Methodology

In their book, Saunders, Lewis and Thornhill (2009) introduce the “research onion”, presented in figure 7, to describe the methodological choices that a researcher needs to make in order to create an effective methodology for the study. In the centre of the onion, there is the choice of how to collect and analyse the data to answer the research question. However, as argued by Saunders et al., there are important layers in the research onion that has to be peeled away before coming to this central point. (Saunders et al., 2009.) All of these choices will be next discussed in more detail. Moreover, the trustworthiness of the study will be evaluated in the end of this chapter.

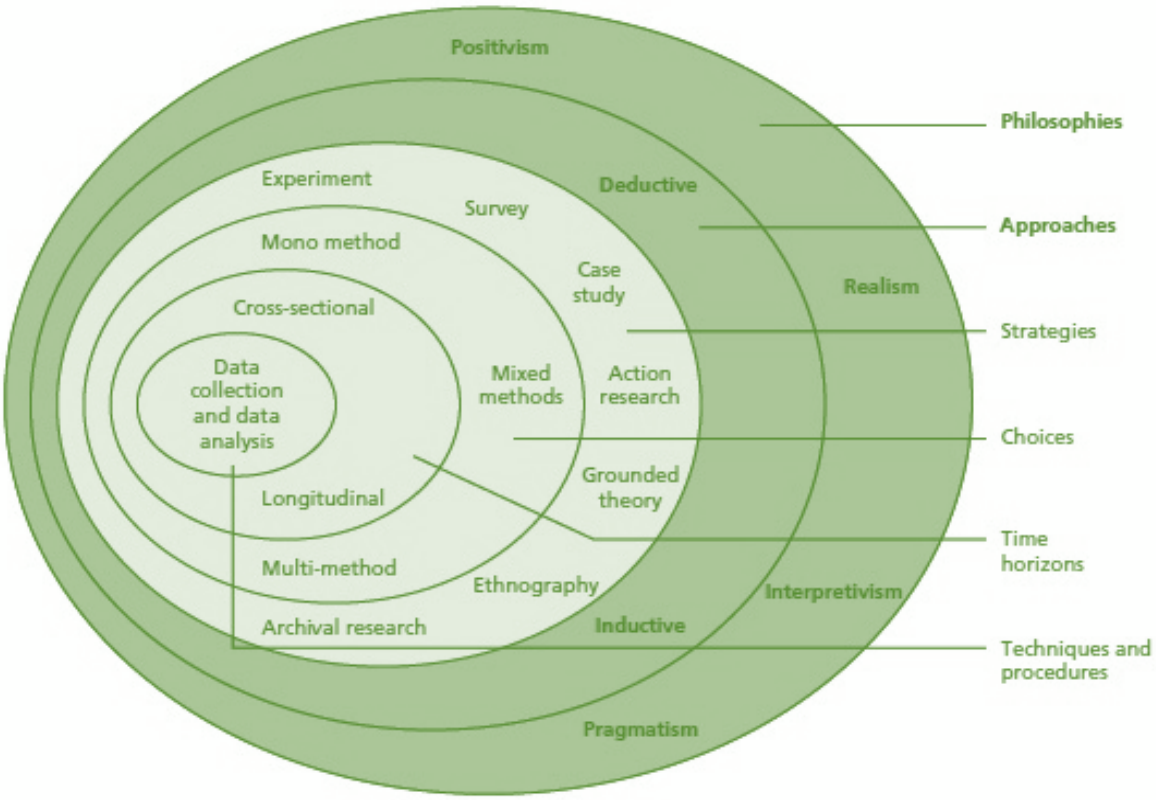

Figure 7. The research onion (adapted from the research onion by Saunders, Lewis & Thornhill, 2009)

3.1 Research philosophy and approach

The first layer of the research onion is research philosophy, which provides a foundation for the selection of research strategy and method. It refers to the philosophical view of the way that researcher thinks about the research process, development of knowledge in the process and the nature of that knowledge. The four research philosophies commonly used in management research are *positivism, realism, interpretivism and pragmatism*. All of these philosophies are different from each other in terms of epistemology and ontology. As stated by Saunders et al. (2009), it is important to understand that one research philosophy is not better than another, but the suitability of a particular research philosophy depends on the research question. (Saunders et al., 2009.)

Epistemology relates to what constitutes acceptable knowledge in the studied field. The studied data can be observable phenomena, objects and hard facts, as in positivist and realist research philosophies, or subjective meanings and soft social phenomena, as in interpretative research philosophy. Pragmatism considers both observable phenomena and subjective meanings as acceptable knowledge and the most important determinant is the research question. (Saunders et al.,2009, pp. 128-129.) In terms of epistemological position, this thesis principally follows an interpretative research philosophy that tries to investigate the world's complexity and diversity of social actors.

Ontology is a branch of philosophy that is concerned with nature of reality. In practice this means that the researcher can determine their ontological position either as *objectivist* or *subjectivist*. Objectivist sees social entities as external to social actors concerned with their existence, whereas subjectivist believes that social phenomena are results of the perceptions and related actions of the social actors concerned with their existence. (Saunders et al., 2009.) The ontological position adopted in this thesis is subjectivist. Since the study explores individual consumers' attitudes towards circular fashion, subjectivist view is the most appropriate view of reality because individuals can

perceive same situations in different ways as a consequence of their own view of the world.

The second layer of the research onion is research approach. It is about the extent to which the researcher is clear about the theory at the beginning of the research, which then defines whether *deductive* approach or *inductive* approach should be used. In *deductive* approach, the theory and hypothesis are first developed and then tested with the collected data, whereas in *inductive* approach the data is first collected and the theory is developed as an outcome of the data analysis. (Saunders et al., 2009, p. 125.)

This thesis will take a *deductive* approach, thus the theoretical framework for the study is built prior to the data collection and the theories and ideas from the previous literature will be tested in the upcoming empirical section (Saunders et al., 2009, p.61). The theoretical framework of this thesis was built combining earlier studies in the fields of circular economy, circular fashion and consumer attitudes as well as the factors affecting them. To explore this theoretical framework in practice, the study will examine young European consumers' attitudes towards circular fashion and what are the most significant factors influencing these attitudes. This kind of need to explain causal relationships between variables is also characteristic of the deductive approach (Saunders et al., 2009, p.127).

3.2 Research design

Going forward with the methodology selection process, the next step to discuss is the research design. It is the general plan of how the study will be formed in order to turn the research question and objectives into a research project and to finally answer the research question. Research design includes research strategies, choices and time horizons that are also the next layers in the research onion. (Saunders et al., 2009.)

The choice of research strategy is guided by the research question and objectives chosen for the study, the existing knowledge, the amount of time and other resources at hand

as well as the philosophical foundations set for the study. The main research strategies used in business studies are experiment, survey, case study, action research, grounded theory, ethnography and archival research. It should be noted that these strategies should not be thought as separate entities, but they can be combined in the same research project as is the case in this thesis (Saunders et al., 2009, pp. 141-142, 160.)

To achieve the objectives of this study, a mono method approach is applied to gather the relevant data. A mono method approach refers to using either quantitative or qualitative data collection techniques and analysis procedures in a research design, and the techniques chosen for this study are quantitative. Quantitative data can be a product of any research strategy and it refers to numerical data or data that can be easily quantified. Quantitative data analysis techniques include graphs, charts and statistics that allows the researcher to turn the data to understandable information. Quantitative methods are employed especially when the aim is to gather a large amount of data and information. Qualitative data, in turn, refers to non-numerical data that results from non-standardized data collection and is analysed using conceptualisation. (Saunders et al., 2009, pp.414-415.)

In this thesis, the *survey* strategy and more specifically a *structured questionnaire* is used to gather the data. The survey strategy is common in business and management research and its' popularity can be explained by its' ability to collect a big amount of data from a sizeable population in a relatively economical way. The data collected by using survey strategy can also be utilised to suggest potential reasons for certain relationships between variables and to create models of these relationships. (Saunders et al., 2009, p. 144.)

In terms of time horizon of the study, there are two options: a *cross-sectional* or a *longitudinal* study. A cross-sectional study is a "snapshot" of a particular phenomenon at a particular time. A longitudinal research, on the other hand, studies change and development over time, thus it adopts a "diary" perspective. (Saunders et al. 2009,

p.155.) This thesis illustrates a snapshot of the consumer attitudes at the particular moment of responding the questionnaire and answering the interview questions, thus the time horizon adopted is *cross-sectional.* Although longitudinal time horizon could have brought an interesting perspective for the study to see how the consumer attitudes towards circular solutions develop over time when the topic gains popularity, cross-sectional time horizon is a more suitable option due to time constraints of this thesis project.

3.3 Data collection and sample

As discussed briefly in the previous section, the empirical part of this thesis consists of quantitative data collection and analysis. The research is based on primary data, which were collected through direct communication with consumers belonging to the target group.

3.3.1 Data collection

The empirical data collection began with the collection of quantitative data using the survey strategy. The chosen data collection technique is *questionnaire*. Questionnaire is commonly used as a general term that includes all data collection techniques where each respondent is asked to answer the same set of questions in a fixed order. It is a popular data collection technique, since it provides an efficient way to collect responses from a large sample in a relatively small time frame and at a low cost. (Saunders et al., 2009, pp.360-361).

The type of questionnaire used was a self-administered online questionnaire that was created using Google Forms -online survey software. The use of an online questionnaire enabled collection of data from a geographically dispersed sample in addition to the collection of responses form a large sample. The questionnaire was pilot tested with colleagues that also belong to the target group of the study and thus were similar to those who would actually complete the survey. They provided feedback on the

functionality and flow of the questionnaire, after which minor adjustments were made based on the feedback. After that it was spread online on social media platforms Facebook, LinkedIn and Instagram and also to friends across Europe who then forwarded the questionnaire to their contacts belonging to the target group. Furthermore, the questionnaire was sent to an email list consisting of international students. When sharing the questionnaire, it was particularly emphasized that the respondents should be European and born after 1980 (belonging to generations Y and Z). The questionnaire was anonymous.

The aim was that the questionnaire would be as brief and concise as possible to avoid losing the attention of the respondents before finishing it. Therefore, the questions were quite general and did not focus too deeply on the feelings and attitudes. Moreover, the purpose of the questionnaire was clearly explained in the beginning and the layout of the questionnaire was designed to be clear and visually pleasing in order to attract respondents. The survey questions can be seen in appendix 1 in the end of the paper.

The individual questions were partly adapted from a consumer research included in Telaketju 2, a project that aims for building business from circular economy of textiles. The aim of the consumer research was to investigate consumer attitudes towards recycling and different circular economy business models. The research project was carried out by Business Finland, VTT Technical Research Centre of Finland and Turku and Lahti Universities of Applied Sciences. (Telaketju, 2020.) However, the questions in the Telaketju research remained at very general level, so they were specified to better match the purposes of this thesis.

Since the questionnaire was aimed at young consumers who would not necessarily have much prior knowledge of the topic, it was designed to be quite informal and as clear as possible. Too academic language was avoided and all the possibly confusing terms were explained. In the first part of the questionnaire, preliminary questions about the respondents' characteristics were asked in order to map their background and to be able

to categorize and compare them in the analysis section. These type of data collected are called *attribute variables* (Saunders et al., 2009, p. 368). The second part of the questionnaire was designed to map the respondents' attitudes towards sustainability in a general level as well as their consumption habits and knowledge of sustainability issues. Attitudes and feelings of respondents are called *opinion variables*, whereas the consumption habits are *behavioural variables* (Saunders et al., 2009, p. 368).

The actual focus of the questionnaire was on the third section that gathered young European consumers' views on six different circular business models for fashion discussed in the literature review: 1) Remanufacture 2) Rent 3) Reuse through sharing platforms, 4) Repair and 5) Resource efficiency 6) Recycling. All of these circular fashion types were explained and examples of them were given to the respondents before moving forward to the questions.

The questions asked in the questionnaire were principally *rating questions* that used a 5-point *Likert-style rating scale*. Thus, the respondents were asked how strongly they agreed or disagreed with series of statements. The responses to rating questions were presented in a straight line, since this is how respondents tend to process the data (Dillman, 2011). The response categories were kept in the same order throughout the questionnaire in order to avoid confusion.

In addition to rating questions, the first section of the questionnaire also included two *quantity questions* which means that the response was a number. These questions were intended to map the respondents' birth year and annual salary. They were also *self-coded* questions, since the data can be entered to the computer without coding them first. Furthermore an open question was asked to map the respondents' nationality. The use of open questions was kept in minimum since their coding is very time consuming. (Saunders et al., 2009, pp. 375, 382.)

3.3.2 Sample of the research

Collecting and analysing data from the whole *population,* referring to the full set of cases that are subject of the particular research, is rarely possible due to restrictions of time, money and access. Therefore, data is often collected from a *sample* – a sub-group or a part of all the cases that represents the whole population. Selecting a sample whenever it is impracticable to collect data from the whole population is equally important regardless of the chosen data collection technique. (Saunders et al., 2009, pp. 210-212.)

There are two types of sampling techniques available: *probability sampling* and *non-probability sampling.* When probability sampling is used, the probability for each case being chosen from the population is known and it is the same for all cases. Probability sampling techniques are all based on the assumption that the sample is selected statistically at random. With non-probability sampling on the other hand, the probability of each case being chosen from the total population is not known. In many research projects a mix of different sampling techniques is used, sometimes including both probability and non-probability techniques. (Saunders et al., 2009, pp. 213-214.)

In this thesis, the sample for the quantitative data collection was selected using non-probability sampling techniques, since a suitable sampling frame needed for probability sampling was not available due to a large and widely spread population. Non-probability sampling offers various different techniques to select sample based on the researcher's subjective judgement. (Saunders et al., 2009, p. 233.) The sample of the quantitative survey consists of 112 voluntary consumers who were selected using mixed sampling techniques: *convenience, self-selection and snowballing*. However, one of the respondents was not European and therefore got rejected because they did not belong to the target group of the study. Thus, the final relevant sample size was 111 and the analyses were performed with this sample. The sample size is not large enough to be considered as representative of all European consumers of generations Y and Z. However, the aim was to collect data through a heterogeneous sample in terms of nationality,

gender, generation (Y or Z), income level and level of education. These demographical variables and their distribution are presented in table 5.

The characteristics in common for all respondents were that they were born between 1980 and 2010, and were European. 61% of the survey respondents were female, 38% were male and 1% did not want to specify their gender. The gender distribution of the respondents was surprisingly balanced, since it was assumed that the topics of sustainability and fashion would have mostly aroused the interest of female consumers. The survey respondents were born between 1981 and 2001 and based on their birth years, they were divided into generation Y (born between 1980 and 1994) and generation Z (born between 1995 and 2010). 47% of the respondents belonged to generation Y and 53% to generation Z.

What comes to education level, 48% of the respondents had a graduate degree, 41% had an undergraduate degree and 11% had a high school degree as their highest degree.

Variable	Frequency	Percentage
Country cluster		
Northern Europe	51	45%
Southern Europe	23	21%
Western Europe	15	14%
Eastern Europe	22	20%
Gender		
Female	68	61%
Male	42	38%
Other	1	1%
Generation		
Y (Born 1980-1994)	52	47%
Z (Born 1995-2010)	59	53%
Yearly income level		

0 – 18 500€	67	60%
18 501 – 37 000€	22	20%
37 001 € →	22	20%
Education level		
High school or similar	12	11%
Undergraduate degree	46	41%
Graduate degree or higher	53	48%

Table 5. Sample of the study

3.4 Data analysis

After collecting the data, it must be processed, analysed and interpreted in order to turn them into comprehensible information. Quantitative data, referring to numerical data or data that can be quantified, in a raw form provides very little information to most people. Hence, they need to be further processed and analysed using quantitative data analysis techniques. These include simple tables and diagrams, graphs, charts and statistics that allow exploring, presenting, describing and examining relationships and trends within the collected data. Nowadays quantitative data is mainly analysed using personal computer based analysis software that significantly reduces the time consumption and lowers the risk of errors, compared to manual analysis of data. Nevertheless, even when utilising a software to analyse the data, the data must be prepared with quantitative analysis in mind, and the researcher must be aware of which data analysis techniques to use for the purposes of their research. (Saunders et al., 2009, pp.414-415.)

3.4.1 Preparing the data

Quantitative data can be classified into different *data types,* depending on the level of numerical precision in measuring the data. Classifying the data before the actual analysis and understanding the differences between different data types is crucial since the data type determines the set of techniques that can be purposefully used to present, summarize and analyse the data. Quantitative data can be divided to two main groups*:*

numerical and *categorical* data. Numerical data refer to quantifiable data whose values can be counted numerically as quantities and are more precise compared to the categorical data, enabling usage of a wider range of analysis techniques. Numerical data can be further sub-divided to interval data and ratio data. Interval data allows adding and subtracting any values meaningfully, but not multiplying or dividing since the relative difference between the variables cannot be stated. Ratio data on the other hand allows also calculation of the relative difference between any two values of data. (Saunders et al., 2009, pp.416-419.)

In contrast, categorical data are those whose values cannot be measured numerically. However, these data can be either put in rank order or grouped based on the characteristics that determine the variable. Categorical data can be further classified into *descriptive* or *ranked* data. Descriptive data, also known as *nominal* data, are data that cannot be ranked or the categories cannot be determined numerically. (Saunders et al., 2009, pp. 417-418.) In the quantitative data set of this thesis, data about the respondents' nationality, gender, occupation and education level belong to the descriptive data category. They could only be counted to find out how the cases were spread between the different categories. Ranked data, or *ordinal* data, represent a more precise type of categorical data. Even though the actual numerical distances between the different categories are not known, there is a clear ordering of the categories within the data set. (Saunders et al., 2009, p. 418.) Most of the quantitative data in this study falls in the category of ranked data, since all the rating questions where respondents were asked to rate how strongly they agreed or disagreed with different statements collected ranked data.

After the data were collected using the online questionnaire, they were downloaded from the questionnaire software to an Excel spreadsheet where they were prepared for a further analysis by organizing them into a *data matrix*. In a data matrix, each column represents a response to an individual question. Each row on the other hand represents

the variables for an individual case, in this case the data gathered from one respondent. (Saunders et al., 2009, pp. 419-420.)

In order to facilitate analyses, all data (with few exceptions) should be numerically coded. The data about respondents' gender were coded as (1) female, (2) male and (3) other. Also the education level was coded as (1) high school or similar, (2) undergraduate degree and (3) graduate degree/higher. For numerical data, actual numbers are commonly used as codes. However, this level of detail might not be required and thus the data can be combined and organized into broader categories using *re-coding.* (Saunders et al., 2009, p. 422.) This was the case with the data about respondents' average yearly income. The questionnaire provided precise numbers and they were re-coded to three different groups of similar salaries (categorical ranked data). As the salaries ranged from 0€ to 51 200 € they were divided to income groups of (1) 0 to 18 500€, (2) 18 500€ to 37 000€ and (3) 37 000€ to 55 500€.

The data about respondents' birth year represented a similar case. The responses varied from 1981 to 2001, but in this survey the interest was in determining whether the respondent belonged to the generation Y or Z. Thus, the answers were re-coded to two groups: those born between (1) 1980 and 1994 (Gen Y), and those born between (2) 1995 and 2001 (Gen Z). To avoid this work, this question could have been pre-coded to only include options "born between 1980 and 1994" and "born between 1995 and 2002". However, mapping the actual birth year of the respondents provided interesting information and ensured that the age distribution of the respondents was balanced.

The rating questions, asked in the second and third section of the questionnaire, were pre-coded and the coding scheme was incorporated already into the questionnaire to minimise the need of coding after data collection. A Likert scale was employed to transform the non-numerical information about customers' views and attitudes into numerical values. These data were evaluated on a linear scale, from 1 being "strongly disagree" to 5 being "strongly agree". The five point Likert scale was also used for

questions measuring how much certain issues related to the circular fashion offerings concerned the respondents. These data were given values from 1 being “not at all” to 5 being “very much”.

For the questions where there were a large number of possible responses, coding had to be done after data collection (Saunders et al., 2009, p. 424). This was the case with the questions mapping the nationality and occupation of the respondents. To code the nationality variable, Europe was divided into four country groups that differ from each other in terms of the level of economic development, culture and attitudes towards social and environmental issues. These groups are (1) Northern Europe, (2) Southern Europe, (3) Western Europe and (4) Eastern Europe.

3.4.2 Data analysis techniques

Once all the questionnaire data were coded, they were analysed using the SPSS data analysis software. First, the initial data analysis was performed using descriptive analysis to see how the responses were distributed. For each question in the second and third section, the mean value was calculated to describe the central tendency to examine in general what the respondents thought about sustainability and the different circular fashion solutions.

Further, possible relationships between data were then tested by applying a *Kruskal-Wallis test*. It is the nonparametric alternative to one-way variance analysis and it compares the population medians. The null hypothesis for the Kruskal-Wallis test is that the population medians are equal. (Bewick, Cheek & Ball, 2004.) Furthermore, bar charts and box plots were used to visualise some of the most significant findings. All the tests were calculated using weighted variables in order to avoid flaws caused by the unevenly distributed demographical traits among the study respondents.

3.5 Credibility of the study

The final goal of each study is to give an answer to the initial research questions and objectives. However, assessing the credibility of the research findings is challenging, meaning that one can never be certain whether the research findings are absolutely true. Nevertheless, the possibility of getting wrong results can be minimized by taking into account two specific emphases on research design: reliability and validity. When using a questionnaire as the data collection method, the validity and reliability of the collected data and research findings depend primarily on the design of the questions and structure of the questionnaire. (Saunders et al., 2009, pp.156, 401.)

3.5.1 Reliability

Reliability indicates the extent to which the data collection methods and analysis techniques generate consistent research findings. If 1) the measures used in the research are able to generate the same results on other occasions, 2) similar observations can be reached by other researchers and 3) there is a transparency in how the raw data was interpreted, then the research can be considered reliable. (Saunders et al., 2009, p. 156.)

There may be four principal threats to reliability: participant error, participant bias, observer error and observer bias. *Participant error* refers to situations where respondents' answers may vary depending on the situation they are in the particular moment of answering the survey. In this thesis, the participant error was controlled by leaving the questionnaire online for four weeks, giving the respondents the possibility to participate when they had time and felt as motivated as possible. The second threat, *participant bias,* has to do with situations where the participants might answer in a way they think they are expected to answer in order to please others. This is a major concern particularly in studies concerning ethics, since the respondents might sometimes reply in a more socially desirable manner than would actually be the truth. This phenomenon is also known as *desirability bias*. (Saunders et al., 2009, p.156.) This error was limited by emphasizing the anonymity of the questionnaire, so the respondents did not think

that their responses would show them in a bad light. It was also particularly communicated in the questionnaire that many of the questions reflect statements that many people would find desirable, but the respondents are wanted to answer honestly and accurately only in terms of whether the statements describe what they are like.

In addition, there might be possible threats related to the researcher. *Observer errors* are systematic errors made by observers, that can result from tiredness for example. (Saunders et al., 2009, p.157.) The highly structured nature of the questionnaire used in the data collection reduced this threat. Also pilot testing the questionnaire with colleagues and editing the questions according to their feedback lowered the risk of possible errors or ambiguities.

Finally, *observer bias* is often seen as the biggest threat to the reliability of research findings. It results from the use of excessive subjectivity in interpreting the findings. Researchers are not separate entities of the social world they are studying and therefore their own common sense knowledge and life experiences affect the way the in which the study results are interpreted. Since the researcher bias cannot be completely avoided, all that can be done is being aware of the threat and seeking to control it by carefully interpreting and double-checking the results. (Saunders et al., 2009, p.297.) In addition, the usage of quantitative data analysis techniques in this thesis minimised the possibility of analysing the results subjectively.

3.5.2 Validity

Validity of the research refers to whether the findings are really about what they are intended to be. Validity can be either internal or external. *Internal validity* measures whether the research reliably indicates causal relationships between variables, such as in this thesis the influence of contextual and individual-related factors to the consumers' attitudes towards circular fashion. (Saunders et al., 2009, p. 157.) To ensure internal validity in this study, the relationships were measured using the SPSS tool. Also the statistical significance of the Kruskal-Wallis test results was ensured by calculating the

asymptonic significance, which is the p-value based on chi-square approximation. Only the findings with $p<0.05$ were considered statistically significant.

On the other hand, *external validity* refers to the extent to which the research results are generalizable, indicating whether the results would be applicable in other research settings. Given the relatively small sample size used in this thesis compared to the entire population of European consumers born between 1980 and 2003, it cannot be claimed that the results and conclusions can be generalised. (Saunders et al., 2009, pp. 157, 158.) However, these research findings can still show direction as the population was not homogenous but the respondents' demographical backgrounds were quite diverse and evenly distributed.

4 Empirical findings

In this section, the most significant findings of the empirical study are presented. First, the findings related to the consumers' views towards sustainability in general are presented. After that, the findings related to the attitudes towards different types of circular fashion are presented together with the findings related to the most significant factors that affect consumers' attitudes and behaviour towards circular fashion.

4.1 Consumers' attitudes towards sustainability

The respondents' attitudes towards sustainability in general were positive. Most respondents considered themselves as environmentally concerned, as 81% either agreed or strongly agreed with the statement. However, level of education and nationality affected the answers of the respondents. Those who had a graduate degree or higher, evaluated themselves as more environmentally concerned than those with lower degrees. What comes to nationality, Southern European consumers evaluated themselves as the most environmentally conscious, whereas Northern European consumers evaluated themselves as the least environmentally conscious. This is an interesting finding, since Northern European consumers are traditionally considered the most environmentally conscious group in Europe. However, this is the respondents' subjective point of view, so it is not necessarily the truth.

A strong majority, 73%, also agreed or strongly agreed with the statement that they try to consider sustainability I their daily purchasing decisions. However, Eastern European consumers were not as likely to agree with this statement than others. In addition, a majority of respondents said that they would be willing to pay a higher price for a sustainable product than a traditional one, especially the most highly educated respondents. However, income did not affect the willingness to pay more. Also in this question, Eastern European respondents were less likely to agree with the statement than others.

When asking whether they usually choose the product that is less harmful to the environment when choosing between two otherwise similar products, the answers were not so clear anymore. Most of the respondents were neutral about this and 20% even disagreed with the statement. This can be at least partly explained by the respondents' scepticism towards retailers' and manufacturers' ethical claims since less than 4% said they are not sceptic about them, as seen in figure 8 (number 1 represents "strongly disagree" and 5 represents "strongly agree").

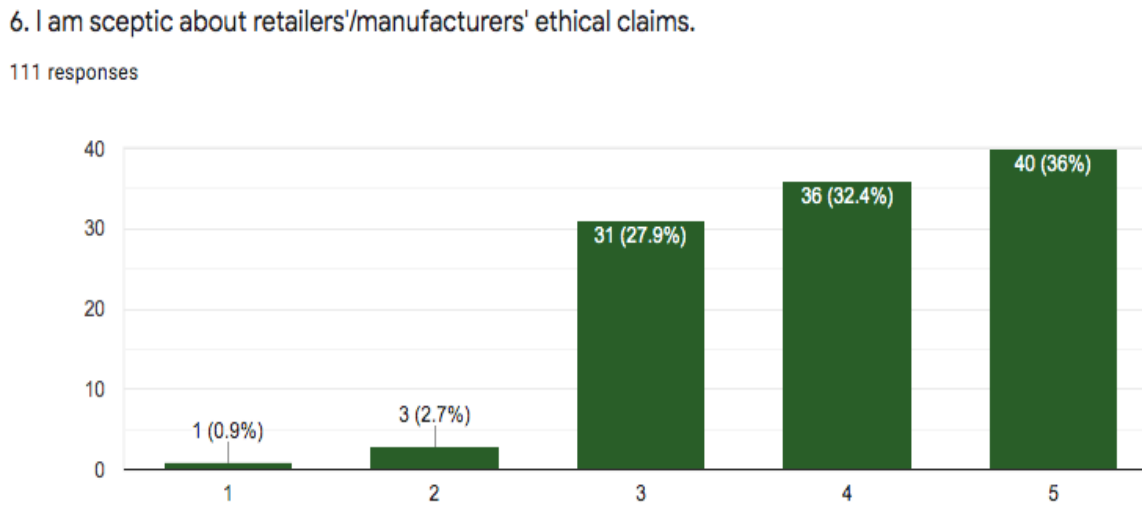

Figure 8. Scepticism towards ethical claims.

Furthermore, more than 50% of the respondents, and especially female respondents felt that there is a lack of trustworthy information about the sustainable choices they can make in their everyday life. 39% were either neutral or said that they are not aware of the environmental impacts of clothing production and consumption. This finding is quite alarming since the study respondents, mostly highly educated young European consumers, belong to the most environmentally conscious group of individuals. This calls for a substantial increase in communicating these impacts. Generation Z was more conscious of these environmental impacts than generation Y. The less educated respondents were more conscious of the impacts than highly educated. This can either mean that the more highly educated individuals are more conscious about what they do

not know, or that the younger generations (with still a lower education level) are the most conscious about these impacts.

63% of the respondents felt that they are able to make a difference with their own consumption choices, which means they have an internal locus of control. This is a positive result as individuals with an internal locus of control tend to make more ethical choices than individuals with external locus of control (Kollmuss & Agyeman, 2002). Female respondents as well as individuals with higher education and income level had the highest internal locus of control.

4.2 Consumer attitudes towards circular fashion models

In this section, empirical findings about the consumers' attitudes towards the chosen models of circular fashion are presented. Also the effects of different individual factors are discussed simultaneously.

4.2.1 Remanufacture

What comes to the *remanufacture* model of circular clothing, 86% of the respondents were either interested or very interested in purchasing clothes and accessories made of recycled fibres or materials. Only 4% stated that they are not interested in purchasing this kind of circular fashion. This is illustrated in the bar chart in figure 9. Thus, there seems to be a huge market opportunity for remanufactured fashion among the young European consumers.

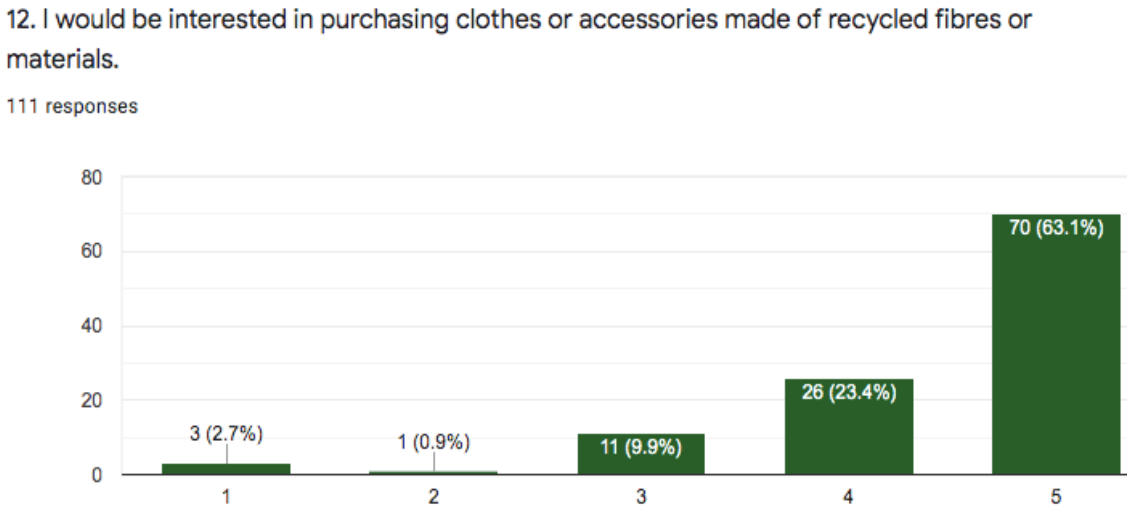

Figure 9. Respondents' interest towards remanufactured fashion.

Especially Northern Europeans were interested in remanufactured clothing, whereas Eastern Europeans were least interested. However, there were also a lot of concerns related to remanufactured clothes and accessories. 77% of the respondents were concerned about the product quality and durability, especially males and Southern and Eastern European respondents. 71% were concerned about the style of the product, especially Southern and Eastern Europeans and those with the lowest education level. 70% of the respondents were concerned about the product comfort and 67% about the product price. The nationality was a significant factor for these too, since Southern and Eastern Europeans were also the most concerned about the remanufactured products' comfort and price. In addition, only 33% said they know where they can purchase remanufactured clothes or accessories, and the result was similar across countries. Thus, more attention should be paid in advertising remanufactured fashion and making it more available to the big crowds.

4.2.2 Rent

The second circular fashion solution, *rent*, contains both one-time rentals and monthly subscriptions of clothing and accessories. This encourages re-use rather than the purchase of items that only get worn once or twice. This model did not attract as much interest as the remanufacture model. 39% were interested in using one-time rental

service and only 25% were interested in using a regular subscription service. Female respondents were significantly more interested in these rental models than male respondents, and also individuals with a higher education were interested in using rental services for clothing. Most of the respondents, 76%, were especially concerned about the convenience and accessibility of these services. Also the price of the service rose doubts of 71% and selection of styles worried 68% of the respondents. Again, Southern and Eastern European consumers, as well as females were significantly more concerned about the selection of styles than others.

4.2.3 Rethink

Peer-to-peer sharing platforms divided the opinions of consumers. Selling used clothes interested 72% of the respondents, and 64% also said they would be interested to buy used fashion through peer-to-peer sharing platforms. However, only 38% said they would rent used clothing through these platforms. Gender and nationality affected these responses. Females were significantly more interested in using these sharing platforms for selling, buying and renting clothes than males. This can be seen in a box-plot presented in figure 10. The black line in the middle marks the median of the data, so the median answer for females is 3 (neutral), whereas for male respondents it is 1(not at all interested). Southern Europeans were most interested in using these platforms, whereas they did not attract as much interest among Eastern Europeans.

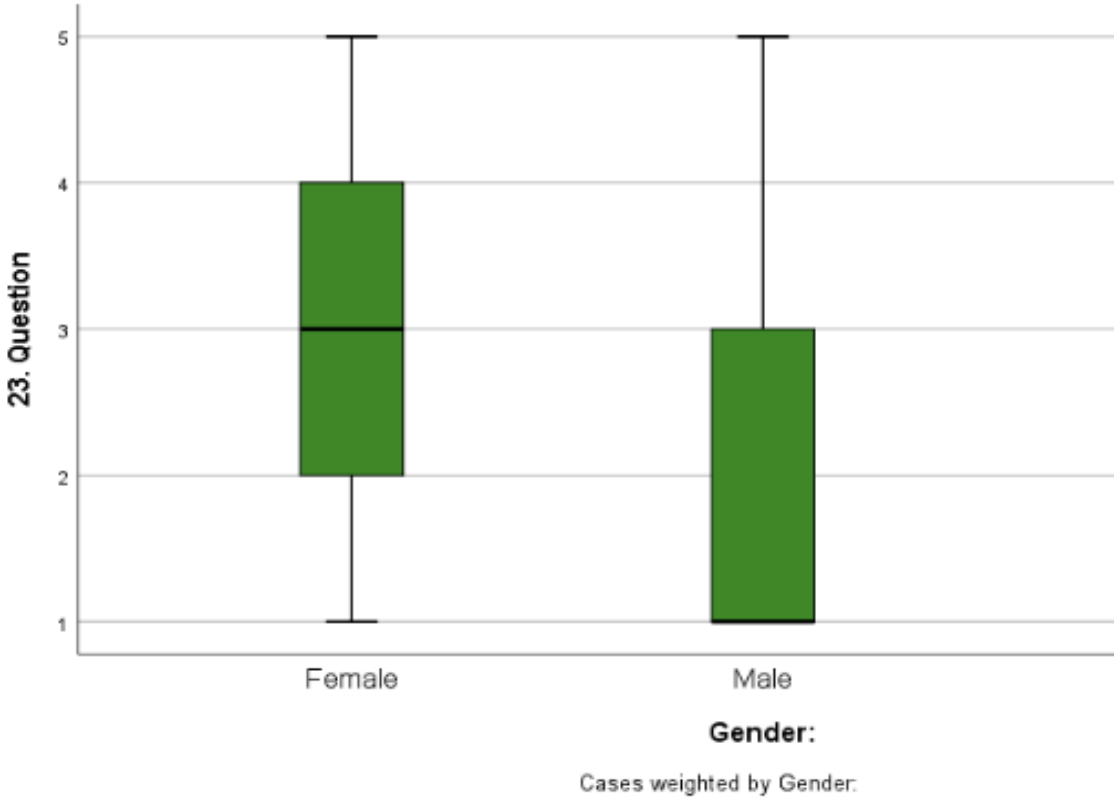

Figure 10. Female and male respondents' interest towards renting through peer-to-peer sharing platforms.

Possible concerns that might affect the popularity of these platforms were also examined. Ease of the use of the platform was a common concern for 71% of the respondents. 70% of the respondents were worried about the reliability of the product, especially Southern and Eastern European consumers. 69% of the respondents were concerned about the effort prior to selling and buying through the platforms, especially the female respondents and those with the highest income level. Doubts about the reliability of the payment (in case of e.g. selling clothes to another consumer through such platform) were raised among 65% of the respondents, especially those with the lowest income level and again, Southern and Eastern Europeans.

4.2.4 Repair

What comes to extending clothes' useful life through repairing old clothes, a vast majority, 70%, said they make minor repair to their clothes themselves. Female

respondents, Southern Europeans as well as Gen Z respondents were more likely to repair their clothes than others. Only 35% of the respondents reported to use repair shops when clothing repair is needed.

4.2.5 Reuse

Only 37% of the study respondents said they often sell their old clothes when they no longer use them. Female respondents were much more likely to sell their used clothes than males. However, what might partly explain the small percentage of individuals who sell their old clothes, is that as much as 84% reported to donate their old clothes to charity, family or friends when they no longer use them. Southern Europeans were the most likely to do this kind of clothing donations.

4.2.6 Recycle

Finally, the respondents were asked about their clothing disposal behaviour. 57% said they are likely to take their old worn out or stained clothing to textile collection points. However, there was some cultural variation since Southern and Eastern Europeans were not as likely to use textile collection points as Northern and Western European respondents. This is visualised in the boxplot in figure 11. The medians for Southern and Eastern Europeans is 3 (neutral), whereas for Northern and Eastern Europeans it is 4 (likely). Furthermore, 24% answered that they tend to throw their worn out or stained clothes to mixed waste. Eastern and Northern Europeans were most likely to do so. When asking about if they think they are able to determine whether their old clothes could still be recycled to new clothes or fibres, the answers were very divided; all the five options got approximately 20% of the answers.

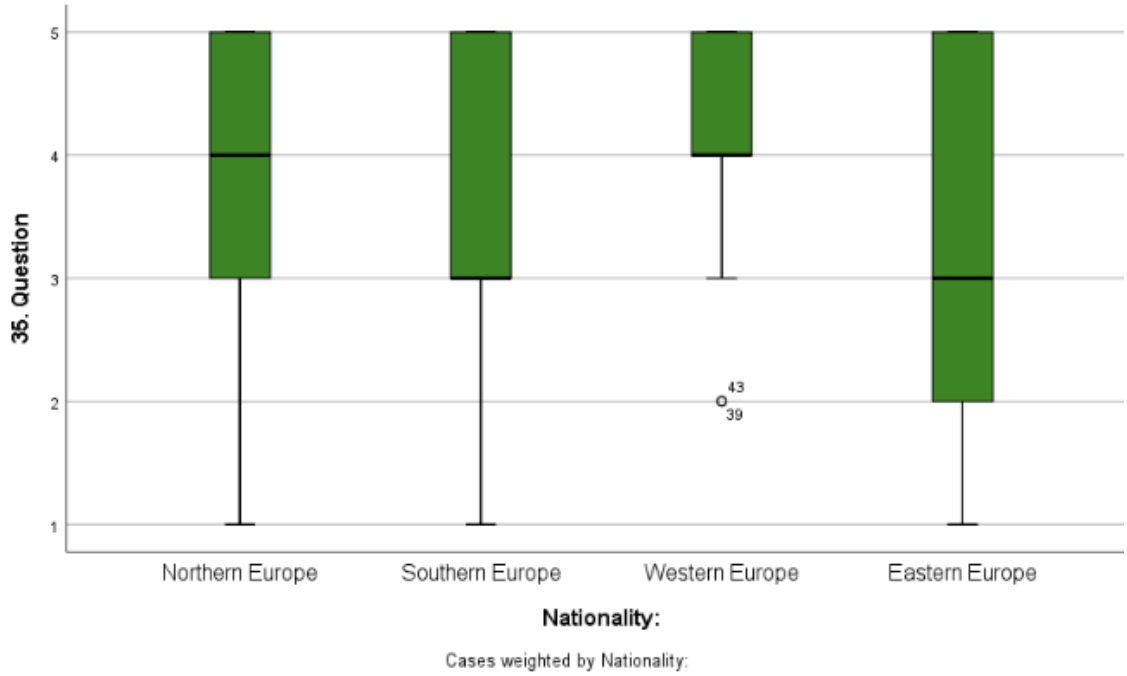

Figure 11. Likeliness to take old clothing to textile collection points by country group

As seen in the figure 12, the incomes of the respondents are distributed very unevenly between the country clusters. Since the same money has a very different purchasing power in different European countries, it is not meaningful evaluating the consumer attitudes based on their income level. When analysing the data, it was seen that the income factor was a significant factor almost every time the nationality factor was also significant, so it was left out from those questions because it does not necessarily describe the significance of the income factor itself.

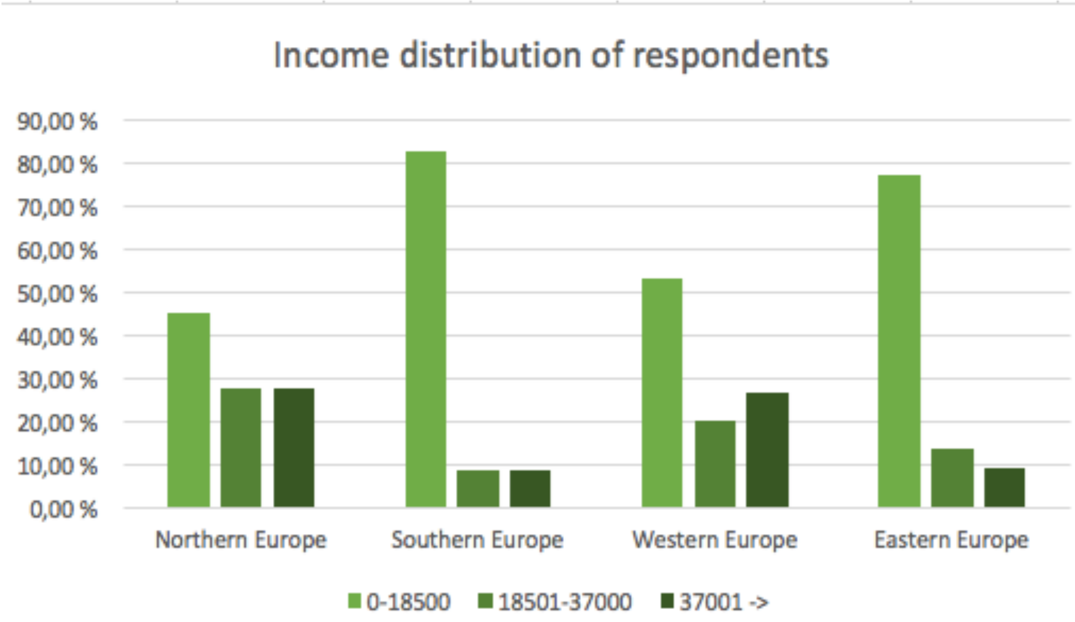

Figure 12. Income distribution of the respondents

5 Discussion and conclusions

This chapter concludes the thesis by summarising and discussing the findings of the study to present the new knowledge attained across the previous sections. The results of the empirical research are linked with the theoretical framework for the purpose of finally answering the research question and objectives in a clear and concise way. Furthermore, the chapter provides managerial implications, giving practical recommendations for companies, policy makers and marketers interested in enabling the shift to a circular economy. Finally, the limitations of the research are brought up and suggestions are given for future studies that could deepen the aspects that were not emphasized in this thesis.

5.1 Summary and key findings

The aim of this research was to obtain more knowledge and understanding of how can fashion industry make a transition towards circular economy through different types of circular fashion and what are young European consumers' attitudes towards these offerings. In addition, the study aimed at discovering what are the most significant individual factors that affect these attitudes. Thus, this thesis contributes to the developing discussion on consumer's role in circular economy.

The main research question of the thesis was *"What kind of solutions does circular economy offer to address the growing sustainability pressures in the fashion industry and how do young European consumers of diverse cultural backgrounds perceive these solutions?"*

This research question, together with the supporting theoretical and empirical objectives, guided the research that took a deductive approach and had an exploratory purpose. Thus, the theoretical framework was first built in chapter 2 by reviewing earlier literature in the fields of circular economy, circular fashion and sustainable consumer behaviour. After this, the theoretical framework was utilised as a basis for the empirical

data collection through an online questionnaire. The goal of the empirical part was to map young European consumers' thoughts and attitudes towards sustainability in general and towards different circular fashion types. In addition, the analysis concentrated on finding the most significant individual factors that might affect these attitudes.

To answer the research question, it is first divided into three parts. Firstly, circular economy offers multiple different solutions to address growing sustainability pressures in the fashion industry. Circular economy can be implemented in the fashion industry through circular fashion business models that cover the whole lifecycle of garments. In circular economy, clothes are designed to last long. There is no need to own everything, and the clothes that are used rarely can be rent or borrowed instead. Furthermore, the garments' useful life is extended by encouraging repairing minor damages and recycling the clothes that are no longer used by either selling them through second hand shops or peer-to-peer sharing platforms. Moreover, the materials and fibres of clothes that are in the end of their lifecycle can be reused as materials of remanufactured clothing. In this way, the life-cycle loop of a garment is closed and a minimum amount of resources are wasted.

Secondly, the findings of the empirical section indicate that the overall attitude towards circular fashion is positive among young European consumers. So, the time seems to be right for firms in the fashion industry to contribute to the shift to circular economy by implementing circular business models instead of current linear models. Especially the remanufactured clothing interested all respondents across countries, genders, generations, income levels and education levels. Clothes as a service-business model as well as peer-to-peer sharing platforms interested female consumers, but males were sceptic about the convenience of the services. Repairing old clothes is already quite popular among the young European consumers, but it should be further encouraged among males and Northern Europeans who did not report to be repairing their clothes as much. After all, repair is one of the easiest ways to extend clothes' useful life.

Recycling old garments through textile collection points was already a common practice among the respondents, and only 24% said they throw their old clothes to mixed waste. This number should however be further decreased by making the textile collection points more visible and available to everyone.

In general, the findings show that skepticism towards the retailers' ethical claims can be a major obstacle in adopting circular fashion. However, the respondents do generally think that they are able to make a difference with their own consumption choices, which indicates that they are ready to make actions concerning their own consumption habits towards a more sustainable direction. Also, price did not play as big role in the respondents' choices to buy sustainable products, as a majority of respondents said they are willing to pay a higher price for sustainable product than a traditional one.

Finally, what comes to the individual factors affecting the attitudes towards circular fashion, the findings show that gender and nationality are the most significant factors. Female consumers were more interested in the circular fashion offerings that males, especially in the rental and peer-to-peer sharing models. However, the overall attitude towards sustainability was similar among genders. In general, male consumers were more concerned about the quality and durability of the products as well as the practicality of the products, whereas females were more concerned about the selection of styles. This should be taken into account in planning marketing communication for the circular clothing.

The findings of the study indicate that Northern and Southern Europeans are the most receptive towards these circular fashion offerings, whereas Eastern Europeans were significantly less receptive. This also showed in general attitudes towards sustainability, since Eastern Europeans were significantly less likely to consider sustainability in their daily purchasing decisions and less willing to pay a higher price for a sustainable product than a traditional one than the others. This finding calls for considerable increase in the sustainable communication and sharing knowledge about the environmental impacts of

clothing production and consumption in Eastern European countries to raise the awareness and shift consumers' thinking. Moreover, the usage of textile collection points was more common in Northern and Western European countries. This can also be due to a lack of required infrastructure for common textile collection system in Southern and Eastern Europe.

The level of education affected some of the attitudes, since the most highly educated consumers had the highest internal locus of control. Furthermore, a higher education indicated also a bigger interest towards the subscription and rental models of circular fashion, including renting through peer-to-peer sharing platforms. These key findings of the study are summarised in table 6 below.

General	• Positive attitude towards circular fashion, especially towards remanufactured clothing • Scepticism towards ethical claims • Internal locus of control → readiness to take actions
Gender	• A significant factor affecting the responses • Female consumers more interested in circular fashion, especially in rental and peer-to-peer sharing models • Female respondents more concerned about the style vs. male respondents more concerned about the quality, durability and practicality • Females more likely to sell their old clothes than males
Nationality	• A significant factor affecting the responses • Northern and Southern Europeans most receptive towards circular fashion vs. Eastern Europeans least receptive • Eastern Europeans also least likely to consider sustainability in their purchasing choices in general & least willing to pay higher prices for sustainable products • Northern and Western Europeans more likely to use textile collection points → unavailability in Southern and Eastern Europe • Southern and Eastern Europeans concerned about the price and style of the circular fashion
Generation	• Less significant factor affecting the responses • Gen Z more conscious about the environmental impacts of clothing production and consumption than Gen Y. • Gen Z more likely to repair their old clothes than Gen Y.

Education level	• Less significant factor affecting the responses • Respondents with the highest education level had the highest internal locus of control → most likely to take actions • Higher level of education indicated a bigger interest towards the rental models
Income level	• Did not necessarily correspond to the purchasing power of the respondents in the cross-national setting → difficult to make conclusions about the effect of income

Table 6. Summary of the study findings

5.2 Managerial implications

The results of this study enable multi-national fashion companies to better understand consumer behavior and attitudes in the context of sustainability and circular economy. This will help them in introducing relevant new business models and strategies in different markets. It has been learned from successful cases that a transition towards circular economy comes from the participation and collaboration of all actors of society. It requires the adoption of cleaner production patterns at company level, an increasing responsibility and awareness of consumers, the use of renewable technologies and materials and the adoption of clear and stable policies that support this transition (Ghisellini et al., 2016).

Business models of companies operating in the fashion industry need to be re-thought in order to ensure their contribution to the circular economy. It is now crucial for the companies to understand that if they do not take steps towards a circular economy, they will be left behind. So, they should start concentrating on product innovation and developing new designs. Based on the study findings, there is huge market potential especially for remanufactured fashion. Most of the respondents did not know where they could buy remanufactured clothing, so a special attention should be paid in advertising the remanufactured fashion to make it more visible and making it available to the bigger audience.

When designing products and directing marketing communication, it should be noted that the selection of styles is especially important for female consumers whereas male consumers are more concerned about the quality and durability of products. Thus, the circular garments should be fashionable and they should not be designed to look very different from the fashion made from virgin materials. In order to decrease the scepticism of the young consumers towards retailers' ethical claims, the communication about the garments' lifecycle and firms' operations should be really honest and transparent. Clarifying and communicating the value proposition of circular fashion to new potential customers is highly significant. In order to achieve the desired impact, the circular clothes should not remain as luxury products affordable only to an upper-class society with high-income earners, but rather be accessible to the mass market. Simultaneously, the emotional engagement for the clothes should be promoted so that consumers would be ready to maintain and use them longer. To achieve this, the quality of the fabric has to be high, so that the clothes last long and can be re-used prior to recycling.

In order to increase the interest of also Eastern European consumers towards circular fashion, awareness-raising initiatives targeting consumers are needed. As the Eastern European consumers were concerned about the price of circular fashion, also the the long-term financial benefits of circular clothing should be emphasized. Circular clothes can be more expensive than traditional clothes, but they are also more durable and designed to be repaired.

Furthermore, these findings might be of potential interest to policy-makers who aim to transition consumer habits and companies' interest towards circularity. The shift to circular economy cannot be tackled by voluntary work and goodwill of companies and consumers alone, and therefore public funding has to be addressed to businesses and initiatives that potentially help us to make practice changes in our everyday lives. Financial incentives should be set for both consumers and companies to make circular activities more attractive and profitable.

5.3 Limitations of the study and suggestions for future research

As with any research, this thesis also has its limitations. However, these limitations also naturally raise ideas for future research. To start with, the sample size of the study makes the findings unlikely to represent larger populations of the selected country groups. This limits the generalizability of the results. In addition, although a questionnaire offers an economical way of collecting data from a relatively large sample, it limits the depth of the analysis. Therefore, consumers' attitudes towards circular fashion could be examined more in depth in the future by conducting in-depth interviews with consumers.

In this study, only the attitudes of Y and Z generations were examined. The results would be very different if also the attitudes of older generations would be observed. Thus, comparison of the attitudes towards circular fashion of younger and older generations would be an interesting topic of study in the future. It is also worth acknowledging that consumer attitudes do not always correlate with their actual buying behaviour. Thus, this so called attitude-behaviour gap in the context of circular clothing should be further researched in the future.

The circular fashion is still a relatively new topic, so it would be interesting to see if the results would differ significantly in couple of years' time when the topic has gained more visibility. This would happen by conducting a longitudinal research with a similar population and similar questions. Furthermore, most of the CE studies with geographical focus explore CE in the context of developed economies. Therefore, it could provide useful insights to research circular economy in the context of developing economies in the future.

List of references

Agyemang, M., Kusi-Sarpong, S., Khan, S. A., Mani, V., Rehman, S. T. & Kusi-Sarpong, H. (2019). Drivers and barriers to circular economy implementation. *Management Decision, 57*(4), 971-994.

Atlason, R.S., Giacalone, D.; & Parajuly, K. (2017). Product design in the circular economy: Users' perception of end-of-life scenarios for electrical and electronic appliances. *Journal of Cleaner Production*, *168*, 1059–1069.

Auger, P., Devinney, T. M., & Louviere, J. J. (2007). Using best–worst scaling methodology to investigate consumer ethical beliefs across countries. *Journal of Business Ethics*, *70*(3), 299-326.

Ayres, R. & Kneese, A. (1969). Production, Consumption, and Externalities. *The American Economic Review, 59*(3), 282-297.

Babakus, E., Cornwell, T. B., Mitchell, V., & Schlegelmilch, B. (2004). Reactions to unethical consumer behavior across six countries. *Journal of Consumer Marketing*, *21,* 254-263.

Belk, R., Devinney, T., & Eckhardt, G. (2005). Consumer ethics across cultures. *Consumption Markets & Culture*, *8*(3), 275-289.

Bewick, V., Cheek, L., & Ball, J. (2004). Statistics review 10: further nonparametric methods. *Critical Care*, *8*(3), 196–199.

Bianchi, C. & Birtwistle, G. (2012). Consumer clothing disposal behaviour: a comparative study. *International Journal of Consumer Studies, 36*(3), 335-341.

Blend, J.R. & van Ravenswaay, E.O. (1999). Measuring consumer demand for ecolabled apples. *American Journal of Agricultural Economics, 81*(5), 1072-1077.

Boulstridge, E. & Carrigan, M. (2000). Do consumers really care about corporate responsibility? Highlighting the attitude—behaviour gap. *Journal of Communication Management, 4*(4), 355-368.

Bray, J., Johns, N. & Kilburn, D (2011). An Exploratory Study into the Factors Impeding Ethical Consumption. *Journal of Business Ethics, 98*, 597–608.

Brennan, G., Tennant, M., & Blomsma, F. (2015). Business and production solutions: Closing loops and the circular economy. *Sustainability: Key Issues,* 219-239.

Brough, A.R., Wilkie, J.E., Ma, J., Isaac, M.S. & Gal, D. (2016). Is eco-friendly unmanly? The green-feminine stereotype and its effect on sustainable consumption. *Journal of Consumer Research, 43*, 567–582.

Cao, H., Chang, R., Kallal, J., Manalo, G., McCord, J., Shaw, J. & Starner, H. (2014). Adaptable apparel: a sustainable design solution for excess apparel consumption problem*. Journal of Fashion Marketing and Management, 18*(1), 52-69.

Camacho-Otero, J., Boks, C. & Pettersen, I. N. (2018). Consumption in the Circular Economy: A Literature Review. *Sustainability, 10*(8), 1-25.

Camacho-Otero, J., Boks, C. & Pettersen, I. N. (2019). User acceptance and adoption of circular offerings in the fashion sector: Insights from user-generated online reviews. *Journal of Cleaner Production, 231*, 928-939.

Carey, L. & Cervellon, M.-C. (2014). Ethical fashion dimensions: pictorial and auditory depictions through three cultural perspectives. *Journal of Fashion Marketing and Management, 18* (4), 483-506.

Cervellon, M., Carey, L. & Harms, T. (2012). Something old, something used; Determinants of women's purchase of vintage fashion vs second-hand fashion. *International Journal of Retail & Distribution Management, 40*(12), 956-974.

Chekima, B., Chekima, S., Syed Khalid Wafa, S. A. W., Igau, O. @. A. & Sondoh, S. L. (2016). Sustainable consumption: The effects of knowledge, cultural values, environmental advertising, and demographics. *International Journal of Sustainable Development and World Ecology, 23*(2), 210-220.

Chi, T. (2015). Consumer perceived value of environmentally friendly apparel: an empirical study of Chinese consumers. *Journal of the Textile Institute, 106* (10), 1038-1050.

Connell, K.Y.H. (2011). Exploring consumers' perceptions of ecoconscious apparel acquisition behaviors. *Social Responsibility Journal*, *7*(1), 61-73.

Dahlbo, H., Aalto, K., Eskelinen, H. and Salmenperä, H. (2017). Increasing textile circulation – Consequences and requirements. *Sustainable Production and Consumption*, *9*, 44-57.

Davidson, D.J., Freudenburg, W.R. (1996). Gender and Environmental Risk Concerns: A Review and Analysis of Available Research. *Environment and Behavior*, *28*(3), 302-339.

Dillman, D. A. (2011). *Mail and Internet surveys: The tailored design method--2007 Update with new Internet, visual, and mixed-mode guide*. John Wiley & Sons.

Edbring, E.G., Lehner, M. & Mont, O. (2016). Exploring consumer attitudes to alternative models of consumption: Motivations and barriers. *Journal of Cleaner Production, 123*, 5–15.

Eisenhardt, K.M. & Graebrner, M.E. (2007). Theory building from cases: opportunities and challenges. *The Academy of Management Journal, 50*(1), 25-32.

Eisler, A. D., & Eisler, H. (1994). Subjective time scaling: influence of age, gender, and Type A and Type B behavior. *Chronobiologia*, *21*(3-4), 185-200.

Ellen MacArthur Foundation. (2013). *Towards the circular economy Vol. 2: opportunities for the consumer goods sector*. https://www.ellenmacarthurfoundation.org/assets/downloads/publications/TCE_Report-2013.pdf

Ellen MacArthur Foundation. (2017). *A new textiles economy: Redesigning fashion's future*. http://www.ellenmacarthurfoundation.org/publications.

European Commission. (2020). *Circular Economy Action Plan for a cleaner and more competitive Europe.* https://ec.europa.eu/environment/circular-economy/pdf/new_circular_economy_action_ plan.pdf

Farrant, L., Olsen, S.I. & Wangel, A. (2010). Environmental benefits from reusing clothes. *International Journal of Life Cycle Assessment*, *15*(7), 726-736.

Fontell, P., & Heikkilä, P. (2017). *Model of circular business ecosystem for textiles*. VTT Technical Research Centre of Finland. VTT Technology No. 313. http://www.vtt.fi/inf/pdf/technology/2017/T313.pdf

Freestone, O. & McGoldrick, P. (2007). Motivation of the ethical consumer. *Journal of Business Ethics*, *79*(4), 445-467.

Gam, H.J. (2011). Are fashion-conscious consumers more likely to adopt eco-friendly clothing? *Journal of Fashion Marketing and Management, 15*(2), 178-193.

Gazzola, P., Pavione, E., Pezzetti, R. & Grechi, D. (2020). Trends in the Fashion Industry. The Perception of Sustainability and Circular Economy: A Gender/Generation Quantitative Approach. *Sustainability, 12*(7), 2809.

Ghisellini, P., Catia Cialani, C. & Ulgiati, S. (2016). A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production*, *114*(7), 11-32.

Grasso, M.M., McEnally, M., Widdows, R. & Herr, D.G. (2000). Consumer behavior toward recycled textile products. *Journal of The Textile Institute, 91*(2), 94-106.

Guide, V., & Wassenhove, L. (2009). OR FORUM - The Evolution of Closed-Loop Supply Chain Research. *Operational Research, 57*, 10-18.

Haas, W., Krausmann, F., Wiedenhofer, D. & Heinz, M. (2015). How circular is the global Economy?: an assessment of material flows, waste production, and recycling in the european union and the world in 2005. *Journal of Industrial Ecology, 19*, 765-777.

Harris, F., Roby, H. & Dibb, S. (2016). Sustainable clothing: challenges, barriers and interventions for encouraging more sustainable consumer behaviour. *International Journal of Consumer Studies, 40*(3), 309-318.

Hazen, B. T., Mollenkopf, D. A. & Wang, Y. (2017). Remanufacturing for the circular economy: An examination of consumer switching behavior. *Business Strategy and the Environment, 26*(4), 452-464.

Henninger, C., & Singh, P. (2017). Ethical consumption patterns and the link to purchasing sustainable fashion. In *Sustainability in Fashion: a cradel to upcycle approach* Palgrave Macmillan Ltd.

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*. Sage publications.

Hobson K. & Lynch N. (2016). Diversifying and de-growing the circular economy: radical social transformation in a resource-scarce world. *Futures, 82,* 15–25.

Ionaşcu, I., & Ionaşcu, M. (2018). Business models for circular economy and sustainable development: the case of lease transactions. *Amfiteatru Economic, 20*(48), 356-372.

Joergens, C. (2006). Ethical fashion: myth or future trend? *Journal of Fashion Marketing and Management: An International Journal*, *10*(3), 360-371.

Jiménez-Parra, B., Rubio, S., & Vicente-Molina, M. A. (2014). Key drivers in the behavior of potential consumers of remanufactured products: a study on laptops in Spain. *Journal of Cleaner Production*, *85*, 488-496.

Joy, A., Sherry, J.F., Venkatesh, A., Wand, J. & Chan, R. (2012). Fast fashion, sustainability, and the ethical appeal of luxury brands. *Fashion Theory, 16*(3), 273-296.

Jung, S. & Jin, B. (2014). A theoretical investigation of slow fashion: sustainable future of the apparel industry. *International Journal of Consumer Studies, 38*(5), 510-519.

Kanchanapibul, M., Lacka, E., Wang, X. & Chan, H. K. (2014). An empirical investigation of green purchase behaviour among the young generation. *Journal of Cleaner Production, 66*, 528-536.

Kapoor, R., & Madichie, N. (2012). *Consumer Behaviour*. June, Tata McGraw-Hill, Noida, India.

King, A. M., Burgess, S. C., Ijomah, W., & McMahon, C. A. (2006). Reducing waste: Repair, recondition, remanufacture or recycle? *Sustainable Development*, *14*(4), 257-267.

Kirchherr, J., Reike, D. & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation & Recycling, 127*, 221-232.

Kirchherr, J., Hekkert, M., Bour, R., Huibrechtse-Truijens, A., Kostense-Smit, E. & Muller, J. (2017). *Breaking the Barriers to the Circular Economy*; Utrecht University: Utrecht, The Netherlands.

Kirchherr, J. & van Santen, R. (2019). Research on the circular economy: A critique of the field. *Resources, Conservation and Recycling, 151*.

Kollmuss, A. & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behaviour? *Environmental Education Research, 8,* 239-260.

Korhonen, J., Honkasalo, A. & Seppälä, J. (2018). Circular economy: the concept and its limitations. *Ecological Economics, 143*, 37-46.

Koszewska, M., Rahman, O. & Dyczewski, B. (2020). Circular fashion – consumers' attitudes in cross-national study: Poland and Canada. *Autex Research Journal*, 20(3), 327-337.

Kotler, P. & Armstrong, G. (2012). *Principles of Marketing.* 14th Edition, Pearson Education Limited, Essex, England.

Lai, Z., Henninger, C.E. & Alevizou, P.J. (2017*). An exploration of consumers' perseption towards sustainable fashion – a qualitative study in the UK*, in Henninger, C.E., Alevizou, P.J., Goworek, H. and Ryding, D. (Eds), Sustainability in Fashion: A Cradle to Upcycle Approach, Springer, Heidelberg, 81-102.

Laroche, M., Bergeron, J., & BarbaroForleo, G. (2001). Targeting consumers who are willing to pay more for environmentally friendly products. *Journal of Consumer Marketing, 18*(6), 503-520.

Lee, J. A., & Holden, S. J. S. (1999). Understanding the determinants of environmentally conscious behavior. *Psychology and Marketing*, *16*(5), 373-392.

Lewandowski, M. (2016). Designing the business models for circular economy - towards the conceptual framework. *Sustainability, 8*(1), 1-28.

Ma, S., Wen, Z., Chen, J., & Wen, Z. (2014). Mode of circular economy in China's iron and steel industry: a case study in Wu'an city. *Journal of Cleaner Production, 64*, 505-512.

Machado, M. A., Almeida, S. O., Bollick, L. C., Bragagnolo, G. (2019). Second-hand fashion market: Consumer role in circular economy. *Journal of Fashion Marketing and Management, 23*, 382-395.

McCrindle, M.; Wolfinger, E. (2009). *The ABC of XYZ: Understanding the Global Generations*; University of New South Wales: Sydney, Australia.

McKinsey. (2016). *Developing products for a circular economy.* https://www.mckinsey.com/business-functions/sustainability/our-insights/developing-products-for-a-circular-economy.

Moody, J. B., & Nogrady, B. (2010). *The Sixth Wave: How to succeed in a resource-limited world*, 16.

Moorhouse, D. & Moorhouse, D. (2017). Sustainable design: circular economy in fashion and textiles. *The Design Journal, 20*(1), 1948-1959.

Moreno, M., Rios, C. D. L., Rowe, Z. & Charnley, F. (2016). A Conceptual Framework for Circular Design. *Sustainability, 8*(9), 937.

Morgan, L. & Birtwistle, G. (2009). An investigation of young fashion consumers' disposal habits. *International Journal of Consumer Studies, 33*(2), 190-198.

Niinimäki, K. (2010). Eco-clothing, consumer identity and ideology. *Sustainable Development,* 18(3), 150-162.

Niinimäki, K. (2017). *Fashion in a circular economy*, in Henninger, C.E., Alevizou, P.J., Goworek, H. and Ryding, D. (Eds), Sustainability in Fashion: A Cradle to Upcycle Approach, Springer, Heidelberg, 151-170.

Nußholz, J. (2017). Circular Business Models: Defining a Concept and Framing an Emerging Research Field. *Sustainability, 9*, 1-18.

Ozdamar Ertekin, Z., & Atik, D. (2015). Sustainable Markets: Motivating Factors, Barriers, and Remedies for Mobilization of Slow Fashion. *Journal Of Macromarketing, 35*(1), 53.

Papaoikonomou, E., Valverde, M. & Ryan, G. (2011). Articulating the Meanings of Collective Experiences of Ethical Consumption. *Journal of Business Ethics, 110*(1), 15-32.

Park, J., Sarkis, J. & Wu, Z., (2010). Creating integrated business and environmental value within the context of China's circular economy and ecological modernization. *Journal of Cleaner Production, 18,* 1492-1499.

Pearce, D.W. & R.K. Turner (1990). *Economics of natural resources and environment.* Harvester Wheatsheaf, John Hopkins University Press.

Pereira, M., Azevedo, S. G., Ferreira, J., Miguel, R. A. L. & Pedroso, V. (2009). The Relationship between apparel attributes and advertising on consumer buying behaviour. *MPRA Paper*, *11908.*

Potting, J., Hekkert, M. P., Worrell, E., & Hanemaaijer, A. (2017). *Circular economy: measuring innovation in the product chain* (No. 2544). PBL Publishers.

Prieto-Sandoval, V., Jaca, C. & Ormazabal, M. (2018). Towards a consensus on the circular economy. *Journal of Cleaner Production, 179*, 605-615.

Puth, G., Mostert, P. & Ewing, M. (1999). Consumer perceptions of mentioned product and brand attiributes in magazine advertising. *Journal of Product & Brand Management*, 8(1), 38-49.

PwC. (2018). *Millennials vs Generation Z*. https://www.pwc.com/it/it/press-room/assets/docs/cs_pwc_food.pdf

Reh, L. (2013). Process engineering in circular economy. *Particuology, 11*(2), 119–133.

Ritzén, S. & Sandström, G. Ö. (2017). Barriers to the Circular Economy – Integration of Perspectives and Domains. *Procedia CIRP, 64*, 7-12.

Rizos, V., Behrens, A., van Der Gaast, W., Hofman, E., Ioannou, A., Kafyeke, T., Flamos, A., Rinaldi, R., Papadelis, S., Hirschnitz-Garbens, M & Topi, C. (2016). Implementation of Circular Economy Business Models by Small and Medium-Sized Enterprises (SMEs): Barriers and Enablers. *Sustainability, 8*(11), 1-18.

Rizos, V., Tuokko, K., & Behrens, A. (2017). The Circular Economy: A review of definitions, processes and impacts. *CEPS Papers*, (12440).

Rotter, J. B. (1954). *Social learning and clinical psychology*. New York: Prentice-Hall.

Salazar, H. A., Oerlemans, L. & Van Stroe-Biezen, S. (2013). Social influence on sustainable consumption: Evidence from a behavioural experiment. *International Journal of Consumer Studies, 37*(2), 172-180.

Saunders, M., Lewis, P. & Thornhill, A. (2009). *Research Methods for Business Students.* 5th ed. Harlow: Pearson education.

Sauvé, S., Bernard, S. & Sloan, P., (2016). Environmental sciences, sustainable development and circular economy: Alternative concepts for trans-disciplinary research. *Environmental Development, 7*(1), 48–56.

Shirvanimoghaddam, K., Motamed, B., Ramakrishna, S. & Naebe, M. (2020). Death by waste: Fashion and textile circular economy case. *The Science of the Total Environment, 718*(22), 137317.

Stahel, W. R. (2016). The circular economy. *Nature News, 531*(7595), 435.

Teece, D. (2010). Business Models, Business Strategy and Innovation. *Long Range Planning, 43*(2-3), 172-194.

Urbinati, A., Chiaroni, D. & Chiesa, V. (2017). Towards a new taxonomy of circular economy business models. *Journal of Cleaner Production, 168,* 487-498.

Van Buren, N., Demmers, M., Van der Heijden, R. & Witlox, F. (2016). Towards a circular economy: the role of dutch logistics industries and governments. *Sustainability*, 8(7), 647.

Vehmas, K., Raudaskoski, A., Heikkilä, P., Harlin, A. & Mensonen, A. (2018). Consumer attitudes and communication in circular fashion. *Journal of Fashion Marketing and Management: An International Journal, 22*(3), 286-300.

Wiederhold, M. & Martinez, L. F. (2018). Ethical consumer behaviour in Germany: The attitude-behaviour gap in the green apparel industry. *International Journal of Consumer Studies, 42,* 419-429.

Xu, Y., Chen, Y., Burman, R. & Zhao, H. (2014). Second-hand clothing consumption: a cross-cultural comparison between American and Chinese young consumers. *International Journal of Consumer Studies, 38*(6), 670-677.

Yin, R. K. (2003). Designing case studies. *Qualitative Research Methods*, 359-386.

Yuan, Z., Jiang, W., Liu, B. & Bi, J., 2008. Where will China Go? A viewpoint based on an analysis of the challenges of resource supply and pollution. *Environmental Progress, 27*(4), 503-514.

Zhu, Q., Geng, Y., Lai, K. (2010). Circular economy practices among Chinese manufacturers varying in environmental-oriented supply chain cooperation and the performance implications. *Journal of Environmental Management, 91*(6), 1324–1331.

Appendices

Appendix 1. Survey questions

Preliminary questions

Nationality:

Gender:
- Female
- Male
- Other

Birth year:

Education (highest):
- High school or similar
- Undergraduate degree
- Graduate degree or higher

Average yearly income (€):

General attitudes towards sustainability

Please reflect your own behaviour during the last 12 months and choose one option in response to each statement. Many of the questions reflect statements that many people would find desirable, but I want you to answer only in terms of whether the statement describes what you are like. Please be honest and accurate!

1. I consider myself as an environmentally concerned person.

Strongly disagree 1 2 3 4 5 *Strongly agree*

2. I try to consider sustainability in my daily purchasing decisions.

Strongly disagree 1 2 3 4 5 *Strongly agree*

3. When I have to choose between two similar products, I always choose the one that is less harmful to the environment.

Strongly disagree 1 2 3 4 5 *Strongly agree*

4. I would be willing to pay more for a sustainable product than a traditional one.

Strongly disagree 1 2 3 4 5 *Strongly agree*

5. I think that there is enough information available about the sustainable choices I can make in my everyday life.

Strongly disagree 1 2 3 4 5 *Strongly agree*

6. I am sceptic about retailers'/manufacturers' ethical claims.

Strongly disagree 1 2 3 4 5 *Strongly agree*

7. I am confused with all the ethical alternatives and therefore find it difficult to make good choices.

Strongly disagree 1 2 3 4 5 *Strongly agree*

8. I have clear purchasing routines and prefer purchasing familiar products in familiar stores rather than trying out new ones.

Strongly disagree 1 2 3 4 5 *Strongly agree*

9. In general, I think I am able to make a difference with my own consumption choices.

Strongly disagree 1 2 3 4 5 *Strongly agree*

10. I would evaluate my closest friends and family members to be aware of sustainability issues and often consider sustainability in their consumption choices.

Strongly disagree 1 2 3 4 5 *Strongly agree*

11. I am fully aware of the environmental impacts of clothing production and consumption.

Strongly disagree 1 2 3 4 5 *Strongly agree*

Attitudes towards circular fashion

Next, you are asked to answer questions regarding six different types of circular fashion.

Clothes made of used materials or fibers.

The first type of circular clothing is new garments made of recycled fibers or materials. The idea is that textile waste can be recycled into new textile fibers, that can be used in the fabrication of new garments. Similarly, used textiles and leftover material from the textile industry can be utilised as such in manufacturing new textile products. These products are of high quality, unique and ecological. Next, you are asked to answer statements regarding clothes made of used fibers or materials.

12. I would be interested in purchasing clothes or accessories made of recycled fibres or materials.

Strongly disagree 1 2 3 4 5 *Strongly agree*

13. I know where I can purchase clothes or accessories made of recycled fibres or materials.

Strongly disagree 1 2 3 4 5 *Strongly agree*

What comes to clothes made of recycled materials or fibers, how much do the following issues worry you?

14. Product comfort

Not at all 1 2 3 4 5 *Very much*

15. Price of the product

Not at all 1 2 3 4 5 *Very much*

16. Product quality and/or durability

Not at all 1 2 3 4 5 *Very much*

17. Style of the product

Not at all 1 2 3 4 5 *Very much*

Clothing rental and subscription.

The second circular clothing type to be evaluated is clothing rental and subscription. The idea of this is that clothes and accessories are offered to the consumer for temporary use, either through one-time rental or weekly/monthly subscription. The products are in good condition and the service also includes repair and washing. This model increases the sustainability of fashion as it encourages the re-use of items rather than the purchase of items that only get worn once or twice.

18. I would be interested in using (one-time) rental service for clothing/accessories.

Strongly disagree 1 2 3 4 5 *Strongly agree*

19. I would be interested in using a regular subscription service for clothing/accessories.

Strongly disagree 1 2 3 4 5 *Strongly agree*

What comes to clothes as a service, how much do the following issues worry you?

20. Price of the service

Not at all 1 2 3 4 5 *Very much*

21. Convenience/ accessibility of the service

Not at all 1 2 3 4 5 *Very much*

22. Selection of styles

Not at all 1 2 3 4 5 *Very much*

Peer-to-peer sharing platforms.

The third circular clothing business model to be evaluated is peer-to-peer sharing platforms. This model maximizes the usage of clothes and extends their life cycle by connecting consumers through digital platforms and allowing them to rent or buy clothes and accessories from each other. This is both budget and environmentally friendly alternative.

23. I would be interested in using peer-to-peer sharing platforms to rent used clothes/accessories.

Strongly disagree 1 2 3 4 5 *Strongly agree*

24. I would be interested in using peer-to-peer sharing platforms to buy used clothes/accessories.

Strongly disagree 1 2 3 4 5 *Strongly agree*

25. I would be interested in using peer-to-peer sharing platforms to sell used clothes.

Strongly disagree 1 2 3 4 5 *Strongly agree*

What comes to peer-to-peer sharing platforms, how much do the following issues concern you?

26. Reliability of the product

Not at all 1 2 3 4 5 *Very much*

27. Reliability of the payment (in case of e.g. selling clothes to another consumer)

Not at all 1 2 3 4 5 *Very much*

28. Ease of use of the platform

Not at all 1 2 3 4 5 *Very much*

29. Effort prior to selling/buying

Not at all 1 2 3 4 5 *Very much*

30. Effort prior to renting

Not at all 1 2 3 4 5 *Very much*

Product-life extension

The next model to be evaluated is product-life extension. The idea of this model is to use products according to their original purpose for as long as possible or enable reuse through appropriate maintenance and repair.

31. I often sell my old clothes when I no longer use them myself.

Strongly disagree 1 2 3 4 5 *Strongly agree*

32. I donate my old clothes to charity or family/friends when I no longer use them myself.

Strongly disagree 1 2 3 4 5 *Strongly agree*

33. I make minor repairs (e.g. sewing buttons, replacing broken zippers etc.) to my clothes myself to extend their usage.

Strongly disagree 1 2 3 4 5 *Strongly agree*

34. I take my clothes to a repair shop in order to repair minor damages.

Strongly disagree 1 2 3 4 5 *Strongly agree*

Resource efficiency and recycling

The last circular model to be reviewed here is called resource efficiency and recycling. This model refers to the collection and reuse of end-of-life clothing and materials, thus the clothes that are too stained or worn out to be reused as such.

35. I am likely to take my old (worn out or stained) clothing to textile collection points (e.g. in retail stores or separate textile collection points).

Strongly disagree 1 2 3 4 5 *Strongly agree*

36. I tend to throw my old (worn out or stained) clothes to mixed waste.

Strongly disagree 1 2 3 4 5 *Strongly agree*

37. I feel that I am able to determine whether my old clothes could still be recycled to new clothes or fibers.

Strongly disagree 1 2 3 4 5 *Strongly agree*