**Aalto University
School of Business**

WHAT GOES AROUND COMES AROUND – OR DOES IT?

A Case Study of Circular Business Models in Finnish Fashion Industry

Master's Thesis
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Abstract

Fashion is an integral part of people's lives today. It is a way to keep us warm but also a way to express and distinguish ourselves from others. However, the fashion industry is not without challenges and the increasing awareness of the industry's environmental and social concerns have made the industry explore new ways to do business. The circular economy is seen as one solution for the industry to overcome these challenges and become more sustainable. Among academics, the circular economy has started to raise interest and in particular, circular business models are increasingly being researched from various perspectives. However, holistic research addressing circular business models in the fashion industry is lacking. Further, there is no previous research focusing on the factors influencing the adoption of circular business models in the fashion context. This study fills this gap by researching six Finnish clothing and accessories companies.

This research is a qualitative, multiple case study of different types of fashion companies. The sample consists of different-sized companies with varying approaches to the circular economy in order to find what type of circular business models can be found in the Finnish fashion industry. Each of the case companies was interviewed once with a semi-structured approach. Additionally, secondary data from online sources were utilised for further information. To identify the drivers and barriers for adopting circular business models a thematic analysis was used.

The study found that circular business models at the beginning of the loop are easier to adopt. These business models include design for longevity, choosing high-quality materials and efficiency in production. Business models that require increased engagement from the consumers' side, such as second-hand stores, repair and rental services, are currently less present. Interestingly, there were no major differences between the adopted circular business models among the companies.

Further, this research found nine factors influencing the adoption of the business models: 1) environment, 2) economic, 3) customer, 4) society, 5) regulations, 6) supply chain and technology, 7) product, 8) organisation and, 9) fashion industry itself. Based on the findings, not all of these factors influence at equal weight. With economic, product quality, regulatory, and supply chain and technological factors, the companies need to further consider if adopting the model is applicable for the company.

Keywords circular economy, sustainability, fashion, clothing, business models

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Tiivistelmä

Muoti on olennainen osa ihmisten elämää nykypäivänä. Se auttaa pitämään meidät lämpimänä, mutta se tarjoaa myös tavan ilmaista itseämme ja erottua toisista. Muotiteollisuudella on kuitenkin monia haasteita, ja kasvava tietoisuus toimialan sosiaalisista- ja ympäristövaikutuksista on vaatinut yrityksiä etsimään uusia liiketoimintatapoja. Kiertotalous on nähty yhtenä ratkaisuna toimialaan liittyvien vaikutusten hallintaan. Kiertotaloutta koskeva tutkimus kasvaa jatkuvasti, ja erityisesti siihen liittyvät liiketoimintamallit kiinnostavat. Tällä hetkellä laajempaa tutkimusta kiertotalousliiketoimintamalleista yleisellä tasolla ei vielä kuitenkaan ole muodin saralla. Lisäksi tekijöitä jotka vaikuttavat näiden liiketoimintamallien käyttöönottoon ei ole tutkittu muotiteollisuudessa. Tämä tutkimus pyrkii täyttämään kyseistä aukkoa tutkimalla kuutta suomalaista vaatetus- ja tekstiilialan yritystä.

Tämä laadullinen monitapatutkimus tutkii erityyppisiä muotiyrityksiä. Otos sisältää erikokoisia yrityksiä, joilla on erilaisia lähestymistapoja kiertotalouteen, löytääkseen minkä tyyppisiä kiertotalousmalleja suomalaisessa muotiteollisuudessa esiintyy. Jokainen yritys haastateltiin kerran teemahaastattelua käyttäen. Haastattelujen lisäksi verkkolähteiden sekundääridataa hyödynnettiin. Data analysointiin temaattista analyysiä käyttäen.

Tutkimus paljasti, että kiertotalousmallin alkuosan toimintamallit ovat helpompi ottaa käyttöön. Näitä liiketoimintamalleja ovat suunnittelu pitkäikäisyyteen, korkealaatuisten materiaalien valinta ja tuotannon tehokkuus. Liiketoimintamallit jotka vaativat kuluttajien laajempaa sitoutumista ovat vielä toistaiseksi vähemmän omaksuttuja. Esimerkkejä tällaisista liiketoimintamalleista ovat second-hand -kauppa sekä korjaus- ja vuokrauspalvelut. Yritysten tämän hetken kiertotalousliiketoimintamalleissa oli yllättävän pienet erot.

Tutkimuksessa löydettiin yhdeksän liiketoimintamallien valintaan vaikuttavaa tekijää: 1) ympäristö 2) taloudellisuus 3) asiakas 4) yhteiskunta 5) säädökset 6) toimitusketju ja tekniikka 7) tuote 8) organisaatio ja 9) itse muotiteollisuus. Löydösten perusteella kaikki tekijät eivät vaikuta yhtä paljon toimintamallin omaksumiseen. Taloudellisten, sääntelyyn liittyvien, tuotteen laatuun liittyvien ja toimitusketjujen sekä teknologisten tekijöiden osalta yritysten on harkittava edelleen, soveltuuko malli yritykseen ja kuinka yritys voisi ottaa sen käyttöön.

Avainsanat kiertotalous, kestävä kehitys, muoti, vaatteet, liiketoimintamallit

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. Introduction

1.1. Background and Context

"Humanity is now standing at a crossroads. We must now decide which path we want to take. How do we want the future living conditions for all living species to be like?"

- Greta Thunberg, 2019

Our planet is currently facing a number of challenges that question how much the Earth can sustain. Overpopulation, global warming, loss of biodiversity, decreasing resources and increasing waste-related problems are issues influencing our future and needing urgent act (Solovjew-Wartiovaara, 2019). These challenges are linked to each other - for example, poor waste management contributes to climate change and pollution, which directly influence the species and ecosystem (European Environment Agency, 2014). The challenge with waste is, that the amount of global waste is expected to grow by 70% by 2050, if not urgent actions are taken (The World Bank, 2018). However, the issues will not only influence our future, but they are already being experienced around the globe today and the costs are becoming high. For example, so far direct economic losses from climate-related disasters have been estimated at almost $3 trillion while climate-related and geophysical disasters claimed an estimated 1.3 million lives (United Nations, 2019).

The driver behind these challenges is our actions. Growing population, urbanisation and the current consumption habits influence what is being produced and how much, which drive and directly influence the amount of waste and greenhouse gases (The World Bank, 2018; IPCC, 2018). One key industry which is directly influenced by the number of people and their constant need to express themselves is the fashion industry. People's demand for clothes and apparel goes beyond satisfying the human need – keeping us warm and providing protection (Fischedick et al., 2014). The culture of low prices and fast fashion appears to have led to "consumers having no absolute limit to their demand for clothing" (Fischedick et al., 2014 p. 756). Fashion and clothes are seen as a way to self-expression, status and social identity, which with the mass production and cheap prices has influenced the increased clothing supply and

1

demand (Rauturier, 2018). Clothing production has doubled from 2000 to 2014, and the number of clothes bought each year has increased by 60% (Remy et al., 2016). At the same time, the clothes are kept about half as long as they were 15 years ago (Remy et al., 2016). Companies constantly offer new styles and the average number of collections released per year has increased from two in 2000 to five in 2011 (European Parliament, 2019). Some brands even offer over 20 collections, leading consumers to view cheap clothing items increasingly "nearly disposable" (European Parliament, 2019; Remy et al., 2016).

The current unsustainable trend where clothes are discarded after just seven or eight wears (Remy et al., 2016) should change. If we continue consuming at the current rate, we will need three times as many natural resources by 2050 compared to 2000 (UNECE, 2018). In addition, the fashion industry is accused of unethical conduct, which is related to the complex global subcontracting relationships (Lobel, 2006). Especially in developing countries, where many of the subcontractors are located, social issues such as human rights, wages and labour standards are a concern (Ma et al., 2016, ref. in White et al., 2017). Ellen MacArthur Foundation has also noticed this and make a statement: "The time has come to transition to a textile system that delivers better economic, societal, and environmental outcomes" (2017). This is a direct call for sustainable business models in the fashion industry. Ellen MacArthur Foundation is acknowledged by their work for circular economy and they drive collaboration between industry leaders, policymakers and other key stakeholders. Currently, they aim to create a textiles economy that fits for the 21st century. In their model, clothes re-enter the economy after use and never end up as waste. This system-level change is not only described to be better for the environment, but it also can capture a $500 billion economic opportunity by truly transforming the way clothes are designed, sold, and used. (Ellen MacArthur Foundation, 2017)

The vision for the circular fashion is to create business models, which are restorative and regenerative (Ellen MacArthur Foundation, 2013). Today around the globe we can find companies already pursuing the idea - such as Patagonia and their Worn Wear platform where the company sells used Patagonia clothing; Pure Waste whose all products are made from waste; and Rent the Runway who provide fashion rental services (Patagonia, 2019; Pure Waste, 2019; Rent the Runway, 2019). Many new companies are built around circular business models, but also established fashion brands are adopting some elements of the circular economy. H&M, for example, has a Garment Collecting Program, in which the customers can

bring their old clothes to H&M store. In return, the customer receives a discount card for 15% off the next purchase (H&M, 2019). However, Stål and Corvellec (2018) studied the product takeback-system in Swedish fashion firms (including H&M) and argue: firms can collectively choose a form of [circular business model] implementation that does not cost too much and allows them to continue to operate in a linear fashion (p. 638). Thus, these new circular economy practices can drive for system-level changes in the fashion industry (Ellen MacArthur Foundation, 2017) or new forms of greenwashing (Stål and Corvellec, 2018).

The circular economy is an important issue for EU, which has many circular economy initiatives, such as Horizon 2020, and funding available for small and medium enterprises to encourage the transition towards the circular economy (European Commission, 2019a). The European Commission has also identified textiles as a "priority product for category for the circular economy" in their Circular Economy Action Plan (European Environment Agency, 2019). By 2025, each EU Member State is obliged to collect textiles separately and ensure that the waste collected separately is not landfilled or incinerated. Also, a resource tax is identified as a potential policy option to increase the demand for used fibres (European Environment Agency, 2019). Currently, the European Commission has legislation for textiles and clothing, but it focuses on fibre names, labelling and marking of the fibre composition (European Commission, 2019b) and no minimum criteria for sustainable performance of textiles exist in EU law (European Commission, 2019c). Thus, today it is possible for the companies in the fashion industry to approach sustainability differently and have different types of circular economy business models – or not to have one.

In Finland, the circular economy is given great emphasis in the Program of Government made in 2019. The aim is that Finland is carbon neutral by 2035 and the circular economy has a vital role in achieving this (Valtioneuvosto, 2019). With the separate textile collecting Finland aims to be ready already by 2023, two years before the deadline given by the EU (Ympäristöministeriö, 2018). However, Finland does not yet have any other regulations regarding circularity, especially in fashion or textiles industry. Despite the lack of regulations shaping the fashion industry, movements have already started to happen in the industry. Initiatives such as Telaketju and The Relooping Fashion Initiative, have aimed to enhance the recycling of textiles and find new ways to use the textiles (Telaketju, 2019; Fontell and Heikkilä, 2017). These initiatives help meeting the EU separate textile collecting directive, but they also aim for a greater transition towards circularity. "Business from circular economy of

textiles" is stated in the front page of Telaketju. They bring together different actors such as textile collectors, waste centres and municipalities to develop circular business models and make the life cycle circle in Finland (Telaketju, 2019). Bringing together industry, society and policymakers is exactly what is needed in the fashion industry to create a systemic change (Mistra Future Fashion, 2019) and an environment for the circular economy to flourish.

1.2. Research Gap

With the increasing concern regarding fashion's environmental and social impact, the fashion industry has gained increased attention. In academia, alternative ways to consume (e.g. product-service-systems, see Tukker and Tischner, 2006) and circular business models (e.g. Nussholz, 2017; Bocken et al., 2016) have started to emerge within the last five years according to the articles in EBSCOHost database at the time of writing (spring 2020). Specific elements of circular business models have been researched in a multiple case study (e.g. product takeback-system by Stål and Corvellec, 2018) and in a single case study (product takeback-system by Hvass and Pedersen, 2019; product-service system by Armstrong et al., 2015). Tunn et al. (2019) also made an expert study regarding potential circular business models in the clothing industry. However, a multiple case study addressing circular business models as a whole in the fashion context is lacking.

Circular business models in the Finnish fashion context have also been gaining increased interest for scholars. Currently, FINIX research project "aims to rethink how we make, use and dispose textiles" (Aalto University, 2019). The project brings together a team of researcher with different actors from textiles, forest and waste management industries, to find solutions for a sustainable Finnish textiles industry (Aalto University, 2019). However, at the time of writing, the project has not yet published any research papers. For already published papers, Fontell and Heikkilä (2017) studied circular business ecosystem for textiles in Finland, having a focus on clearing the vision and model for the circular business ecosystem. Their work was based on literature review and interviews with project partners and other local stakeholders, but they do not describe their methodology or cases in more detail. In addition, *Sustainable Fashion in a Circular Economy* (ed. Niinimäki, 2018), a book focusing on circular business in Finland consists of sections focusing on different aspects of the circular economy and fashion. For example, they have studied collaborative consumption (Henninger et al, 2018) and designing for circularity (Balkenende and Bakker 2018; Karell, 2018; Ræbild and Hasling,

2018). Despite the valuable work and findings of these studies, none of them focuses on circular business models as a whole and conducts a multiple case study of Finnish fashion companies. This leaves a research gap and a suitable space for future research.

In addition, while there is literature regarding the drives and barriers regarding the adoption circular business models (see e.g. Bechtel et al., 2013; Linder and Williander, 2017; Tura et al., 2019), there currently is no research regarding the factors in the fashion industry. Thus, this research aims to reduce the gap of circular business models in the fashion industry, and in particular identifying the drivers and barriers to adopt them in the Finnish context.

1.3. Research Objectives and Research Questions

From an academic perspective, this research aims to contribute to existing knowledge of circular business models and create a framework of factors influencing fashion companies' circular business model adoption. From a practical perspective, this study aims to help fashion businesses to identify what factors are drivers and/or barriers for adopting a circular business model. Acknowledging the drivers ideally helps the companies to know what factors enhance the adoption and hence helping them to possibly increase the focus on these factors. In addition, it is important for the companies to be aware of the barriers to reduce their influence and even overcome these barriers. This study focuses on fashion companies (clothing and accessories) that operate in the business-to-customer (B2C) segment.

To be able to reach the aims of the study and contribute to the identified research gap, the research is based on the two following research questions:

Q1. What type of circular business models can be found in the Finnish fashion industry, and what not?

Q2. What are the drivers and barriers for adopting circular business models in the Finnish fashion industry?

1.4. Definitions and Abbreviations

Barrier

In the context of this study, the term is used as a factor that limits or hinders the adoption of the Circular Economy concept or circular activities.

Business Model (BM)

Currently the term business model does not have a widely accepted definition. However, one often sited description is by Osterwalder and Pigneur who state that "A business model describes the rationale of how an organization creates, delivers, and captures value" (2010, p. 14). More broad definition and discussion of business models in Section 2.1.

Circular Business Model (CBM)

"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" (Nussholz, 2017, p. 12).

Circular Economy (CE)

"A circular economy describes an economic system that is based on business models which replace the 'end-of-life' concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes, thus operating at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations." (Kirchherr et al., 2017 p. 224-225)

Driver

In the context of this study, the term is used as a factor that enhances or helps forward the adoption of the Circular Economy concept or circular activities.

Ellen MacArthur Foundation (EMF)

A foundation working to accelerate the transition to the circular economy. They work together with businesses, governments and academia to build a framework for an economy that is

restorative and regenerative by design. Reports published by EMF are utilised throughout this thesis.

Fashion Industry

Fashion industry consists of the design, production, distribution and retail stages. In fashion industry, the focus is on high-value-added segments, where design, research and development are important sources for competitive advantages. (Gardetti and Torres, 2011, Ref. In Fontell and Heikkilä, 2017) In the context of this research, the term fashion includes clothing and accessories industries.

Linear Business Model

A 'take-make-dispose' approach, where companies take and extract materials, manufacture them to a product which is sold to a consumer. Consumers discard and dispose the product after it no longer serves its purpose. (Ellen MacArthur Foundation, 2013, p. 6)

Product-Service-System (PSS)

Combining tangible products and intangible services to fulfil customer needs (Tukker and Tischner, 2006).

Sustainability

"Meeting the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations, 1987). The needs consist of economic, social and environmental conditions.

Sustainable Business Model (SBM)

"Sustainable business models are business models that align the interests of all stakeholder groups and explicitly considers the environment and society as key stakeholders" (Bocken et al., 2014, p. 44)

1.5. Structure of the Thesis

This paper is structured into four main sections. Section 2 introduces the key concepts of the research by presenting, building a throughout understanding and critically reviewing existing literature. The review starts by introducing the concepts of business models, sustainable business models and circular business models. It is followed by introducing linear, sustainable

and circular business models in the fashion industry. Thereafter the literature addresses the drivers and barriers that are identified in the literature as factors to adopt circular business models. The literature review ends with a framework based on drivers and barriers for adopting a circular business model. Section 3 presents the chosen methodology, having a closer view on the philosophical starting point, research design, data collection and data analysis methods. In addition, section 3 introduces an evaluation of the chosen research design and discusses ethical concerns. Section 4 focuses on the findings of this research. The section first provides an overview of the case companies and is followed by an introduction of the identified circular business models in the Finnish fashion industry. Thereafter, the observed drivers and barriers for adopting circular business models are presented. Section 5 provides a discussion by comparing and discussing the findings between the previous literature and this research. The framework created at the end of Section 2 is revised at this section. Finally, section 6 summarises the main findings and presents the academic contribution. Further, it provides managerial implications. The section ends with a discussion of the limitations of the study and gives suggestions for future research.

2. Literature Review

This literature review introduces the three key areas of this research: 1) business models, 2) business models in the fashion industry and 3) drivers and barriers for adopting a circular business model. The two first areas address three types of business models: linear, sustainable and circular, whereas the third part focuses purely on circular business models. The key findings from the previous literature are used to create a theoretical framework, which is presented at the end of the literature review.

2.1. How Do Companies Create Value?

Every business enterprise has a business model because they make choices that have consequences (Casadesus-Masanell and Ricart, 2009). These decisions differ between firms, and companies have adopted different types of business models. The following sections introduce the concepts of business models, sustainable business models and circular business models. Sustainable business models can be viewed as a subcategory of business models whereas circular business models are a subcategory of sustainable business models.

2.1.1. Business Models

Business models have been at the focus of many scholars within the last few decades and it has caught the interest for both academic and practitioner-oriented studies. Despite the increased interest for business models in academia and practice, a common and widely accepted definition or language does not exist (Zott et al., 2011). It is worth noticing that the paper from Zott was published in 2011 but more recent literature or the most recognised scholars in the field have still been unable to create a commonly agreed definition for business models (Massa et al., 2017).

One of the most cited articles about business models is by Teece (2010), who states that "business model articulates the logic, the data and other evidence that support a value proposition for the customer, and a viable structure of revenues and costs for the enterprise delivering that value" (p.179). This definition states the three main elements of business models, that are also identified by other scholars: value proposition, value creation and delivery, and value capture (e.g. Osterwalder and Pigneur, 2010; Johnson et al., 2008). Different scholars and their articles have different types of level of details for each of the business model elements. For example, Johnson et al. (2008) identify four components: customer value proposition, profit formula, key resources and key processes. A model taking

a step even further is the business model canvas by Osterwalder and Pigneur, which has nine building blocks (2010). It is actively used both in academia and practice and it covers four main areas of how the company can create profits: customers, offer, infrastructure, and financial viability (Osterwalder and Pigneur, 2010). The nine building blocks are divided based on the three business model elements (Nussholz, 2017):

- Value proposition: Customer segments, Customer relationships, Value propositions
- Value creation and delivery: Key partners, Channels, Key resources, Key activities
- Value capture: Cost structure, Revenue streams

A good business model answers the questions: Who are the customers? What do the customers value? How do we make money in this business? What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost? (Magretta, 2002, p. 4). These four questions integrate all the three main business model elements and they are questions that every manager should ask.

Despite the acknowledgement of business models in academia and practice, the articles and whole business model concept is not without criticism. For example, Chesbrough (2010) makes a general claim regarding business model tools: "Tools such as mapping are useful to explicate business models but cannot by themselves promote experimentation and innovation with those models" (p. 360). Business Model Canvas has also received criticism and Verrue (2014) made a critical investigation of the Business Model Canvas and argues that the canvas lacks consistency and power due to many overlaps. According to Verrue, these are caused by the fixed architecture which too easily leads to a filling-in exercise (2014, p. 16).

Another acknowledged study is by Zott et al. (2011) who make an extensive review of business model literature published between 1975 and 2010. They analysed 133 articles, that filled their three criteria: the article must deal with the business model concept in a non-trivial and non-marginal way; it must refer to the business model as a concept related to business firms and the journal in which the article appeared must be ranked in the ISI Web of Knowledge (p. 7). The findings of these 133 articles reveal many insights, which help to understand the prior business model literature.

Firstly, as already noted above, scholars do not agree on what a business model is. Zott et al. (2011) claim that researchers frequently adopt idiosyncratic definitions that fit the purposes of their studies, but that is difficult to reconcile with each other (p. 5). Secondly, the literature is developing largely in silos, according to the phenomena of interest to the respective researchers. The main areas of interest that they identify are 1) e-business and the use of information technology in organisations; 2) strategic issues, such as value creation, competitive advantage, and firm performance; and 3) innovation and technology management. The points one and three are also acknowledged by some other scholars who find that a lot of business model literature focuses on e-business (e.g. Richardson, 2008).

The comprehensive literature review by Zott et al. (2011) is a valuable source to understand business model literature. They claim that researchers often use definitions that fit the purposes of their studies. This is a relevant argument which should bear in mind when analysing and critically reflecting business model research. Zott et al. (2011) also find that scholars have used the business model term to explain and address different phenomena. This has created unclarity and confusion for the literature about the meaning of the business model concept. A limitation of their study is that the main literature that they review was published in 2000-2009. These articles most likely address similar kind of business models and reflect the world that existed during that time. It is also notable that one-fourth of their reviewed articles which clearly defined business models are related to e-business. This is likely to be due to the advent of the internet in the mid-1990s, which increased the interest to study business models around the topic (Zott et al., 2011).

In addition to the confusion created by the lack of a unified definition for a business model, the distinction between strategy and business model may create confusion. Clarifying the two terms and the relationship between them is important before proceeding in this research. A business model is not the same thing as a strategy, even though many people use the terms interchangeably (Magretta, 2002). Zott et al. (2011) also address this issue in their broad literature review. They make two main findings from the 133 articles: 1) the traditional emphasis of strategy is on competition, value capture, and competitive advantage, whereas business models appear to focus more on collaboration, partnerships, and joint value creation, and 2) business model concept has a focus on the value proposition and a generalised emphasis on the role of the customer, which seems to be less focused in other strategy literature (p. 16).

Thus, this research views business models from the perspective that the company aims to create value for customers and jointly with different partners. A business model is more the initial hypothesis for how to deliver value to the customer than it is a fully defined plan of action (Chesbrough and Rosenbloom, 2002, p. 550). An example related to this research could be that a circular business model is to design for circularity or lengthen the use-phase. The strategies for these business models would be more concrete, such as designing a T-shirt that is easy to recover after use. Taking a broader and more cooperative perspective of business models is suitable for this research, as in the circular economy, the view is broad and takes into account both upstream and downstream activities (Urbinati et al., 2017).

2.1.2. Sustainable Business Models

Compared to the conventional business models, sustainable business models are more recent phenomena in academia and practice. From the EBSCOHost database when searching with 'Sustainable Business Model', altogether 1627 articles have been published (2019). From these articles, 1385 have been published within the last 10 years (starting from 2009). However, a sustainable business model is not the first term and concept to take a joint approach of economic, environment and social value creation. For example, Natural Capitalism is one of the earliest books relating to the topic (by Hawken et al., 1999) and the Triple bottom line is an acknowledged framework by Elkington to examine the company's impact on sustainability (1998). While the concepts have integrated the dimensions of economic, environmental and social value, they do not approach business models explicitly, despite their important influence on businesses as well.

As it is with business models, sustainable business models do not have a commonly agreed definition (Boons and Lüdeke-Freund, 2013). Lüdeke-Freund (2010) argues that neither theoretical nor empirical research offers sufficient answers to the central question: What is a sustainable business model? In the same paper, he aims to reduce the gap and describes that "a business model that creates competitive advantage through superior customer value and contributes to the sustainable development of the company and society can be interpreted as a sustainable business model" (p. 23). Bocken et al. (2014) extend the view by stating that "sustainable business models align the interests of all stakeholder groups and explicitly considers the environment and society as key stakeholders" (p. 44). From the value perspective, sustainable business models are suggested to ingrate value destroyed (e.g. negative social

impacts) and value missed (e.g. under-utilised resources) (Bocken et al., 2014). This broadens the conventional business model view, which includes value proposition, value creation and value capture (e.g. Osterwalder and Pigneur, 2010; Johnson et al., 2008). In practice, a sustainable business model should be treated in organisations as a core and integral part of the business, rather than as an add-on (Stubbs and Clocken, 2008). While there is an extensive literature on the theory of business models for delivering sustainability and examples on specific companies, there is no comprehensive view of how firms should approach embedding sustainability in their business models (Bocken et al., 2014, p. 43).

At the time of writing (spring 2020), the most cited article addressing sustainable business models on Google Scholar is *A literature and practice review to develop sustainable business model archetypes* by Bocken et al. (2014). Their research combines prior literature and findings from practice to identify eight sustainable business model archetypes. They reviewed sustainable business model literature from 2000-2013 and included sustainable business models developed in practice by reviewing secondary literature. It builds on the categorisation by Boon and Lüdeke-Freund's (2011) work of business model innovations for sustainability. Boon and Lüdeke-Freund's study, which was a literature review of five articles, revealed three main categories of business model innovations for sustainability: Technological, Organisational and Social (2011). Technology refers to the company's capabilities to improve and adopt new technologies to innovate; organisational perspective focuses on the internal capabilities and management systems; and social aspect focuses on how the company can change and influence consumers' behaviour and lifestyles (Lüdeke-Freund, 2010). Figure 1 is a modified representation of eight sustainable business model archetypes by Bocken et al. (2014). Categories *create value from waste* and *encourage sufficiency* are examples of circular business models, which are addressed in the next section.
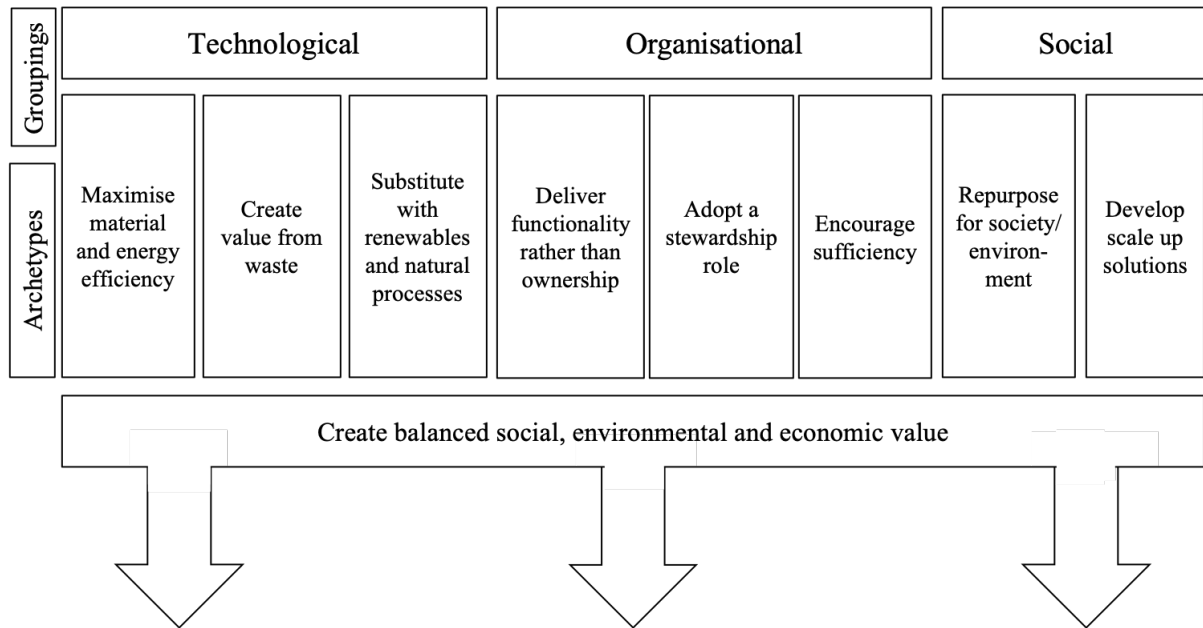
Figure 1: Sustainable business model archetypes. Source: Modified illustration from Bocken et al. (2014)

Despite the valuable contribution by Boons and Lüdeke-Freund (2013) and Bocken et al. (2014), their articles should be reviewed with criticality. The articles define and approach the concept of business models differently. Boons and Lüdecke-Freund (2013) view business models more as market device, whereas Bocken et al. (2014) approach it from the value creation and capture perspective. Thus, the two articles both addressing sustainable business models define and approach the key term from different perspectives. These differences between used business model definitions are important to note to be able to understand what the initial assumptions are that the articles are built on. As there is not one common definition among the scholars, neither of the definitions is more correct.

2.1.3. Circular Business Models

To understand circular business models, it is essential to first define the circular economy. The circular economy has become trending in public debates, and we can increasingly find more circular economy activities in practice. However, critics claim that the circular economy means many different things to different people (Kirchherr et al., 2017). To reduce this gap, Kirchherr et al. gathered 114 definitions and created one definition: "A circular economy describes an economic system that is based on business models which replace the 'end-of-life' concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes, thus operating at the micro-level (products, companies,

consumers), meso-level (eco-industrial parks) and macro-level (city, region, nation and beyond), with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations." (2017, p. 224-225)

Regarding circular business models, only a few scholars have clearly defined what a circular business model is. Nussholz (2017) reduces this gap and provides a 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 the useful life of products and parts (e.g., through long-life design, repair and remanufacturing) and closing material loops." (p. 12). It was formulated after analysing 44 articles addressing circular business models.

The prior academic literature has approached circular business models from different perspectives, such as innovation at a product level (e.g. Bakker et al., 2014), for specific resource flows (e.g. Bocken et al., 2016) and from a value chain perspective (Moreno et al., 2016). Despite their different approaches, they have found similar types of elements of circular business models. Nussholz (2017) categorises these to be: 1) substituting primary material input with secondary production, 2) extending the useful life of products and parts, and 3) closing material loops.

Substituting primary material input with secondary production refers to business models where waste is used as an input in the production. These type of business models turn otherwise wasted materials into new forms of value (Bocken et al., 2016). In addition to using waste as an input for production, fully renewable or biodegradable resources replace the use of scarce resources while cutting waste (Lacy et al., 2014). Business models that substitute single-lifecycle inputs take place at the process and manufacturing level or the product level and may happen across geographical areas. From practice, Interface is an often introduced as an example of a company using waste as a material input. They collect and supply fishing nets and use them as a raw material for carpets (Bocken et al., 2016).

The second category that Nussholz (2017) identifies is extending the useful life of products and parts. Nussholz (2017) identifies three business models in this category. The first one is the access and performance model where the product or service is provided to satisfy to

consumer need without changing the ownership (Bakker et al., 2017; Bocken et al., 2016). Car-sharing platforms and Airbnb are described as access and performance models, which Lacy et al. (2014) also identify as a sharing platform business model. A similar type of business models but where the company itself has a more significant role over the products are a product-service system (PSS), where products and services jointly fulfil customer needs (Tukker and Tischner, 2006, p. 1552). Product-as-a-service models where the company provides access to the product without changing the ownership is also an example of an access model (Lacy et al., 2014). The second model is classic-long life model where the product is high-quality and aimed at lasting for a long time (Bocken et al., 2016; Moreno et al., 2016). These business models also include maintenance and repair services to ensure a long lifetime. Patagonia, an outdoor clothing company, has their own repair services where customers can bring their clothes for fixing. Besides, they publish repair and take care guides to encourage longer use for the clothes. Third business model to extend the useful life is designing the product for multiple cycles which can enable longer circulation of materials and resources (Bocken et al., 2016). One example is from the automotive industry, where the car parts can be changed.

The final category from Nussholz (2017) is material recycling. This is linked to the first category of circular business models, where the material inputs come from old resources. Whereas the first part focuses on production, this category has a focus on end-of-life treatment (Nussholz, 2017). In this part, the resource value is extended and the wasted materials can be turned into new forms of value by finding new applications for the used materials (Bocken et al., 2016; Lacy et al., 2014). Circular business models in this category include for example recycling materials and reprocessing by-products or waste material (Lacy et al., 2014).

Table 1 summarises the three categories of circular business models identified in the literature.

Circular Business Model	Source
Substituting primary material input with secondary production • Circular supplies	Nussholz, 2017; Lacy et al., 2014

Extending the useful lifetime of products
 	
• Access and performance model
  • Product-service-system
  • Product-as-a-service
• The classic long life (repair, maintenance)
• Resell
• Sharing platforms
	Nussholz, 2017;
	
	Bocken et al., 2016;
	Tukker and Tischner, 2006;
	Lacy et al., 2014;
	Bakker et al., 2014

Material recycling • Resource recovery	Nussholz, 2017; Lacy et al., 2014

Table 1: Circular business models. Source: Own creation

Some scholars have also linked circular business models to business model canvas to provide a template to design a circular business model. A literature review of circular business models by Lewandowski (2016) identifies two additional components to the nine initial ones by Osterwalder and Pigneur (2010): take-back system and adoption factors. A take-back system refers to company's design of the take-back management system, whereas adoption factors address the internal capabilities and external factors that influence the company's transition towards circular business model (Lewandowski, 2016). Circularity is applied to each component of the business model, and these eleven building blocks create the circular business model canvas that supports a company to design a circular business model (Lewandowski, 2016).

Circular economy literature has faced critique of how the literature rarely takes the consumption side into account (Tunn et al., 2019). This may create unbalanced emphasis between upstream (raw materials and suppliers) and downstream (distribution and customers) activities. Thus, the studies that only focus on either of the sides, do not represent fully circular business models, where both upstream and downstream activities are circular (Urbinati et al., 2017). Circular economy concept and activities have also faced some critique themselves. This is mostly due to the increased overall production, which may partially or fully offset the

environmental benefits or circularity (Zink and Geyer, 2017). This circular economy rebound may happen if the products made with circular business models are for lower quality or price than primary products, which would then increase the overall consumption (Zink and Geyer, 2017). Moreno et al. (2014) take a broader view of the system and state that despite they "acknowledge the potential benefits to businesses of a circular economy, … in practice it is impossible to have a completely circular system" (p. 1). This will be noticed in the next section, which introduces business models in the fashion industry and presents examples from practice.

2.2. How Do Fashion Companies Create Value?

The fashion industry is a huge industry, accounting for two per cent of the world's GDP and being worth of over three trillion dollars (Fashion United, 2019). The fashion industry is known for its complex and long global supply chains, where it is normal that the different parts of the value chain are spread over countries and continents (Hilger, 2008). The industry has grown at a fast pace and some operations of the industry are creating a lot of environmental and social issues. It is said that currently, the fashion industry alone produces the same amount of global carbon emissions as international flights and maritime together (UNEP, 2018). Media, NGOs and other stakeholders have criticised fashion companies for their operations and negative impact (Pedersen and Gwozdz, 2014) and today we can see many fashion companies taking actions towards these issues. The following sections introduce different types of business models adopted in the fashion industry.

2.2.1. Linear Business Models

The leading clothing brands and retailers globally are Inditex (Zara), H&M and Uniqlo (Statista, 2019). What all of them have in common is the pace and way how they make their products. This type of business model is called fast fashion for which low quality, high speed to market and mass production are typical (Doyle et al., 2006). When many fashion companies previously had two collections, today the number can be over 20 collections (Remy et al., 2016). The characteristics of a fast-fashion company are: 1) quick response; 2) frequent assortment changes; and 3) fashionable designs at affordable prices (Caro and Martínez-de-Albéniz, 2015). Both H&M and Zara have on average 120 product introductions per week to respond quickly to the customer demands (Caro and Martínez-de-Albéniz, 2015).

However, some fast fashion companies have also adopted some sustainable and circular business model activities. This shows that a clear-cut separation between linear and sustainable or circular business models does not occur in practice. For example, H&M uses a lot of recycled or sustainable materials (H&M, 2018) and Inditex has collection points for used clothes at many of its stores (Inditex, 2019). Despite some sustainable and circular activities, the textiles and fashion industry currently operate predominantly in a linear way (Ellen MacArthur Foundation, 2017; Niinimäki, 2018). This means they are part of the take-make-dispose model, where natural resources are used as an input for production and after a while of use, most of the products end up in waste. It is estimated that every second, the equivalent of one garbage truck of textiles is landfilled or burned (Ellen MacArthur Foundation, 2017). A simplified version of a linear business model in the textiles and clothing industry is presented in Figure 2. The production process is similar in both textiles and clothing industries, but the fashion and clothing industry focus on more high-value-added segments (Gardetti and Torres, 2011, Ref. In Fontell and Heikkilä, 2017).

However, linear business models in the production and life-cycle, are not only adopted by fast fashion brands. There are also traditional clothing retailers, premium brands and fashion brands whose production is mostly based on this linear business model, despite having different types of business strategies.
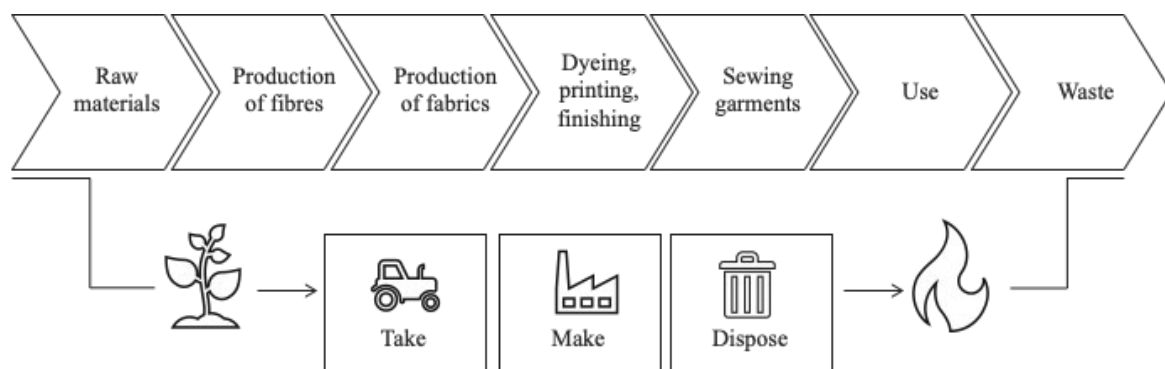
Figure 2: Simplified linear model for textile and clothing production. Source: Upper linear model developed from Choudhury, 2014 ref. in Fontell and Heikkilä, 2017

The issues with linear models in the textiles industry lie in the social and environmental impacts. From the social perspective, the main issues are related to labour conditions, such as low wages, long working hours, child labour and poor work conditions which lack sufficient

health and safety procedures (Fontell and Heikkilä, 2017). From the environmental perspective, many steps within the garment's lifecycle create negative environmental impacts. Firstly, the production requires many scarce resources. For example, the production of synthetic raw materials, such as polyester uses non-renewable natural resources, whereas the production of cotton requires high amounts of chemicals and water. Secondly, during the production process, many processes are wet processes, meaning high levels of freshwater and energy consumption. Finally, the end of the product-life cycle creates high environmental challenges. This is mostly due to the short use-phase, which leads to high levels of clothing waste. (Fontell and Heikkilä, 2017). Sustainable and in particular circular business models aim to tackle these challenges, and they are introduced in the following sections.

2.2.2. Sustainable Business Models

As noted in the previous section, it is difficult to find fashion companies that only have linear business models. This can be seen from increased interest in integrating sustainability into conventional business model thinking (Schaltegger et al., 2016). The current fashion industry is extremely complex and characterised by very long and global supply chains with a large number of agents (Dickson et al., 2012; Kozlowski et al., 2012). The challenges in the upstream supply chain, especially regarding the social aspect of sustainability with materials and suppliers, has created a need for more sustainable business models. However, the complex supply chains combined with consumers' high level of consumption, have also brought the focus on environmental issues. Thus, social and environmental perspectives have become an increasingly important topic for fashion brands.

From the social perspective, apparel and footwear companies were among the first organisations to formulate supplier codes of conduct in the early 1990s (Pedersen et al., 2018). They focus on carefully sourcing suppliers that meet the requirements and have for example minimum wages, no child labour and safe work conditions (see e.g. H&M, 2010; Adidas, 2019; Fast Retailing Group, 2019). Also, some fashion brands have garment collections, which means that customers can bring their old clothes to the company's store. Different brands have different types of strategies for garment collection. Inditex for example partnerships with charities and donates the clothes to them (Global Fashion Agenda, 2018). However, most of the literature and practices that address sustainable business models in the fashion industry, emphasise more the environmental aspects than social (e.g. Pal and Gander, 2018).

One reason why fashion companies' sustainable business models focus a lot on the environmental aspects, can be due to the resource-intensity and significant impact of fashion industry's operations to the planet (Global Fashion Agenda, 2017). The fashion industry is argued to be one of the most polluting industries, and thus integrating sustainability-related practices into the fashion industry business models is important (Thorisdottir and Johannsdottir, 2019). Pal and Gander (2018) identify three categories for sustainable business models in the fashion industry, which focus on increasing environmental value: 1) narrowing, 2) slowing and 3) closing logics. Narrowing logics aim to increase energy and material efficiencies, which can be reached through lean manufacturing, waste reduction and demand-driven production. From the industry, Zara has developed an on-demand production process and Nike aims for a zero-waste future (Pal and Gander, 2018; Nike, 2019). Activities in the slowing category are slow fashion, designing for longevity, sufficiency and responsible promoting. Kättermusen, a Swedish outdoor brand, is one example to encourage slow fashion and modularity. Their products are designed to be high-quality and the clothes have pockets that can be attached and detached (Pal and Gander, 2018). The third category is closing the loop, which refers to the circular economy. Business models in this category are for example multiple product lifecycles and collaborative consumption, where people "coordinate the acquisition and distribution of a resource for a fee or other compensation" (Belk, 2014, p. 1597), such as second-hand marketplaces. Bocken et al. (2016) argue that slowing and closing logics are central components of circular business models, and these will be discussed in more detail in the next section. This division of sustainable and circular business models demonstrates that it is not only challenging to identify different types of business models from practice but also academics categorise the different models and terms differently. This may create challenges for researchers studying the topics, as inconsistency with the terms and categorisation can create confusion and challenges for future research.

Despite the sustainability initiatives from many fashion companies, even companies that are committed to sustainability find it difficult to become sustainable unless the system surrounding them also becomes sustainable (Stubbs and Cocklin, 2008). For fashion companies that have long and complex supply chains, this is evident, as they are highly dependent on the suppliers. If there are no manufacturers or suppliers who are interested in becoming sustainable, it can be very challenging for the single fashion company or retailer to do sustainable business. In addition, the World Economic Forum (2010) argues that current

sustainability initiatives fail to challenge the current unsustainable models of consumption. Stubbs and Cocklin draw the focus on the systems whereas World Economic Forum sees the consumers be in the central. However, the previous literature and practical implications rarely address the role of business models on educating the customers about their consumption behaviour. Patagonia is one of the rare brands that has repeatedly been mentioned to encourage its customers to think about their consumption behaviour and to consider if they truly need to purchase the product (e.g. Bocken et al., 2014; Moorhouse and Moorhouse, 2018).

2.2.3. Circular Business Models

Circular business models have been identified as a potential solution to the global textile waste problem and to replace the need for some virgin materials (Fontell and Heikkilä, 2017). However, a single company cannot make a systems-level change alone, as a central principle in the circular economy is collaboration. In the fashion context, this means that different actors from the consumer to the brand and from the fibre manufacturer to the textile collector need to work together along the value chains (Fontell and Heikkilä, 2017). Prior literature has identified four main loops of circular business models in the textiles and fashion context (EMF 2017; Fontell and Heikkilä, 2017):

1) Repair and maintenance
2) Re-use as a product
3) Re-use as material
4) Recycling-related activities and business models for post-consumer textiles along the value chain

According to Fontell and Heikkilä, the first goal is to use textiles in their original format as long as possible and a key to success in this is to design for circularity (2017). In practice, this means e.g. designing for durability, attachment, standardisation, ease of maintenance and repair (Delft University of Technology, 2020). In addition to design, business models related to repair and maintenance are vital, as they also aim to lengthen the use of textile in the original format. An example can be a company that provides repairing services, but this requires engagement from the consumers' side as well. Consumers are increasingly used to discard clothes and buy new ones instead of repairing the original (Fontell and Heikkilä, 2017). Thus, companies need to support consumers to maintain their clothes longer. They can achieve this for example by

informing the consumers of how to take care of the product or by providing repair and restyling services (EMF, 2017).

If a consumer no longer wants to use the garment or accessory, it is recommended to re-use it as a product. For a circular business model, this means finding solutions and models that enhance the re-use of the clothing, such as second-hand trading (Fontell and Heikkilä, 2017). Re-use centres, flea markets and brand's second-hand platforms enhance the product to find a new user and extend the use of the product. Circular business models that are also identified to operate in this loop are clothing rental and leasing services, that combine a product and service (e.g. Ellen MacArthur Foundation, 2017; Kjaer et al., 2019). These type of PSS models especially focus on the consumer side and they are often seen as a way to replace personal ownership and excess material consumption (Briceno and Stagl, 2006).

The third loop of circular business models focuses on re-using the initial piece of clothing as material. These business models use discarded textiles that no longer can be re-used as a product and utilise e.g. chemical, thermal or mechanical technology to make new fibres and materials from the old materials (Fontell and Heikkilä, 2017). However, currently, most of the recycled textiles are used in lower-value applications. In the future, the Finnish textiles and fashion industry is expected to have great growth potential for re-using the textiles as material and using the recycled fibres for high-value applications as well (Fontell and Heikkilä, 2017).

Finally, the fourth type of circular business models concerns recycling-related activities. These type of circular business models address textile collection and sorting. The users recycle their clothes and may bring them to a separate collection point or to a store that has a product-take back model. From the collection points, the clothes are sorted and depending on their condition they go either to re-use as a product, re-use as material, industrial processing or other industries. Currently, in Finland, 80% of post-consumer textiles go to mixed waste and only 20% are collected separately (SYKE, 2015 ref. in Fontell and Heikkilä, 2017). This is due to the lack of municipal collection systems for textiles and initiatives or obligations for customers to take care of their discarded textiles (Fontell and Heikkilä, 2017).

In addition to acknowledging the circular business models, the companies are also keen to know how to accelerate the transition. Global Fashion Agenda is one of the central global forums focusing on the collaboration between the different actors in the fashion industry,

government and regulators. Global Fashion Agenda (GFA) has identified four actions points for fashion companies to accelerate the transition to circular fashion and adopt the circular business models (GFA, 2017):

- Implementing design strategies for cyclability
- Increasing the volume of used garments collected
- Increasing the volume of used garments resold
- Increasing the share of garments made from recycled textile fibres

Although being presented separately, the idea is to use them continuously and simultaneously as all aspects of a circular strategy go hand in hand (GFA, 2017). The list identifies the design, material decision, reuse and recycling phases. These four action points are more concrete than the business models described above. These can be seen as a starting point in the transition towards circular business models and increased collaboration, as most of the action points require more actors than the single fashion company itself.

Figure 3 illustrates an ideal circularity in the fashion industry, where the different elements of the circular economy are linked to each other. The boxes describe different circular business models that are found in the fashion industry by Fontell and Heikkilä (2017).
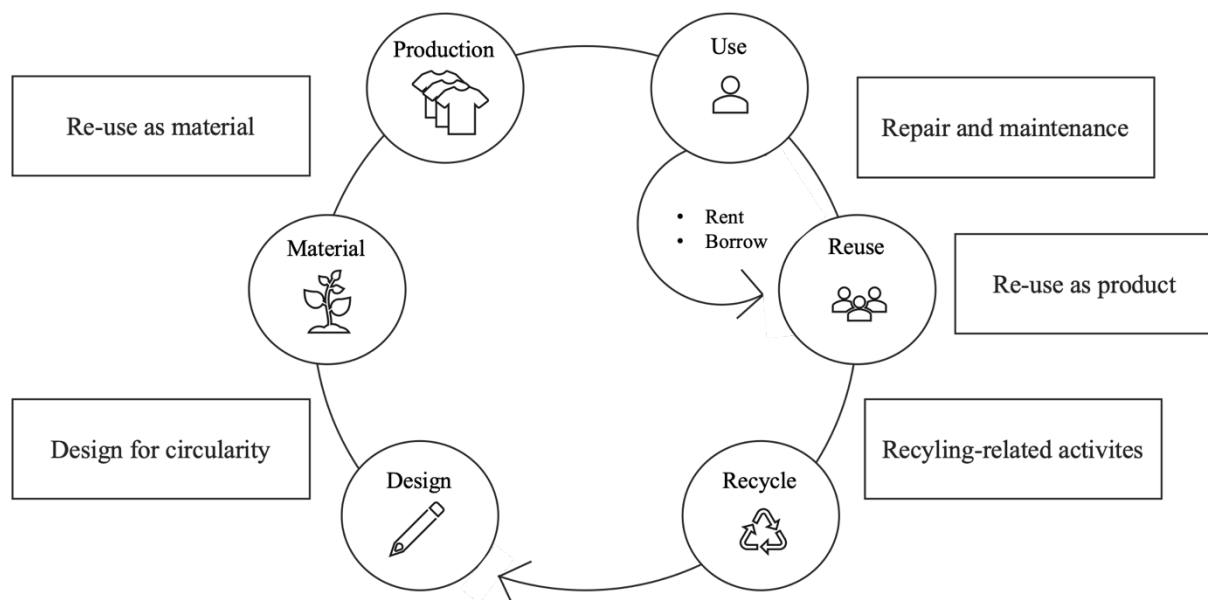

Figure 3: Circular economy model in the fashion industry. Source: Adapted from Mäki, 2018 and Fontell and Heikkilä, 2017

From practice, we can find companies that have already adopted circular business models successfully. One example is Pure Waste, which makes all of their clothes from textile waste (Pure Waste, 2019). Another example is Patagonia, who are often introduced with sustainable and circular business models as they have integrated many circular economy aspects to their business. First, most of the materials Patagonia uses for its high-quality products are recycled, e.g. recycled polyester, nylon and wool. Second, to extend the lifetime further, Patagonia provides repair service and comprehensive DIY repair guidebook. Finally, Patagonia has established a second-hand platform where they sell their customers' old Patagonia products, thus engaging in the reuse phase of the circular economy model. (Patagonia, 2019)

However, not all fashion companies have yet fully adopted circular business models. Stål and Corvellec (2018) studied seven Swedish fashion companies and their product takeback systems. The findings show that fast fashion companies such as H&M and Lindex sell old clothes from their customers to third parties, such as professional textile collectors or charities. Thus, these fashion brands do not attempt to create and capture value from collected garments. In fact, as the companies provide a discount voucher to the customer, and the prices the third parties pay are not near to the kilos of clothes they purchase, these fast fashion companies are providing this service at a consistent loss (Stål and Corvellec, 2018). Premium brands such as Filippa K sells some of the old Filippa K clothes in their speciality stores. However, both types of strategies seem to be framed as part of firms' sustainability strategy rather than their business strategy (Stål and Corvellec, 2018). Thus, at least product takeback-systems can be viewed as marketing, brand and sales activity. This can also be seen from the findings of the Ellen MacArthur Foundation, who claim that only 1% of textiles are recycled to new clothing (2017). To achieve a fully circular fashion system a collaborative effort is needed among businesses and government, as well as involving the customers and broader society. However, the transition from linear models to circular business models is not described to be an easy transition, as it is recognised to need a new kind of value creation mindset for companies and increased consumer commitment (Fontell and Heikkilä, 2017). The following section introduces these factors that act as drivers and/or barriers for fashion companies to adopt circular business models.

2.3. Drivers and Barriers for Adopting a Circular Business Model

Existing literature has studied circular business models and factors influencing the adoption of circular activities and business models. These drivers and barriers impacting the development and implementation of circular business models have been studied from different perspectives, such as from textiles-to-textiles recycling (Sandvik and Stubbs, 2019), clothing collection (Stål and Corvellec, 2018) and product take-back initiatives (Hvass and Pedersen, 2019). These studies represent research focusing on one specific stage of circularity in the fashion industry and introduce drivers and barriers to adopt the respective activities. There are also studies having a broader view of factors influencing the adoption of circular business models, but these do not focus on the fashion industry. They are for example literature reviews (e.g. Lewandowski, 2016; Tura et al., 2019; Rizos et al., 2016), expert studies (e.g. Tunn et al., 2019) or cross-industry multiple case studies (e.g. Ranta et al., 2018). To create a framework of factors influencing the adoption of circular business models, both types of studies are utilised. Following subsections introduce specific factors identified in the previous literature combining the circularity in fashion industry with general circularity. The aim of combining the two types of literature areas is to create a comprehensive framework of the drivers and barriers that are identified in the existing literature.

Some factors may be both drivers and barriers, as the specific impact on a company is highly depending on the context (Tura et al., 2019). Table 2 summarises the findings of the existing literature. It is based on the framework of drivers and barriers of circular economy introduced by Tura et al. (2019). Their research concerns the drivers and barriers in the adoption of a circular business model in general, thus not having a specific focus on the fashion industry. Tura et al. identified in their literature review seven categories of factors: environmental, economic, social, political and institutional, technological and informational, supply chain, and organisational factors.

Category	Driver or Barrier	Concept	Source
Environmental	**Driver:** Potential to reduce environmental impact	Opportunity to deliver better environmental outcomes by using recycled materials as an input	Ellen McArthur Foundation (EMF), 2017; European Commission, 2019c

Category	Driver or Barrier	Concept	Source
Economic	Driver/Barrier: Cashflows	High investment such as R&D and training employees. Potential to create cost savings and new business opportunities.	e.g. Sandvik and Stubbs, 2019; Bechtel et al., 2013; EMF, 2017; Tura et al., 2019
	Barrier: Lack of resources	No financial resources for investments or hiring right people. Concerns mostly SMEs .	Rizos et al., 2016
	Barrier: Cannibalisation	Potentially lower sales if the new products decrease the sales of the previous products	Guiltinan, 2009; Michaud and Llerena, 2011, ref in. Linder and Williander., 2017
	Barrier: Capital tied up	When offering rental services, the financial risk moves from the customer to the producer	Besch, 2005 ref in. Linder et al., 2017
Social	Driver/Barrier: Customer awareness and demand	Increased awareness of sustainability, but uncertainty of consumer responsiveness and demand.	e.g. EMF, 2017; Henninger et al., 2017; Tura et al., 2019
	Driver/Barrier: Changing trends	In consumer markets, ability respond to fashion changes.	Mont et al. 2006 ref in Linder et al., 2017; EMF, 2017
	Driver: Community	Participation in communities of practice can support implementing CMBs and shaping the business together	EMF, 2017; Rizos et al. 2016
	Driver: Customer relationship	Improved customer relationship and customer behaviour understanding	Walsh 2010, ref. in Linder et al. 2017 Firnkorn and Müller 2012, ref. in Linder et al., 2017
Political & Institutional	Driver/Barrier: Regulations	Regulations related to textile waste management (EU) but differences between countries and business activities	European Parliament, 2018; Bechtel et al., 2013; Karell, 2018
	Driver/Barrier: Government support	Some circular economy funding availabe (e.g. Horizon 2020 in EU), often lack of government support	e.g. Tura et al., 2019; Bechtel et al., 2013; Rizos et al., 2016; EMF, 2015 & EMF 2017
Informational & Technological	Driver/Barrier: Technology	Technology may act as a driver but it might not be ready for scaling or affordable	e.g. Bechtel et al., 2013; EMF, 2017; Sandvik and Stubbs, 2019
	Barrier: Lack of knowledge or skills	Insufficient knowledge of the products, processes or circular economy	EMF, 2017; Bechtel et al. 2013; Rizos et al., 2016
Supply Chain	Barrier: Complex supply chains	Typically long and complex supply chains which lack transparency	Kozlowski et al., 2012; Sandvik and Stubbs, 2019; EMF, 2017
	Driver/Barrier: Networks and partners	Finding and establishing appropriate partnerships and collaboration	e.g. Bechtel et al., 2013; Tura et al., 2019; EMF, 2017
	Barrier: Strong focus on linear models	Linear model deeply rooted in various industries	EMF, 2017; Tura et al., 2019
Organisational	Driver/Barrier: Organisational culture	The habits and attitudes of the company towards adopting circular business models	Hvass and Pedersen, 2019; Bechtel et al., 2013; Rizos et al. 2016
	Driver/Barrier: Management support and leadership	Supportive management and leadership appreciates the strategic direction, while a reluctance does not take change forward	Bechtel et al., 2013; Linder et al., 2017
	Barrier: Incompatibility with existing (linear) operations	Challenges if circularity not integrated in company strategy and goals	Hvass and Pedersen, 2019; Tura et al., 2019; Bechtel et al., 2013
	Driver: Improved company brand	Circular innovations may improve the image of a sustainable company	Stål and Corvellec, 2018; Tura et al., 2019

Table 2. Drivers and barriers for adopting a circular business model. Source: Categories of factors from Tura et al. (2019), other content developed from the main sources of the reference literature

Environmental factors

Negative environmental impact and resource scarcity are major factors influencing fashion companies to adopt circular business models (Ellen MacArthur Foundation, 2017). The current clothing system is extremely polluting and wasteful, creating a need for better use of resources (Ellen MacArthur Foundation, 2017). Circular economy business models help to use resources more efficiently and reducing the pressure on the environment (European Parliament, 2018). Tura et al., (2019) also identify environment as a driver for companies across industries to engage in circular business. The prior literature has not identified environmental factors as barriers for companies to adopt circular business models.

Economic factors

Many companies identify financial issues as one of the key barriers to adopt a circular business model (e.g. Linder and Williander, 2017; Bechtel et al., 2013). This is especially an issue for small and medium-sized enterprises, which often lack the resources to either acquire the right people with the right knowledge or develop the needed technology (Rizos et al., 2016). In the fashion industry, Sandvik and Stubbs (2019) studied textile-to-textile recycling, and they identified the current high-cost manual textile sorting practices as a barrier. To improve this, there is a need to develop the recycling system's technology and creating infrastructure, which requires financial resources from the company and the fashion industry in general. However, circular business models are also seen as a way to increase efficiency and bring savings (e.g. EMF, 2017). Also, they can open new business opportunities that the companies would not reach with linear business models (Tura et al., 2019).

Cannibalisation and capital tied up are viewed as barriers, as they increase the financial risk for the company (Linder and Williander, 2017). With cannibalisation, the new products may reduce the demand for the previous products, especially if they are of higher quality and aimed to last longer. With capital tied up, the company offers to rent products and the customer only pays for the use, which moves the financial risk from the customer to the producer (Besch, 2005). The is no prior research on the topic, but clothing rental services are an example of capital tied up in the fashion industry.

The financial drivers and barriers are not limited to the ones mentioned above. There are other factors, such as customer demand, which directly influence sales and thus the company's

financials. Customer demand is introduced in the societal factors, and other similar types of factors are addressed in the categories that are more suitable for the specific driver or barrier.

Social factors

Globally, awareness and need for more sustainable solutions have increased among policymakers, companies and consumers (Tura et al., 2019). Prior literature identifies the customers' awareness as a driver for many companies adopting circular business models and having more sustainable products and services. People, and especially millennials, are increasingly aware of the negative sides of the fashion industry, which has led them to be more conscious customers (Henninger and Singh, 2017). This change in customer awareness is a driver for fashion companies to engage in circular activities. However, not all customers are interested in the circular economy (Kirchherr et al., 2017), which creates uncertainties regarding the demand for products produced with circular business models (Tura et al., 2019). This links directly to the previous paragraph regarding economic factors and the uncertainty of future cash flows. With uncertain sales, companies are more hesitant to adopt new business models and invest money. This uncertain demand is identified as a barrier to adopt a circular business model.

Demand is linked to customer trends and changing customer trends may act as a driver or barrier for adopting a circular business model (Linder and Williander, 2017). This is particularly the situation in the fashion industry, where companies are used to introduce many collections annually. In consumer markets, the inability to respond to fashion changes with the product is identified as a barrier (Linder and Williander, 2017). This may be the situation for example when producing clothes from returned textiles, when the quality and amount of returned clothes may vary. However, in PSS, such as clothing leasing, changing trends are a driver (EMF, 2017) since the consumers are constantly looking for new garments to rent. Participation in communities of practice and collaboration with different actors is viewed as a driver for successfully implementing and adopting a circular business model (Rizos et al., 2016).

Improved customer relationship is also identified as a social driver for adopting a circular business model (Walsh, 2010, ref. in Linder and Williander, 2017). Especially with product-service-systems, the company has a greater contact with the customer, which leads to good

relationships (Walsh, 2010, ref. in Linder and Williander, 2017) and understanding customer behaviour (Firnkorn and Müller 2012, ref. in Linder and Williander, 2017).

Political and Institutional factors

This category refers to formal institutions, laws and regulations. Formal and informal institutions (socially shared rules) create the rules of the game, and according to Meyer and Peng:" Success and failure of firms are enabled and constrained by the different rules of the game" (2016). Thus, laws and regulations have an important role in influencing companies' business models and activities. The complexity and difference between global and national regulations are identified as key factors for many companies to adopt circular business models (Bechtel et al, 2013). For example, in the EU, common legislation for textile waste management is currently lacking, and the regulations vary between countries (Karell, 2018). Also, the regulations are not necessarily aligned between different product uses or regions (EMF, 2017). Regulations can enforce companies to adopt circular business models or circular activities, thus being also a driving factor as well. For example, regulations have influenced companies to follow eco-design approach when designing clothes (Balkenende and Bakker, 2018).

Policymakers have an important role in the transition to the circular economy as they can either fix regulatory failures or stimulate the market activity (Lewandowski, 2016). However, the prior literature mostly emphasises the lack of government support and policymakers' knowledge regarding the circular economy (e.g. Tura et al., 2019; Rizos et al., 2016). The lack of funding opportunities, training and effective taxation are factors that the previous studies have found to be significant barriers in the transition to more sustainable business and circular economy (Parker et al., 2009; Calogirou et al., 2010, ref. in Rizos et al., 2016). In the fashion industry, currently only France has, and Sweden has been considering, an Extended Producer Responsibility (ERP) (EMF, 2017). It is an example of a model where the government supports companies to transit towards the circular economy. In France, due to ERP, the companies are obliged to either set up a recycling and waste management system for the clothes, or they need to pay a contribution to an organisation which will financially support third parties to manage clothing waste (EMF, 2017).

Informational and Technological factors

Technological factors are identified as one of the major barriers for adopting circular business models (Bechtel et al., 2013; Rizos et al., 2016; Tura et al., 2019). These barriers include the company's technological capabilities to establish a closed-loop system and extend it to manufacturing and production (Bechtel et al., 2013). Also, even if some technology is already developed, it may not be ready for scaling or affordable (Sandvik and Stubbs, 2019). However, technology is also identified as a driver to a circular economy. For example, information technologies enable companies to track the origin and flow of material in the fashion industry (Webster, 2017) and establish information-sharing platforms, which enhances the collaboration between the actors in the industry (EMF, 2013). Also, new technical innovations help companies to have cleaner solutions for the future (Ghisellini et al., 2016), such as producing garments from waste. This is an example of circular business model, which is adopted for example by Pure Waste (Niinimäki, 2018).

In addition to the technology itself, the company, its management and/or employees often lack the skills, knowledge or information regarding the circular economy and how to adopt circular activities (Bechtel et al., 2013; Rizos et al., 2016). They may have insufficient knowledge about the materials, products or process design which creates a significant barrier for adopting a circular business model (Bechtel et al., 2013). This same issue is also within the fashion industry, where Ellen MacArthur Foundation identifies a lack of technical skills as a barrier to implement circularity (2017). They recommend closer cooperation with the suppliers as a solution to this, which is introduced in the next paragraph.

Supply Chain factors

The fashion industry and its supply chains are often described as complex and dispersed (Kozlowski et al., 2012). The supply chains are usually long, and the life cycle of a garment consists of many phases from resource production to textile manufacturing and from the consumer use to the ultimate disposal (Kozlowski et al., 2012). The high level of complexity creates a barrier itself to adopt circular business models, especially as the industry lacks transparency which makes it difficult to find the exact information about material content (Sandvik and Stubbs, 2019; Karell, 2018). In the circular economy, all parts of the supply chain

need to be aligned to circular principles, and the fashion industry's size and complexity are identified as a barrier (Sandvik and Stubbs, 2019).

For the whole industry to achieve systems change to a circular economy, collaboration is needed (EMF, 2017). However, finding and establishing appropriate partnerships may act as a driver or barrier for engaging in the circular economy. The weak environmental awareness of some suppliers and lack of network support are described as barriers towards circularity (Tura et al., 2019). However, a collaboration between the stakeholders and finding suitable partners may drive the transition (EMF, 2017). Industry-wide collaboration and different initiatives, such as the 2020 Commitment of the Global Fashion Agenda or The Nordic Action Plan 'Well-dressed in a Green Environment' are examples that enhance the implementation of circular activities in the fashion industry (Wu and Li, 2019; One Planet Network, 2019).

The third supply chain barrier is a strong industrial focus on linear business models (Tura et al., 2019; EMF, 2017). The fashion industry is still today mostly linear, and highly relying on non-renewable resources as an input for production (EMF, 2017). The fashion industry is not alone, as from the supply chain perspective, many industries have a strong focus on linear models (Tura et al., 2019). This is due to the reason that business processes are described to typically be linear in nature and many policies still favour linear models (Tura et al., 2019).

Organisational factors

The ones who decide whether or not to adopt a circular business model are inside the company, and thus the final category focuses on the organisational factors. Currently, there are only two articles addressing circularity in the fashion industry which lightly mention organisation as a factor to adopt a circular business model. In particular, both of the studies focus on product-take-back systems (Hvass and Pedersen 2019; Stål and Corvellec, 2018). Thus, most of the references are from literature addressing circular business models from different industries and having a more general view (e.g Bechtel et al., 2013; Linder and Williander 2017).

The first organisational factor is the organisational culture and managers' and employees' attitudes towards implementing circular activities. Some managers and employees have positive attitudes towards the circular economy, while others are more resistant and sceptic (Bechtel et al., 2013; Rizos et al., 2016; Hvass and Pedersen, 2019). The same implies with

management, as supportive management and leadership appreciate the strategic direction towards the circular economy and understand both the benefits and risks related to new business models (Linder and Williander, 2017). These leaders see the big picture, and also make the employees excited about the vision and transition (Bechtel et al., 2013). However, risk-averse and reluctant management does not take change forward (Bechtel et al., 2013), thus creating a barrier for the company to adopt a circular business model.

Tura et al. (2019) identify in their research that if circularity is not integrated into the strategy, it can create a conflict of interest and values between different stakeholders. Also, incompatibility with development targets or missing strategic goals linked to the activity are identified as barriers (Tura et al., 2019; Hvass and Pedersen, 2019). One reason for the incompatibility with the current model may be due to focus on relatively short-term perspective (Bechtel et al., 2013). A change to a longer perspective is needed, but this change in mindset is identified as one significant barrier (Bechtel et al, 2013). The study of the product-take-back system by Hvass and Pederson found that in the case company, the initiative was not directly linked to the overall strategy and the value proposition was not clearly defined (2019). However, they do not study further why circularity was not directly and fully linked to the strategy.

Finally, adopting a circular business model may improve the company brand (Tura et al., 2019). Circular innovations can make the customers view the company more sustainable, thus improving the brand image (Tura et al., 2019). This is also identified in the fashion industry, where companies such as H&M has established a product-take-back system, even though it creates them financial loss (Stål and Corvellec, 2018). Thus, engaging in circular activities may act as a driver if the company views it as a way to increase brand value.

Limitations of the Factors

It should be noted that the presented factors do not necessarily present all factors that are identified to influence circular business model adoption. Rather, the seven categories present key categories that are fully or partly identified in the existing literature. In addition, the categories combine findings from general and fashion-specific studies. The same implies with the different circular business activities. Part of the literature addresses circular business models as a whole, whereas other studies focus on a specific part or activity in the circular

economy. These aspects may create an issue where the findings of the literature are not applicable in other contexts, such as industries or circular activities. However, combining findings from different types of literature was needed, as currently no study has a focus on the drivers and barriers for adopting a circular business model (instead of a specific circular activity) in the fashion industry. Finally, based on the existing literature it is not possible to state if all of the factors have an equal influence, or if some factors have a stronger influence. In the studies, economic resources, lack of funding and government support and weak knowledge of circular economy in the organiation were described as "significant barriers". However, no stronger emphasis between the factors and their influence can be identified in the existing literature.

2.4. Theoretical Framework

The literature review has first introduced different types of business models: linear, sustainable and circular. This was followed by a more specific focus on the business models in the fashion industry, and similarly, the three types of business models were addressed from the fashion industry perspective. Finally, the drivers and barriers for adopting a circular business model were introduced and gathered to a summarising table. The drivers and barriers are identified combining both fashion specific and general literature regarding circular business model adoption.

Especially the Ellen MacArthur Foundation has done remarkable work with combining policymakers, businesspeople and academia to enhance transition towards the circular economy, also in the fashion industry. Despite their important work, their reports regarding the circular economy in the fashion industry have mostly been developed for wider audiences, and deeper academic research has been given a smaller focus. Thus, to conclude the key aspects of the literature at the conjunction of circular business models, the fashion industry and factors influencing the adoption of circular business model, I have developed a theoretical framework (see Figure 4). This framework will be revised in section 5.2, where the findings from the empirical research are discussed.

Category	Drivers	Barriers
Environmental	• Improve environmental impact	
Economic	• Cashflow expectations	• Uncertain cashflows • Resources • Cannibalisation
Social	• Demand • Trends • Community	• Demand • Trends
Institutional	• Regulations • Government support	• Regulations • Government support
IT	• Technology	• Technology • Lack of knowledge
Supply chain	• Network and partners	• Complex supply chains • Network • Focus on linear models
Organisational	• Culture • Management support • Improving brand	• Culture • Management support • Incompatibility with operations

When drivers outweight the barriers	When barriers outweight the drivers

Adopting a circular business model

Continuing with the existing business model

Figure 4. Framework of drivers and barriers for adopting a circular business model. Source: own creation

The framework is divided into seven categories which Tura et al. (2019) identify in their research of drivers and barriers towards circular business models. The categories are revised to be applicable in the fashion industry. Each of the categories has the key factors that are identified in the literature either as drivers or barriers. When the drivers outweigh the barriers, the company is expected to adopt circular business models. The illustration of circularity in the fashion context is developed based on the work done by the Ellen MacArthur Foundation (2017) and Mäki (2018). The ideal circularity is illustrated as the outcome when the drivers and their influence exceed the barriers. In a case when the influence of the barriers is higher, the company is expected to continue business as usual and hence proceeding with the existing business model.

3. Methodology

The following chapter introduces the methodological choices of the research. The aim is to shed light on the philosophical starting point and the decisions concerning the chosen methods of data collection and analysis. The end of this section presents the evaluation for the research process and discusses the ethical concerns.

3.1. Research Philosophy

This research was done with a qualitative research method. As circular economy business models are a relatively new area of interest for scholars, a qualitative method provides more flexibility and an opportunity to focus on the phenomena in their context (Eriksson and Kovalainen, 2008). Besides, a qualitative approach is a suitable method for this study, as it aims to holistically understand circular business models and identify factors that are drivers or barriers for adopting circular business models.

Recognising the qualitative approach for the research is not enough. As Eriksson and Kovalainen note:" Among the issues that you need to consider at the beginning of your research project are philosophical aspects and questions that lurk behind every research method and methodological approach." (2008, p. 10) Thus, identifying and acknowledging my ontological and epistemological starting points is important. My philosophical approach is critical realism, which views reality independent of the observer but acknowledges that people interpret reality differently in different times and contexts (Eriksson and Kovalainen, 2008).

Having a critical realist approach provides a broader approach on what drives business decisions and value creation, as in this study it is assumed to be more than purely increasing the profits. Thus, research and a researcher who approaches the same research questions purely from profit maximisation perspective would most likely have a different looking study. In critical realism, while believing that an independent reality exists, it is also acknowledged that individuals interpret this reality through social conditioning (Wahyuni, 2012).

3.2. Research Design

According to De Vaus (2001) research design is the structure of an inquiry to ensure that the identified and collected data enables us to answer the research question in a convincing way (p.16). To discover what type of circular business models are found in the Finnish fashion

industry and what are the drivers and barriers for adopting those, this study is an exploratory multiple case study. A case study is a suitable "research strategy when addressing complex organisational, managerial, and other business issues, which are considered difficult to study with quantitative methodologies" (Ghauri and Gronhaug, 2005: ref. In Eriksson and Kovalainen, 2008, p. 117). Both business models and circular economy are described as complex issues (Casadesus et al., 2010; Hvass and Pedersen, 2019), thus creating a good space for a qualitative case study.

Evans et al. (2017) claim that "little effort has been spent exploring their [circular business models'] successful adoption" (p. 605). With a multiple case study design, this study researches many fashion companies in their context, expecting to discover either similar or contrasting factors for adopting circular business models. According to Yin, when predicting either similar results in the studies or when predicting contrasting results for expected reasons, multiple case studies can be used (2003, p. 47). This supports choosing multiple case study as a research design.

This research is an exploratory case study, as currently there exists only little empirical data of circular business models, in particular in the fashion context. The research aims to discover new insights of factors influencing circular business model adoption, making it exploratory. Yin (2018) specifies that exploratory case studies typically seek to identify concepts and models for further studies. Asking and addressing general questions in an exploratory case study, are meant to bring opportunities for further examination of the studied phenomenon (Zainal, 2007). Depending on the findings of this research, future research may go deeper into the identified themes or study the circular economy business model adoption or implementation process.

The research context is Finnish fashion companies, and for the sampling design, I used purposive sampling to choose the case companies. Daniel (2011) describes that in purposive sampling the samples are selected from the population based on their fit with the purpose of the study (p. 87). As the purpose of the study is to find what factors influence the adoption of circular business models, purposive sampling is suitable for this research. The aim is to gain a broad understanding and overview of the fashion industry in Finland and thus the research includes different types of companies regarding their size and current business models. Purposive sampling ensured that different types of fashion companies regarding their sizes

(small, medium or large) and current business model were chosen (circular business model or no circular business model). The purposive sampling was made mostly based on the information found online such as from the companies' websites. Furthermore, I consulted people who knew the industry better to ensure including different types of companies to gain a more holistic sample. In addition to purposive sampling, I used availability sampling. This refers, that only people from companies who were available, able and willing to participate, were selected to participate in the study (Daniel, 2011, p. 84-85).

Despite aiming to gain and present an overview of circular business models in the Finnish fashion industry, I acknowledge that with a case study as a research design, the case study is only generalisable to theoretical models, not to populations (Yin, 2003).

3.3. Data Collection

After describing the research and sampling design, I introduce my data collection approach. To answer my research questions, my data consists of two types of data: 1) primary data from interviews and 2) secondary data from online documents and strategy papers.

As noted with the data sampling design, the aim was to include different sized companies with different kind of business models. Eisenhardt (1989) suggests having the number of cases when the incremental improvement of adding more cases is minimal (p. 545). The final number of cases in this research is six and during the fifth interview, certain themes began to emerge. As I had one more interview scheduled, after the sixth interview I judged that sufficient saturation was achieved. Since at the same time the COVID-19 pandemic made obtaining further interviews difficult, I settled with the final number of six companies. The final case companies represent different types of fashion companies well as there are small (< 10 employees), medium (10-100 employees) and large (>100 employees) companies. Additionally, the sample consists of both companies who have visible circular business models and companies that have not communicated engagement in the circular economy. However, this research does not include any fast-fashion company, as there currently is no Finnish fast fashion company. More comprehensive introduction of the case companies is be made in section 4.1.

I requested the companies for an interview through my networks and from an online search. I contacted four people directly, and they were either people I knew beforehand or a person that

a shared connection knew. The respondents were people from the companies that had both knowledge of the company's strategy and approach to sustainability. The interviews were all in Finnish. Every person representing a company was interviewed once. The interviews were recorded and lasted from 40 minutes to one hour. All of the interviews were allowed to be recorded, which during the interviews helped to focus on the discussions. In additions, it ensured that no straightforward or other own interpretations were made, as I was able to focus on the discussion instead of rapidly typing notes.

The interviews were semi-structured, as this allowed interesting topics to arise, which I may have not addressed with the pre-defined questions. This was also important as the case companies have a different kind of characteristics, providing an opportunity to address issues important for the specific company. However, the approach had enough structured to address specific dimensions of the research question (Galletta, 2013) – circular business models and in particular the drivers and barriers for adopting these. Besides, as circular business models are relatively new phenomena, the term has not yet been clearly defined. This also supported choosing semi-structured interviews, as recommended by Kvale and Brinkmann (2009) for topics not well defined. The list of the interview questions can be found in Appendix.

In addition to the interviews, I relied on secondary data. This consisted of publicly available websites, online documents, such as sustainability reports, blog posts and other relevant communications material. With the online material, I made background research before the interviews. This brought valuable information regarding the companies' approach to sustainability and circular economy and provided some good insights to be addressed in the interviews. Using secondary data was important as I only had one interview per company.

3.4. Data Analysis

The analysis partly started already during the data collection. After I had collected the secondary data, interviewed the companies and transcribed the interviews, I started the 'official' data analysis phase.

From the collected data, I assumed to identify themes or categories that why some companies have adopted circular business models (drivers) and why some have not (barriers). Thus, I chose to use a thematic analysis. Braun and Clarke (2007) describe thematic analysis as "a

method for identifying, analysing, and reporting patterns (themes) within data" (p. 6). They also describe it as a theoretically-flexible approach to analysing qualitative data. As a novice researcher, an approach that is described to be accessible to researchers with no experience of qualitative research sounded suitable. With thematic analysis, I believed to identify relevant themes from the data and make valuable findings, without sacrificing too much time to learning a complex method. Finally, the thematic analysis was also suitable for my critical realist approach. Braun and Clarke (2007) note that thematic analysis can be conducted within both realist and constructionist paradigm.

On a more specific level of the data analysis, I relied on Braun and Clarke's (2007) six-phase guide with the following phases (p. 16-23):
1. Familiarising yourself with your data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report

After transcribing the interviews, I was relatively familiar with the data, which helped me with starting the thematic analysis. To start the process, I reread the transcriptions to deepen my knowledge of the interviews. During the reading, I started to create initial codes that describe the data. After developing the initial codes, I started to search for broader themes. To find broader themes, I utilised cross-case analysis, in which I compared the codes from the companies to identify either similarities or differences among the companies. After grouping the codes and searching the themes, I reviewed the themes and reflected if they accurately reflect the data and codes. Also, I analysed if they made sense together and drew a coherent view of the findings. Finally, I defined and named the themes and produced the findings section to this report.

Combining thematic and cross-case analysis ensured that while I was searching for emerging themes from the data set, the findings from an individual case company were analysed. While the case companies were different-sized and had varying business models, cross-case analysis was a valuable method while comparing if different factors emerge due to the company size or existing business model.

3.5. Research Process Evaluation and Ethical Concerns

To evaluate my research design and process, I adopt the classic criteria of good-quality research. According to Eriksson and Kovalainen (2008), the three key concepts are the criteria for good research: reliability, validity and generalisability. Having reliable research refers to the sense that another researcher can replicate the research and conclude with similar results. To ensure this, the decisions regarding sampling, data collection and data analysis have been explained in detail and throughout the decisions. The suitability with the studied topic has been carefully considered. For validity, which aims to provide conclusions that accurately represent the data, the six-phased guide for data analysis is used. This ensures that while being a novice researcher, the analysis was made carefully and ensuring that the issues emerging from data are correctly represented in the themes and findings. Additionally, applying a systematic approach can reduce bias towards the emerging themes. Further, to improve reliability and validity for the study, I use triangulation of data by collecting primary data from interviews and secondary data mainly from online sources. Using evidence from multiple sources allows for cross-checking information (Eriksson and Kovalainen, 2008). Finally, generalisability refers to research that can be extended to a broader context. According to Yin (2009), comparing previously developed theory with empirical research is an analytical generalisation. However, analysing the outcomes of the findings and their validity can be done after the empirical research is conducted. Thus, the final evaluation of the research is made in section 6.3, where the limitations of the study and chosen methodologies are discussed.

Regarding research ethics, a key aspect is the respondents and their privacy. According to Oliver (2010), anonymity and confidentiality are key aspects of research ethics. As the aim of this research is to find broader themes of drivers and barriers towards circular business models in the fashion industry, disclosing the names of the case companies was never a key criterion. Thus, already in the beginning, I decided to keep all case companies anonymous as it might also have been at their interest as the industry is relatively small in Finland. Additionally, anonymity and naturally confidentially might have made the companies more willing to participate in the interview and discuss more openly. Regarding privacy, the interviews were recorded at the agreement from the participant and the records are deleted after finishing the research. No other personal information that the participant's professional role and responsibilities were collected.

For ethical concerns, two aspects emerge. First, as I conducted the interviews with a person, there was always a possibility of leading interviews. However, bearing this in mind, I planned my interview questions to be neutral. Also, in the interviews, I took always a brief moment to consider how to phrase a non-planned question to be as objective as possible. A concern that needs to be noted is that I have a personal link to two interviewees. Thus, even if I aimed to objectivity, it might have been difficult due to the personal link. Besides, this might have been the situation also the other way around - they maybe did not view and answer the questions with objectivity having me as the interviewer. However, the need to include these companies and people was vital for two reasons. First, they represent important and interesting companies in the industry. Secondly, these companies and people were available and interested in an interview, thus improving the number of available case companies.

The second ethical concern is that while I assumed that not all of the companies view the concept of circular economy and circular business models similarly, I shared the illustration of ideal circularity in the fashion industry (see Figure 3) during the interviews. The illustration aimed to demonstrate to the companies what type of circular business models exist in general and help them to reflect their current business from the circular economy perspective. While the aim was to help the companies to identify and discuss their current business models, it may have limited the interviewees to focus on mostly on the models in the illustration and approach circular economy purely through the perspective of this illustrations. Further, the illustration may have created social desirability bias, meaning that the interviewee may have answered in a way they viewed to be more socially acceptable than would be their "true" answer (Lavrakas, 2008). An example could be that the company shared that they are increasingly using recycled materials, while in reality the proportion of recycled material is marginal. However, the illustration was not introduced immediately, and before presenting it, the companies were openly sharing how their companies approach sustainability. The need to include the illustration was important while the participants most likely approached the term circular business model differently. Further, most of them shared in advance how they feel that they do not engage in the circular economy, but once they reflected their operations through the illustration, the extent of circular economy and circular business models cleared up to them. Thus, including the illustration brought up many areas of discussion and helped to discuss the drivers and barriers for adopting these circular business models. This could have been more challenging without the illustration.

4. Findings

This section introduces the findings of this research. It starts by providing an overview of the six case companies and their characteristics. It is followed by an introduction of the circular business models that are found among the case companies, thus aiming to answer the first research question: *What type of circular business models are found in practice in the Finnish fashion industry, and what not?* After this, the factors influencing the adoption of circular business models are introduced, thus finding an answer to the second research question: *What are the drivers and barriers for adopting circular business models in the Finnish fashion industry?* The findings throughout the section are presented with key examples from the interviews and secondary data.

4.1. Overview of the Case Companies

The six case companies provide a holistic cross-section of the Finnish fashion industry. The annual revenues of the studied companies range from 100 000 Euros to 100 million. As noted in the methodology section, the case companies represent different sized companies, from small companies employing less than ten people to larger companies having more than 100 employees. Besides, the maturity of the companies varies, while some of the companies have been established less than five years ago and some have been running their business already some decades. The case companies consist of companies operating both globally and locally, and companies having both physical and online stores, and companies operating purely online. The spectrum of products that these companies produce vary from stylish kids wear to activewear and from accessories to lifestyle clothing and premium garments.

As the aim of this research is to identify what type of models are and are not present in the Finnish fashion industry and for what reasons, the companies are kept anonymous. The objective of this research is to provide a holistic understanding of the factors that drive or hinder the fashion companies' engagement in the circular economy, instead of identifying and focusing on company-specific reasons. This way, fashion companies can identify the factors and reflect their own situation based on broader themes and factors.

The sample aimed to include both companies that have already circular business models and companies that are not yet engaged in circular economy. Some of the companies are built around sustainability, while others have adopted the aspects of sustainability later-on. The same

implies to circular economy and some companies are more engaged in circular economy than others. However, a key finding that is discussed further in the following sections is that all of the companies have adopted at least some circular business models. Thus, while the sample aimed to include different types of companies, based on the findings, there are no major differences with the adopted circular business models. Hence, the companies that identify themselves as more sustainable or circular, seem to relatively little differ from companies being less engaged in the circular economy. The next section introduces in more detail how these companies approach the circular economy and what type of models we can find in their operations.

4.2. Circular Business Models in Finnish Fashion Industry

While the companies are relatively similar regarding their engagement to circular economy, there is one company that is built entirely on the concept of circularity. This company uses leftover material as the starting point in their design and naturally in their entire production process. Thus, when approaching the other case companies for an interview with a focus on the circular economy, many of them doubted at first whether they would have anything to contribute to the discussion about circularity. However, when introduced to the illustration of ideal circularity in the fashion industry (see Figure 3), many of the interviewees identified elements that the company has already adopted, or at least has been considering. Some of the companies have described in their website their approach to circular economy but based on the findings, the companies have adopted and considered circular business models regardless of their current engagement to circular economy.

Based on the ideal circularity in the fashion industry and the findings of the data, the key findings related to the circular business models can be divided into business models before and after the finished product. Figure 5 illustrates the division between the two categories and the key identified business models found among the case companies. The cursive font illustrates business models that are used by more than three companies, and the non-cursive font illustrates models that are not as common among the case companies. The non-cursive business models are either adopted by less than three companies or are currently absent among the case companies. All of the models are introduced and discussed further after the illustration.
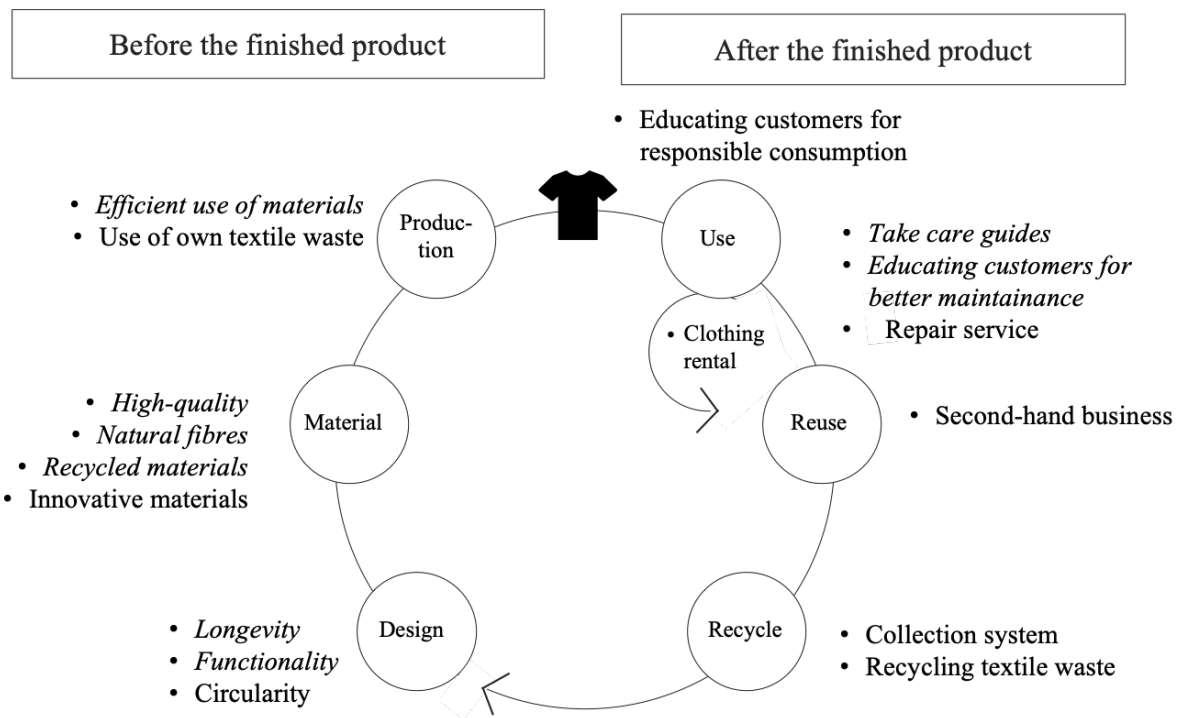
Figure 5: Observed circular business models in the Finnish fashion industry. Source: own creation

4.2.1. Before the Finished Product

The process for creating a new accessory or piece of clothing most often is viewed to start with the design. Thus, even with circularity, it seems natural for the case companies to start the process from design, move to decisions regarding materials and finally to manufacturing and production before the product is finished. The data clearly shows that the case companies have adopted circular business models related to each of the three steps described above. The key finding is that all of the companies described their design aims to be long-lasting, and the other steps – material decisions and production – are based on this. This section introduces the identified circular business model in the Finnish fashion industry; design for longevity, materials to last and production with efficient use of materials. Also, the subsections introduce and discuss business models that are less present among the companies.

Design for longevity

From the data, three aspects for design emerge: design for longevity, design for functionality and design for circularity. Design for longevity can be found in all the case companies and is,

therefore, a business model that is adopted across the companies. Design for functionality and design for circularity are found among the companies but are less frequently adopted compared to design for longevity.

Design is viewed as the first step for creating the product, but it is also described as being an integral part of the company's fundamental identity. When the case companies described themselves and how their companies approach sustainability, they all shared the same vision of making clothing and/or accessories that last. This finding emerged across all companies, despite their explicit engagement to the circular economy or the lack of the visible circular business models. Design for longevity is not a new approach for these companies, and it is shared by both the younger companies and the more mature ones. Design for longevity could be further described as being a foundation for these brands: it is the way they have produced their clothes and accessories from day one, and a way that is integrated to each process and what describes their identity. A comparison to fast fashion brands was made, as these companies share the view that their approach to business and fashion is the opposite of fast fashion. Thus, either the sample failed to include companies that are not engaged and interested in the circular economy, or the Finnish fashion companies generally have fundamental business models that are fitting the circular economy model and the principle of keeping the products in use.

"Our company's most important thesis has been from the start to make clothing that lasts – both from design and quality perspective... So that is the starting point and our fundamental idea and carrying force." – Company E

Design can be divided into two aspects: designing the visual appearance and making functional decisions. These Finnish companies aim to create garments and accessories that visually last time. They want that the "customers will pick up the product from their hangers after many years and still feel that the product is up to date" (Company D). This means, that the design is more classical, but some small 'trendy' aspects can be added. With these types of design decisions, the companies encourage for longer use, which is an integral part of the circular economy.

However, designing visually timeless products is not enough if the product does not physically bear the run of time. Thus, there are many decisions regarding the functionality of a product –

what materials to use, what type structural decisions to make, and how to ensure this product is of high-quality? Based on the findings, decisions regarding the materials are viewed as a key step when aiming for longer use. This is explored in more detail in the next section, which introduces the material decisions. However, other decisions can improve the longevity of a product. For example, a company producing clothing for kids makes structural decisions such as designing double snap buttons instead of a single one to ensure that the product lasts longer in use. However, this kind of structural solutions aiming at extending the life of a product seems to be rarer than decisions regarding the materials. These types of structural solutions include, for example, designing for standardised and easily accessible components or leaving more fabric to the steam to help consumers to let it out themselves and to facilitate the modification for the specific needs of the consumer. Based on the data, none of the companies producing clothing for adults provides these types of structural solutions.

"Our starting point is to create products that are just the opposite of fast fashion. We make long-lasting products – starting from the design, we create products that are not made based on the charm of the moment… The idea behind our design is that is both durable and classically elegant" – Company D

The second aspect that emerges from the data is designing for functionality. Designing for functionality means that the product suits the use it is created for and that the product lasts well in the function. Not all companies explicitly stated that they design their products for functionality. One reason for this could be that design for functionality is self-evident for the companies, and thus it was not mentioned separately. Design for longevity can also indirectly be seen as addressing design for functionality – why would a company have the interest to provide long-lasting, high-quality garments and accessories, if their aim is not to be used. One part of designing for functionality can be design for use, which is a direct translation from one interview. This company explicitly mentions that they want to create their products to be used and only purchased for need. This company strongly aims to educate the customers to purchase only products they need. Thus, this business model aiming to educate customers for more responsible consumption demonstrates how the different aspects of circularity in the fashion industry are linked, and how introducing them separately does not provide an accurate description of the industry.

The third aspect of the design is designing for circularity. This business model – where the product is designed both to last long and be easy to recycle – emerged in the interviews, but so far, its' practical significance is relatively non-existent. There are a few single products by different companies that have been designed for circularity, meaning that they are either fully made from one material or they have only yarn made from other material. The challenge in designing for circularity is the uncertainty of the technological capabilities and requirements for recycling textile waste. Thus, it is difficult for these companies to design for circularity, as they do not know what it would mean in practical terms for them. This barrier is introduced and discussed further in section 4.3.

Materials to last and fit with the brand

These Finnish fashion companies choose their materials based on what is long-lasting and high-quality but also based on what fits with their brand and purpose while taking into account the materials' sustainability. Based on the data, the key material decision is based on the quality of the material. The material needs to fit with the brand, and as all of the companies aim to create long-lasting products, the material needs to be of sufficient quality to ensure the long use of the product. The material decisions differ slightly among the companies due to differences in the brands and their focus. For example, natural fibres such as cotton and cashmere, are the main materials for companies producing lifestyle clothing for adults and in the premium segment, whereas companies focusing on activewear and children's clothing use more synthetic fibres. On the one hand, these companies acknowledge the concerns regarding their material decisions, such as the environmental challenges of cotton and the difficulties of recycling mixed materials. On the other hand, they claim that using other types of more sustainable or recycled materials would significantly reduce the quality of the material and thus shorten the use phase. Thus, the main decision regarding the material is the suitability with the brand and the intended use, and above all the longevity of the material.

"At the moment I don't see that natural fibres are suitable material for sports clothing, because the materials' characteristics don't feel nice. It can feel wet and if you think for example organic cotton, the water supplies are scarce in the world and growing cotton takes a lot of

water. So maybe some new material innovations could be suitable for sports, or that we can make a plastic circle. I feel that these are the material options for sports clothing."
– Company B

The second aspect of material decisions concerns the sustainability of the materials. What was interesting, both companies that describe themselves as sustainable and companies that do not strongly identify themselves as sustainable, described that the product's sustainability is an important factor when choosing a material. With the increasing awareness of sustainability and circular economy, it is evident that these issues are also taken into account in these companies. The current and potential sustainable materials that emerged across the companies can be divided into three categories: natural fibres, recycled materials and new innovative materials. Thus, the factor that differentiates the companies with their material decisions is more the fit for the brand and use, than whether the company is a so-called circular economy adopter.

Natural fibres come from nature, and examples of plant-based materials are cotton, while leather and wool are animal-based material. Natural fibres are seen as a more sustainable option compared to synthetic fibres, as most of the synthetic fibres are made from fossil fuels and their production is extremely energy-intensive. The case companies use a lot of cotton, especially organic cotton, which they view as a more sustainable option than the non-organic counterpart. Most of the companies have started to use organic cotton, and 'the customers have started to expect it' (Company E).

Regarding recycled materials, one of the companies uses purely recycled materials as the input for their products, but the other companies have also used recycled materials in their production. The proportion of recycled materials is still lower than that of natural fibres, but there is an upward trend. It is important to note that these recycled materials are leftover materials from other industries – thus they are outside the fashion industry loop. The Finnish company Pure Waste was often mentioned as a supplier of recycled materials. The companies share a positive attitude towards recycled materials and are continuously keeping their eyes open and exploring the options with recycled fabrics. However, the quality of the recycled materials is not yet at a level where it could replace the virgin materials. This barrier is discussed in detail in section 4.3.

The third category is currently less visible in the companies' products but was often brought up in the interviews – new innovative materials. Some of these innovations use waste material from textile and/or other industries and thus operate in the closed-loop system. Some innovations explore the options to use new virgin materials efficiently to create new sustainable materials. What both types of innovations have in common, is that they are developed in Finland and the case companies have a highly positive attitude towards these innovations. The companies seem to appreciate the positive hype that these innovations bring to the Finnish fashion industry and the case companies are almost impatiently waiting for the commercialising of these materials.

"We are also actively following the new fibre innovations… We follow these innovations with interest, and it would be good if new material can be made from pulp, paper waste or post-consumer textile waste." – Company E

The three material decisions present three different types of circular business models. Natural fibres, which are viewed as a high-quality and durable material choice, are materials outside the closed-loop, but with the right type of maintenance and repair, products made of natural fibres have the potential of a long life. In addition, products that contain 100% one material, such as cotton or cashmere, are easier to recycle after use. Yet, recycled materials represent a business model where the waste from other industries or post-consumer textile waste is explored within the loop. However, currently, the quality of recycled materials does not always reach the same level as virgin materials, thus potentially resulting in a shorter use phase. Finally, the innovative materials are becoming a trendy and an eagerly awaited alternative. Depending on the particular innovation, the innovations may present material flows both from outside the loop utilising more sustainable materials (such as pulp) or from within the loop from textile waste.

Efficient Use of Materials

Business decisions regarding the sustainability of production, such as choosing suppliers that appreciate human rights or have production sites in Europe, are viewed important for the case companies. However, production from the circular economy perspective has received less

focus, while an efficient production and use of materials are principles in the circular economy. These companies claim to use materials effectively, for example creating the garment pattern efficiently or producing smaller collections from unused leftover fabrics. However, the use of a company's own production waste and leftover materials is a relatively unadopted model currently. The reason behind this is that some of the companies are brand holders, meaning that they purchase the products from a supplier and thus do not have their own production. These companies do not accurately know how their suppliers handle the leftover materials and production waste. Some suppliers downcycle textile waste to automotive or chemical industries and at some places, the material is burnt for energy. Companies that have their own production have varying approaches to manage their textile waste. For one company, the use of the company's own production waste is an adopted business model, and the waste is used systematically as part of their design and production. In their accessories, they start the process by considering what type of materials they have and what can they create from those. Additionally, they use the leftover material from their production for smaller pieces in their accessories. This description is more of a unique case, as among the case companies more common is the irregular use of the leftover materials to make small products such as wallets, purses or cardholders.

"We have created some smaller leather products that use the leftover material from our own production. You can see those for example in these wallets – they have very small pieces and we aim for as close as zero-waste thinking as possible. Of course, a perfect production does not exist, but we try to do our best." – Company A

According to the findings, there is room for improvement for even more efficient use of materials in the production process. Companies with their own production can take the textile waste into account already when designing the garments, which can spur for new product innovations. Further, the Finnish fibre innovations introduced in the materials-section have the opportunity to significantly influence where the textile waste ends up, and if the post-consumer waste can be used to create new accessories and clothes in the future.

4.2.2. After the Finished Product

The circular business models after the finished product are less present among the case companies than the models introduced in the previous section. Lengthening the use phase by providing maintenance instructions and guidance is found among the companies. The following subsections introduce the business models are that present among the case companies and discuss the models that are currently less adopted. The following circular business models are introduced next: maintenance, reuse solutions and recycling.

Take-care guides to lengthen the use

Solutions to lengthen the use phase include providing take-care guides and maintenance instructions to the customers. Also, educating customers to take better care of their clothes and providing repair services fall into this category.

All of the case companies provide take-care guides and care instructions to their customers. Some of the companies share the instructions only at their website, while some companies give or send the instructions directly to the customer with each purchase. These maintenance instructions give both general advice on how to lengthen the life of the product (wash less, air out more etc.) and material-specific guidance on how to ensure the best possible maintenance for the specific material.

"We want to engage our customers more to our sustainability work. We want to help them to take care of their products. It is also a matter of perceived quality. When you maintain your product correctly, it stays good and you don't need to make a reclamation." – Company E

While aiming to engage the customers in the process more, the companies have also recognised that sharing the instructions is not enough. The customers of today are described as relatively unaware of how to take care of the products or how to repair them. The current take-make-dispose model is strongly present in the customers' lives. Company D has experienced this, and they shared that some customers view that if a product has a bit of pilling, it is unwearable. These companies feel it is also their responsibility to educate and support their customers

further to extend the lives of their products. Further, from the circular business models, the companies express it has been relatively easy to start providing maintenance instructions, as it does not require a lot of resources from the company. This can explain why all of the companies have care instructions, while the business models requiring higher resources and engagement from consumers are currently less adopted. For example, few of the companies describe how they already have or are planning to organise an event for their customers to teach how to maintain their products correctly. Maintenance products such as cashmere comb or crep protect sprays are also important when aiming for longer use. A few of these companies are increasingly exploring different types of products they can provide to their customers to further support the correct maintenance of the products. However, currently only two of these companies sell clothing care products for their consumers.

"We always give a note of how to take care of the product when a customer purchases something from us – air out more, don't wash so often. It is natural that the material may get some pilling, so you need to use the garment comb. That is what we do a lot and our customer service team answer often to the question of how to take care of the product." – Company D

Maintenance is helpful only up until a certain point, and even high-quality products may have defects or may need repair after some time. Repair services are identified as one of the key circular business models for companies to contribute to the longer use of the product. Currently, only one company provides a so-called repair service. They state that their products have a warranty for a lifetime and they always encourage the customer to bring the product back to the company to examine how they can help. This company could be described as unique, as they are the only one currently providing a repair service. Other companies describe that they have been considering repair services, but they have not yet adopted the model. Many of the companies view that a repair service would be a suitable business model for the company as it would fit well with the brand. However, they describe that adopting the model is not without challenges. These challenges are introduced in section 4.3, which discusses the barriers to adopt circular business models.

Reuse solutions slowly lifting their head

The two main business models to improve the reuse of clothing and aiming to give the product multiple lifecycles are clothing rental services and second-hand solutions. The case companies actively discussed these types of circular business models and especially how the significance of these models most likely will increase in the future. Still, these circular business models that encourage the products to have multiple lives with different users are currently almost absent among the companies. No company provides clothing rental services through their own channels or with a partner. Regarding second-hand solutions, one of the companies has a partnership with an independent second-hand store.

If these companies claim that they create their products to last and they increasingly focus on educating the customers to maintain the products correctly, why are the re-use solutions almost entirely lacking from their business models? Compared to care guides, re-use solutions, such as setting up a rental service or second-hand corner or platform, these solutions require more resources to implement and successfully run the daily operations. Thus, partnerships are expressed as a potential way to start providing re-use solutions. A partner can take care of the daily operations and bring the knowledge of either running a rental service or second-hand business. A partnership was viewed as a suitable model among both the smaller and the larger firms, which indicates that the company's resources are not the sole explanation as to why re-use solutions are currently less present in the industry.

The companies describe the models before the finished product feel more natural starting and development points. They express that clothing rental and especially second-hand solutions have high potential and that there is a possibility to be among the first ones to introduce these solutions. It could be described that these companies are waiting for someone to make the first move and show that these business models can be successful.

Recycling – time will show

The last stage in the circularity of a garment or an accessory is recycling. Recycling ideally takes place when the product has been fully worn out, and when it is not suitable anymore for the use that it was designed for. Business models related to recycling are currently absent among the case companies. None of these companies has a garment or accessory collection

system to which customers can bring their old products. Thus, we can state that based on this sample, there is a high potential to explore the opportunities with recycling. Recycling has an important role in closing the loop and encouraging the circularity of the material. If the life of the garment ends at disposing of it by burning it for energy, the need for new raw materials continues to exist.

The reason for the lack of recycling business models is not alone due to the case companies. Recycling requires a lot of cooperation among different actors from the customer to waste management companies and from sorters to operators to enable the material to start its cycle again. As recycling requires a new type of cooperation between many different actors, fashion companies need to be active and find their way to encourage cooperation and decide what is their role.

4.3. Identified Drivers and Barriers in Finnish Fashion Industry

The previous section introduced both the circular business models that can be found among the case companies, and the models that are currently less adopted in the Finnish fashion industry. This section aims to provide an understanding of the factors that have influenced and can influence the adoption of circular business models. Based on the data, nine broader themes of drivers and barriers emerge: 1) environment, 2) economic, 3) customer, 4) society, 5) regulations, 6) supply chain and technology, 7) product, 8) organisation and, 9) fashion industry itself. The following subsections introduce and discuss each of the themes in detail. It introduces how and why the drivers and/or barriers influence engaging in the circular economy in detail, as well as the factors influencing the adoption of specific circular business models, when applicable.

It can be noted that the themes are mostly in accordance with the findings in the existing literature and these findings are presented mostly based on the categorisation by Tura et al. (2019). However, while the broader themes overlap, the specific drivers and barriers are not identical. This is discussed in Section 5.2, where the theoretical framework is revised.

Environmental factors

The potential to reduce the environmental impact of the company's operations is identified as

a driver to adopt circular business models. The environmental benefits enhance the circular economy approach as a whole, as these companies acknowledge the environmental issues created by the fashion industry. Circular business models are seen as a way to reduce the demand for virgin materials. Thus, these companies are increasingly interested in both using recycled materials and finding ways to recycle textile waste to use them again in the fashion industry.

The companies also acknowledge how designing for longevity and supporting for longer use of the product can help to reduce the created environmental impact. However, they acknowledge that a lot of the emissions created during a product's lifecycle are created during the use as well. Hence, the companies have started to instruct their customers on how to take care of the product correctly. With improved product maintenance, product lives can be considerably extended, which in turn is identified as a key factor in reducing the environmental impact of the product.

	Observed drivers	Observed barriers
Environment	**Reduce the consumption of virgin materials** *"When you look at the big trends and the current consumption of virgin materials, it is clear that the consumption of virgin materials needs to decrease."* *(Company F)* **Lower carbon footprint with durable products** *"We design products that are both durable and visually last time. According to the Ellen MacArthur Foundation, if people double the use of their current garments, the GHG emissions would be 44% lower. So that is, we are not a fast fashion company and we create clothes that last."* *(Company E)* **Reducing emissions with improved maintenance** *"If you use a garment for 10 years, which is quite long today, then in fact 80% of the emissions are created during the use - so when washing, drying and ironing. You don't always need to wash the product, you can just air it outside. With wise maintenance, you can reduce the emissions created during the use."* *(Company F)*	N/A

Table 3: Observed environmental drivers and barriers

Economic factors

The financial aspects could be described as being integrated into all decisions regarding the business models. Thus, financial logic and a clear "business case" emerged as key aspects when considering circular business models. Hence, the business model's economic feasibility can be stated as a minimum requirement for adopting a circular business model. If other factors are strongly driving the adoption of the model but from the economic perspective the company does not find a solid business case, it is unlikely that the company adopts the circular business

model. While economic and financial benefits from circular business models were identified by the companies, financial resources and economic potential were described as a challenge. This concerns especially larger circular business models, such as rental services or second-hand business.

When the investment of the circular business model is relatively low, it is easier to adopt. This is the case with maintenance and care instructions, which require the company to decide first, for which materials to provide instructions, second to write the instructions and lastly to publish them online and/or create the physical instruction rubric. While putting the care instructions online requires input, the investment is mostly the time from employees. Thus, the additional investment to create own maintenance instructions appears to be low which can explain why all of the case companies are currently providing care instructions. The same applies to the expected income from this business model – the companies naturally do not expect higher sales or cost savings due to providing maintenance guides.

What is described to bring cost savings is the efficient use of materials in the production. While the cost savings can be described as a driver for the more efficient use of materials, in this case, it seems that the efficient use was already in place. This is because the efficiency mindset seems to be already present in the fashion industry. It does not reduce the importance of efficient use of materials during the production but this finding aims to demonstrate that the financial aspect has already previously been adopted – as opposed to the circular economy mindset. Another interesting finding is that no potential cost savings emerged from adopting a circular business model.

One reason why no potential cost savings were discussed with the circular business models is that the concern regarding the economic potential and the challenge of finding a successful business case were strongly present. This particularly emerged when discussing the renting services and second-hand business. While the companies showed interest in these new reuse solutions, a challenge of finding the right scope and implementation emerged. Should the service be online or in the store? If it is online, do we purchase the product from the customer, photograph it and then sell it online? If it is in our shop, where can we find the place to show and store the products? These questions indicate that while there is interest in new business models, figuring out all the big and small issues require time and resources. Besides, running the rental service or second-hand marketplace requires additional resources and it seemed to

be unclear and uncertain if the income for providing these services would cover the costs it creates. Hence, before these companies are ready to invest in the new circular business models, the business case needs to be figured out. The business model does not necessarily need to create high cashflows, but it certainly cannot bring only negative cashflow and reduce the company's value.

In small companies, the lack of resources, both financial and human, was described as a barrier for developing further circular business models. This is mainly due to the fact that with limited resources, a lot of time and money is allocated to the business as usual, such as marketing and sales. Thus, even with high interest and drive to develop and adopt circular business models, the resources have created a boundary to drive these models forward. What these companies identified as potentially helping them overcome this barrier, was growing their business – which, in turn, would potentially free some resources for further business development.

	Observed drivers	Observed barriers
Economic	**Low investments models more accessible (take care instructions, education campaigns)** *"Some things, such as providing the take care instructions, they don't need, or they aren't that huge investments. So that type of things can relatively easily be developed further."* (Company C) **Cost savings with efficient use of materials in the production** *"In our production when we own the fabric ourselves, of course, it is wise to use the material as efficiently as possible."* (Company F)	**Unclear business case and cashflow** *"The business case and scope [for second-hand or repair service] need to be clearly defined. Would the repair be paid or would we repair the product as a warranty? How long would the timeframe be? Also, it would require a lot of logistics and resources from our personnel... So let's say there is a lot to be sorted out and to find the functioning concept."* (Company F) **Limited resources at small firms** *"We have started from very small and it has created some limitations, because we have needed to work with the normal business, such as marketing and sales. We are only two people, so it has taken most of our time."* (Company B)

Table 4: Observed economic drivers and barriers

Customers

Customers have an integral part to play when it comes to adopting a circular business model. They bring the cashflow for the company: hence, the customer purchasing decisions are also linked to economic factors, which were introduced in the previous section. In addition, customers and their consumption habits strongly influence the expected operation of the fashion industry as a whole. This is discussed further in the subsection where the factors regarding the characteristics of the fashion industry are introduced. What this subsection focuses on is the increased awareness among customers, which drives the adoption of circular

business models in general. Further, the customers' low level of taking care of their garments has, in turn, prompted the rise of maintenance instructions. Customers who are not interested in sustainability or circular economy, as well as people's current consumption habits and expectations, restrain the adoption of circular business models.

A consensus among the case companies emerged that the customers today are more aware and demanding for sustainable products, which is one of the reasons why the interest in the circular economy has increased. Customers have a long list of requirements they are looking for in a product, from the production location to the material and to the brand values. The increased awareness of the fashion industry's social and environmental concerns has made the customers further consider where they purchase their products and what type of companies they want to support. The transition seems to have happened within the last few years, and the pace of change in demand for more sustainable products was described to be faster than the companies had expected. This can also be seen in the increased consumption of second-hand products. Almost all of the companies shared that they are aware of their products being actively exchanged in different second-hand markets and platforms. Thus, they acknowledge the demand for their products on the second-hand markets, which has driven them to seriously consider entering the second-hand market themselves. One of the case companies was once asked that as the second-hand market already exists for the brand, and the products are being exchanged with relatively good prices, why is the company not taking part in the business? While the question makes a good point, the existing market and the customer demand alone are not enough to drive the engagement in the second-hand business as there exist many other issues the company needs to consider. These issues were briefly introduced in the previous subsection, which discussed how the companies are considering how to find a suitable business case for them which is also economically wise.

A clear driver to create the maintenance instructions was the lack of knowledge of the consumers on how to take care of the products correctly. Many of the companies shared that they often receive questions from their customers regarding the correct maintenance of the products. Thus, it became almost self-evident for the companies to educate and provide more information to their customers to ensure a longer use for their products. While all of the companies either share the care instructions online or give a small guide to the customer at the moment of the purchase, some of the companies have also organised or planned to organise a workshop to teach correct maintenance. This is due to the observation which many of the

companies have made, that the customers do not have the skills to take care of or repair their products correctly. Thus, as the companies have designed the products to be long-lasting, they feel that by educating and supporting their customers to take good care of the product, the design mentality truly comes alive.

While customers strongly drive the transition towards more circular business models, they may also create some barriers for adopting a circular business model. The key customer-related barrier concerns current consumption habits and expectations. Customers are used to low prices, which is why one of the companies was concerned that if they use recycled materials which would cost double compared to virgin materials, would the customers understand it and be ready to pay more? While customers are more aware, prices are still a key factor in the purchasing decision. The same applies to the current practice of brand's having continuously changing collections. As customers have been taught to expect low prices and fast collection rotation, taking a step back and changing the customers' consumption habits appears to be a big challenge. While companies may have loyal customers, who value sustainable and circular solutions, if the companies aim for growth, a wider clientele is needed.

The analysis of the current consumption habits of consumers links well to the next observed barrier: the fact that not all customers are interested in sustainable or circular products. A company which has two main customer segments: young women between 25-34 and 50+ ladies describe that both of the customer groups are vital for the company, but their values are very different. The company raised a concern that if they make products or identify themselves as highly sustainable or circular, the older customer segment may shun the company. Hence, the company stated that they need to find a balance to create products that are suitable for both of the segments. Currently, the company is taking steps towards more circular activities, but they do not emphasise it in their communication.

Finally, the customers still make the final purchasing decision based on what is visually appealing to them. If a customer connects with a brand, shares the company's values and the price of the product is suitable for the customer, but the product is not visually attractive, it will most likely stay at the store. Thus, engaging in the circular economy and creating fashion based solely on circularity is not enough. It seems that the customers expect that all of the aspects from company's values to materials fit, while resonating with the product's appearance.

	Observed drivers	**Observed barriers**
Customers	**Increased awareness and demand** *"At the beginning, we needed to explain often what it means to be an ethical brand or what does a sustainable brand, from an ecological and environmental perspective means. These weren't clear at all four-five years ago, but now within the last years, people have talked much more about these. So now it starts to be easier." (Company B)*	**Existing shopping habits** *"Unfortunately the customers have now been taught and become used to such a low price level and continuously changing collections, so it is not an easy task to start moving away from that." (Company E)*
	Engaging in the second-hand markets *"We have noticed that our products have quite good demand in the second-hand market, at online stores and portals. And our products have relatively good prices and fast rotation there. So in that sense, our idea of designing for longevity works there and the products find new users." (Company E)*	**Not all customers are interested** *"We have both young adults and older ladies as customers and their values differ strongly. And to put things simply, I see it as a challenge if we create a collection that is too much something. Like too sustainable, or too youngish... Then this other customer group may not find anything to buy." (Company D)*
	Limited knowledge and skills regarding product maintenance *"People ask a lot why the product has gotten some knots or fluff and if the product is now useless. So they just need the guidance on how to maintain it... And if I think about my grandmother, she knew how to take care of products and repair them, but now people have lost those skills." (Company D)*	**With fashion items, the purchasing decision still strongly based on the appearance** *"Sustainability alone is not a reason to purchase a garment. Customers buy what they like visually, or what they consider as high quality, and these are their key criteria." (Company C)*

Table 5: Observed customer-related drivers and barriers

Society

The society also has an important role in influencing the adoption of circular business models. The impact of society might not be as direct as the impact of customers' purchasing decisions, but external pressure from NGOs strongly shape how the brands are perceived. For example, the Rank a Brand report published last year focused on the sustainability communication and the transparency of Finnish fashion brands. In the report, for example, the proportion of environmentally preferred material and if the company has a garment collection were disclosed. The debate of sustainability in the fashion industry has increased in the public discussion and this report also gained a lot of media attention. For the industry itself, the report brought the importance of transparency and sustainability communication to the table. Since the publishing of the report last spring (2019), it was expressed that a larger focus has been put on the communication regarding these issues. Also, as the proportion of environmentally preferred materials is disclosed in the report, it has encouraged for setting targets and hence, increased the consideration to use for example recycled materials. NGOs examining and evaluating the current state of sustainability among Finnish fashion companies have driven the companies to focus on their sustainability approach, which in turn has led to increased consideration regarding circular business models.

The previous paragraph explored the society as a whole, but a smaller group within the whole population can also be identified to support the transition to and implementation of circular business models: the community of small fashion firms. An example of this sort of community is a project by Business Finland, which brought together 40 small brands. This community was described as having a positive team spirit. Also, it was said to have unconsciously driven the companies to be better and there was a spirit of doing things together. This type of community of practice can drive the adoption of the different circular business models and a company that already has implemented circular activities can share best practices with the other members in the community.

	Observed drivers	Observed barriers
Society	**External pressure** *"I have to admit that the Rank a Brand report about Finnish fashion brand's sustainability communication, it brought us time pressure and draw our attention more to the communication... And let's say the time has changed faster than we maybe expected. " (Company E)* **Community among the small fashion actors** *"Smaller fashion players in Finland have a good community spirit... We have been able to change thoughts and maybe also unconsciously been able to help each other to develop for the better." (Company A)*	N/A

Table 6: Observed society-related drivers and barriers

Regulatory factors

Regulations regarding circularity, especially in the fashion industry, have almost been non-existent. However, this will change by 2025 as part of a new EU legislative package, which requires all EU member states to collect textiles separately and ensure they are not incinerated or landfilled. These new requirements, which Finland intends to fulfil already by 2023 have made the companies to pay attention to the recycling. The case companies describe that the regulation changes how the textiles are recycled, but the role of the companies in fulfilling the requirements is still unclear. As one company stated, it is unclear whether it is the companies who will collect the textiles or the municipalities. The regulation drives the adoption of circular business models regarding recycling, but at the time of the interviews, the distribution of responsibilities was still unclear. Thus, the companies were unable to describe further what type of business models and concrete actions could spur if the collection is done by the companies. However, this regulation changes the recycling of textiles and time will show how strongly it will drive the adoption of recycling business models. Furthermore, this EU

legislative package is one of the many still to come which will oblige the fashion industry to move towards more circular business.

	Observed drivers	Observed barriers
Regulations	**Separate collection of textiles in the new EU waste legislation** *"The separate collection of textiles becomes mandatory in the EU in 2025 and in Finland already by 2023. So we have been following how it will be implemented and if it influences us... And it depends if the collection is done by municipalities or companies." (Company F)*	N/A

Table 7: Observed regulatory drivers and barriers

Supply Chain and Technological factors

Many of the observed drivers and barriers concern supply chain and technology. This is natural as the fashion industry is highly connected and transformation towards the circular economy is impossible to achieve alone. The identified factors in this category concern the access to recycled materials, the current state of recycling technologies and logistics, new innovative materials, the importance of partnerships related to recycling and the reverse logistics with logistics in reuse solutions.

As described earlier, the number of companies using recycled materials is increasing. This is due to improved access to recycled materials. The companies describe that the amount of recycled material has increased drastically within the last few years. In addition, the minimum amounts needed to order have reduced and while the prices are still higher compared to virgin materials, the difference is smaller. This has clearly driven the use of recycled materials among the case companies. However, it is important to note that the recycled material is not yet coming from the textile industry, as the technologies to create new material from post-consumer textile waste is not yet at a commercialised level. This is a key factor that the companies identified as a barrier: the recycling technologies are not yet fully developed. The companies describe that while there already exist technological innovations, it will take more time to develop the technologies further. For example, technologies to separate fibre blends are under constant development, but the current state of recycling technologies is a barrier for the case companies to engage further in the recycling phase. This also creates a challenge when designing a product, as the companies do not know what the technical requirements for the products are to

successfully separate the fibres. The companies are optimistic that technology will develop further within the next few years, and they are eagerly waiting for these new solutions to be accessible for them as well.

The lack of reverse logistics for recycling is another barrier concerning recycling business models. According to the companies, there is currently no place where they could take their textile waste and where the waste would be utilised. As long as there is no good place to take the textile waste, the companies describe they have no resources to engage, for example, in the garment collection. However, as discussed with the regulatory drivers, the new EU legislation on textile waste collection can turn this barrier into a driver.

As noted, the interest in the recycled materials has increased. The same applies to new innovative materials, such as creating fibres from pulp or even from old newspapers. For example, Spinnova (creating fibre from pulp) and Infinited Fibre (creating material from textile waste) are Finnish companies. The case companies were not only eager to have these new materials commercialised, but they also described how these innovations bring new kind of excitement to the Finnish fashion industry. However, Finnish fashion brands are not the only ones who have become interested in these new fibres. Large global brands have also become curious about these companies. The case companies were concerned that once the innovative materials become commercialised, will there be material left from the large companies? Thus, while the positive attitude and development of the new material innovations can be identified as a driver to engage in more sustainable material decisions, in reality most of the innovations are not yet developed for commercialisation. Further, the demand for the fibres is enormous.

Taking a step further from materials and recycling, an important factor that can either strongly drive the adoption of circular business models or create a barrier, is partnerships. For these companies, suppliers play a vital role and the companies describe how finding suitable partners sharing the same values has been a key issue. Especially for younger companies, finding and establishing a partnership with the right supplier has been one of the main reasons they have been able to drive their business forward. The companies state that many suppliers have been open-minded and also interested in developing their own business to be more sustainable. While some of the case companies are smaller and their ability to change the industry alone is relatively low, one of the companies shared an impressive story of how partners truly have a significant role in contributing to the transition towards a circular economy:

"This company supplies our neck labels and clothing label cards. When we started, they did not have any sustainable collection, or they had some single labels but nothing more. We asked if we could get a label from recycled polyester because we would prefer purchasing a label made from recycled material. From our initiative, they started to develop this type of label. Now, this supplier visited us and shared that because of our request, they have today a whole sustainable collection. They realised that this is the future, that you need to have a sustainable collection. And now they have everything from organic materials to labels made from many different recycled materials. And they also told us that Zara had seen our neck label made from recycled polyester and gotten excited about it and ordered labels from the same material."

This story illustrates how open-minded partners have a role in supporting and enabling these companies to develop their business further and towards their vision. The same applies to partners who enable these companies to engage in reuse solutions. As the human or physical resources, such as storage space, are limited in most of the companies, with right partners these companies may be able to provide rental or repair services, or second-hand solutions. While some of the companies described that they have been considering maintaining, for example, the second-hand business themselves, the role of partners is nevertheless evident. If a company had its second-hand store, one of the most important questions would be how to maintain the logistics. As some of the companies have warehouses outside the capital region, the question of where to store the products emerged. How and from where would we send the products, and if there was a second-hand corner in our store, where in the store could we store them? Partners were identified as the party that would be able to answer these questions and share their knowledge on how to run the rental or second-hand business. In addition, the day-to-day operations would also be the partner's responsibility. Thus, partners can be seen as drivers for adopting especially reuse solutions, as it requires lower resources from the brand itself. Adopting a circular business model through a partner can be viewed as a way to try the business model with a lower risk, hence being an appealing option for the companies.

Observed drivers	Observed barriers
Improved access to recycled materials *"The access to recycled materials has improved significantly, and now the minimums are reasonable and prices slightly higher, but not too much. So they have become possible to use also by smaller companies."* (Company E)	**Recycling technologies to separate fibre blends** *"Recycling is maybe a bit of a challenge because we use elastane in our tricot products and currently recycling it is difficult. But as I have understood, new solutions to separate it from cotton are constantly being developed. But I think it will still take a few years before we see those in practice."* (Company C)
Finnish material innovations *"We have seen that the material decisions have a significant impact, and if some very sustainable materials can be developed, then it is a huge thing for the whole industry... And I feel there is quite a lot happening in Finland in this area, which is also nice for the industry because we don't have that much production here anymore."* (Company F)	**High demand for innovative materials** *"We follow closely the fibre innovation companies, but their materials have a huge demand and large global players are also investors in those. So let's see when the material becomes commercially available and if anything is left after these big companies."* (Company E)
Finding and establishing suitable partnerships *"When we started, the key was to find a manufacturer of good quality who accepts to take all of this textile waste [which is the material for our products]... Amazingly, we have found this manufacturer and they are also very excited and into this. They also want to continuously develop their own way of working and be more resource-efficient. So this is a two-way learning process for us."* (Company A)	**No reverse logistics for recycling** *"There currently is no model that companies supply the textile waste somewhere and they would know that the material is utilised instead of incinerating. So there are no such models, only pilot projects."* (Company F) **Challenges with logistics for second-hand** *"These always require some space, and if we had it at the store, well our backroom has rather limited space. And if it was online, it would create logistical costs. So all these should be considered."* (Company D)

(Left-margin label for the row: *Supply chain & technology*)

Table 8: Observed supply chain and technological drivers and barriers

Product

The concrete output of the production in the fashion industry is the product – the garment or accessory. Most of the case companies described it feels more natural to start adopting the circular business models before the product is finished. They state that it is easier for them to influence the decisions regarding the design and material than adopting business models that require customer engagement as well. The ease of influencing the decisions at the very beginning of the product's lifecycle can be identified as a driver to adopt the circular business models that take place at the early stage of the circularity loop. For example, the companies describe that changing the material is a decision that is easy and quick for them to make. Thus, many of them have changed to organic fibres and tried recycled materials. However, a key observed barrier takes place at the material level. Almost all of the case companies described how currently the quality of recycled material is not at the same level as virgin materials. As the companies design for longevity, using recycled materials that have a shorter life, has made many companies to consider if they can use recycled materials as it often contradicts their vision for longevity. The tradeoff between recycled or other environmentally friendly materials and durability was evident in almost all of the discussions, and it is a challenge with which

these companies are truly struggling. How most of the companies are currently dealing with this challenge is by using mostly organic virgin fibres, and eagerly following the fibre innovations and optimistically expecting these innovations to bring a suitable solution.

A product-related driver on the customer-side can also be identified; the repair service. As the companies create products for long use, they are interested in maintaining the high quality of the product. The company that produces their accessories from waste, states that they want to take care of the repair themselves because the structure of the products is very unique, and by repairing the products themselves they can guarantee the level of quality remains the same. This was also brought up by other companies who were considering the repair service. A clear driver to adopt it is to be able to guarantee the quality of the repair-service and hence allowing the product to stay in use for a long time and maybe even be reused.

	Observed drivers	Observed barriers
Product	**Relatively easy to make changes with own product-related decisions** *"These [material] decisions are relatively easy and fast to make, and they have the biggest impact we can create."* (Company E) **Protecting the product quality with own repair service** *"We encourage the customer to bring the product back to us because our materials and products have quite unique structures... And that's why we want to send the product back to the person who from the start made it."* (Company A)	**Challenge to create high-quality products from recycled materials** *"Especially with recycling natural fibres, the fibre length shortens and then the quality reduces. So you may not necessarily be able to create a new garment from that material, and even if you could, the garment won't be as good and it doesn't bear the reuse and maintenance."* (Company E) **Trade-off: Sustainable material vs. longevity** *"We are searching for the balance between sustainable production process and longevity and how do we weight these in our decisions. Because we know cotton has negative effects, but it is durable."* (Company F)

Table 9: Observed product-related drivers and barriers

Organisational factors

The organisational factors emerged among the case companies to be strong drivers towards circular business models. Internal motivation, as well as the company's characteristics and existing operations, clearly drive and enable easier adoption of circular business models. However, these internal factors may also act as barriers towards circular economy particularly in the reuse phase.

A key aspect that emerged across the companies is the high motivation of the companies' employees. Most of the employees are described as environmentally conscious and they are

internally creating pressure for the company to be more sustainable. The employees are described to act based on their values also at their tasks. What became evident between the younger and more mature firms, is that all of the three younger firms were established due to the founder's personal drive to create a sustainable and responsible brand. One of the founder's described that she was struggling to find fitting sports clothes that are made sustainably and hence decided to establish her own company creating sustainable and durable sports clothing. In the younger firms, the internal motivation is strongly present and as the founders still are active in the companies and their ideology and motivation strongly impact the decisions. Thus, as noted previously, the younger case companies have been built on the concept of sustainability, while the more mature ones have been engaging in sustainability increasingly over time. What is clear across the companies, is that the internal drive exists, and it encourages the companies to explore further the possibilities of a circular economy.

In addition to the internal motivation of the employees, the organisational characteristics and current operations help the transition towards circular business models. The companies assume that smaller size and a smaller number of product categories help the adoption of circular business models. If a company has many different types of products, successfully driving the implementation of circular business models could be more challenging. This is supported by the statements from companies that operate internationally. They describe how especially deciding the scope for second-hand solutions is more challenging, as they need to decide if the business model is adopted globally or locally.

While the organisational characteristics may act either as a driver or a barrier for adopting circular business models, the fit with existing operations and brand emerges as a clear driver among the companies. As noted previously, the companies design for longevity, and thus they describe how different circular business models fit well with their brand and ideology. A good fit with the brand was often stated as a key criterion when considering what kind of business model to adopt. Besides, as the companies design durable products and claim to be the opposite of fast fashion, many principles of circular business models could be easily adopted by the companies. Thus, these companies feel that their brands and operations are relatively prepared for further adoption of circular business models.

However, while the companies claim to find circular economy fitting with their brand, a small doubt emerged towards the business models at the end of the circle. These circular business

models include second-hand solutions, repair service and recycling. One company described that adopting business models at the end of the circle requires a new kind of mindset. Also, they described that while there currently are not many reuse or recycling business models, there are no models that could be benchmarked. While it is evident that it is in the companies' interest to explore the opportunities and business cases at the end of the circle, it seems the companies are slightly struggling to find the mindset to engage further in these business models. Once one company in Finland implements a reuse business model, it may happen that within a short period, more companies adopt these models as well.

	Observed drivers	Observed barriers
Organisation	**Employees' strong motivation** *"We have a lot of employees who are environmentally and sustainability-conscious and they have an internal motivation to do things responsibly. (Company F)* **Founder's own motivation at small firms** *"Our founder had long been at the industry, and she got frustrated that she didn't know where the products were made, who made them and what kind of environmental influence they had... That ended there and she decided that the only way how she can continue as a designer and keep creating something new, is that we use something that is already existing." (Company A)* **Organisational characteristics (size, maturity)** *"At our company, this [adopting circular business models] is much easier than in companies having many different brands and price categories. So because we are smaller, it is of course much easier." (Company D)* **Fit with existing operations and brand** *"As our design is the exact opposite to fast fashion, many of these models fit with our brand and could be relatively easy to adopt at least in some manner." (Company D)*	**Organisational characteristics (size, maturity, geographic presence)** *"We are still a relatively young company and the current life cycle of our products is still at the beginning. And because we think that our products are used for many years, even for decades, so the products are still very young. I feel we need to grow a bit more that our products truly have demand at the second-hand markets." (Company A)* **Reuse innovations require a new kind of mindset** *"Thinking that end of the circle, it in a way requires new kind of thinking. And because currently there aren't many prepared business models [to benchmark], so in that sense, it can also be more challenging." (Company C)*

Table 10: Observed organisational drivers and barriers

Fashion industry characteristics

The final category reflects the special characteristics of the fashion industry that emerged as challenges in adopting circular business models. These two findings, seasonality and the long time horizon between the design and sales are highly fashion context-specific. These two characteristics were not only described as challenges when adopting a circular business model but also as general issues for operating in the fashion industry.

The seasonal and cyclical characteristics refer to the two seasons which dominate the fashion industry: spring/summer and fall/winter. The weather differences between the two seasons

alone require different types of clothing, but people have also been taught to expect different clothes for different seasons. This has led to a situation where companies are continuously creating new collections. This was discussed already in Customer factors, but the difference with this barrier is that if a company adopts a new circular business model, such as a second-hand corner, it is almost by default expected to provide varying collections between the seasons. As one company described, the challenge with adopting a second-hand business is that people are still seeking products suiting the season and at a second-hand, the supply and demand may not match. This company described that because in the end it still is a fashion store, you are expected to have current products for the season with the right colours and sizes. This type of seasonal thinking is a natural characteristic of the fashion industry, but it creates a barrier especially in engaging in the second-hand business.

Another characteristic that emerged concerns the long time horizon between the time when the product is designed and the moment it is sold to the customer. At the time of writing (spring 2020), the companies were already planning the collections for fall 2021 and winter 2022. This illustrates how the decisions at the beginning of the product's lifecycle are made a long time before the product ends up in the customer's wardrobe, let alone when the reuse solutions become relevant to the customer. As the material decisions are made a lot in advance, for example, the amount of material from post-consumer textile waste may not match with the supply of the material and demand from the company. Due to the long time horizon, the collections we currently find at the store reflect the decisions the companies have made already more than a year ago.

	Observed drivers	Observed barriers
Fashion Industry	N/A	**Cyclic and seasonal industry** *"This fashion industry, in general, is quite challenging because it is so cyclic, new collections are continuously made and R&D is relatively expensive." (Company C)* **Long time horizon between the design and actual sales moment** *"For a company like us who operates in the pre-sale system where we are currently selling the collection for next fall and winter... So necessarily these recycled materials such as materials from post-consumer waste, the amounts don't always match with our needs, which is a challenge." (Company E)*

Table 11: Observed fashion industry-related drivers and barriers

4.4. Conclusion of Findings

The previous sections have introduced the findings from the study conducted on the six case companies and aimed to find answers to the two research questions, which are as follows:

Q1. What type of circular business models can be found in the Finnish fashion industry, and what not?

Q2. What are the drivers and barriers for adopting circular business models in the Finnish fashion industry?

The first part of the findings aimed to answer the first research question. The key findings were that all of the companies design for longevity. Similarly, all of the companies provide their customers with some type of care instructions to support the correct maintenance of the products. Interestingly, there were no major difference with the adopted circular business models regarding if the company is communicating to engage in the circular economy or not. One of the companies can be identified to engage further in the circular economy, as this company only uses waste as an input for their products. For other companies, the level of engagement in the circular economy today is at the same level. One reason why there are no greater differences with the companies and their approach to the circular economy can be that the case companies represent more aware and forward-looking companies than what was expected during the sampling. Additionally, the entire Finnish fashion industry may be relatively forward-looking in terms of sustainability and circular economy, as there are no fast-fashion companies and hence finding truly different companies was not possible. The third option for relatively homogenous findings is that during the interviews, positive answers regarding circular economy were emphasized due to social desirability bias. These considerations are discussed further in section 6.3, when introducing the limitations of the study.

Regarding the business models before the finished product, these were generally described as easier to adopt. This can be seen from the observation that all of the companies either continuously use or have tried recycled materials, but second-hand, repair and recycling solutions were less present among the companies. While the companies share an interest in

engaging in reuse solutions, they express that finding a successful business case for these models is more challenging. This indicates that while there is interest, the business models that require further engagement from the customers' side are still more unfamiliar. Further, it can be noted that circular business models that are for smaller scale and require relatively low investment from the company are more adopted among the case companies. An example is the maintenance instructions, which all of the companies are currently providing to their customer. In comparison, only one company currently provides repair services to their customer, while both of the two business models aim to lengthen the use of the product.

For the second research question, nine themes for influencing the adoption of circular business models were identified: 1) environment, 2) economic, 3) customer, 4) society, 5) regulatory, 6) supply chain and technology, 7) product, 8) organisational and, 9) fashion industry itself. Of the categories, factors related to environment, customer, society, organisation and fashion industry have an important influence, but they could more be viewed as background factors. The increased customer awareness and their demand for more sustainable products and operations have influenced the companies and acted as a driver towards a more circular business. Additionally, society has created external pressure for the companies to focus more on transparency and communication of their operations. While customers and society create external pressure for the companies, also the internal pressure and employees' motivation act as drivers. The organisations described that their employees have a strong internal motivation to develop their operations and explore the opportunities of a circular economy.

However, four factors were identified to influence more strongly the adoption of circular business models. If there are regulations for the fashion industry and circular economy, then their adoption is mandatory. Thus, regulations can be viewed as a key driver to circular business models, when the law obliges the company to engage in the circular economy. Currently, the companies are waiting to see how the new EU regulation regarding the textile waste collection will be carried out in Finland. If there are no regulations, then the economic factors can be described to be the minimum threshold. If the drivers from other categories are strong, but the company does not have additional resources or the circular business model would only bring negative cashflows and reduce the value of the company, the model will not be adopted. Thus, the circular business model needs to have some type of solid business case for it to be adopted.

Supply chain and technological factors are important in influencing if it generally is applicable to engage in the circular economy and adopt circular business models. The current technological capabilities of recycled material and recycling textile waste emerged as barriers. The companies are interested in using recycled materials, but due to their lower quality, the companies describe they are facing a tradeoff with the product quality when using recycled materials instead of virgin materials. Also, as there apparently is no place for the companies to take textile waste where it would be further utilised, they view that the opportunities for recycling are highly limited. Thus, the companies are keenly waiting to see how the new technological innovations develop and when the innovations are going to be available for wider audiences.

Regarding the drivers and barriers, it can be stated that many factors are influencing the adoption of circular business models and some of the factors have a stronger influence than others. Some of the factors are almost only dependent on the company, while others require a higher level of cooperation between many actors. Table 12 summarises the drivers and barriers.

To conclude this section, it can be noted that while many of the circular business models have either already been adopted or have been considered, a full transformation into a circular economy has not happened yet. The companies are truly aiming for more sustainable and circular operations, but the circular economy mindset is still some steps away. From the case companies, it could be identified that currently only one of them is truly engaging in the circular economy and doing its business according to the circular economy principles. This company starts the creation of a product by asking: What recycled materials do we have available, and what can we create from those? The aim of this conclusion and statement is not to underrate the actions taken by the companies, but to bring up that the practice is more towards adopting circular and sustainable business models than to transform the business into a fully circular model. The companies do not engage in the activities to greenwash, as they truly have integrated sustainability into their business strategies. However, sustainable business models are not the same as circular business models, and this can be seen in the industry. While the aspiration for many companies is to move towards more sustainable business, it does not necessarily drive the transformation into a fully circular economy. If the companies want to further engage in the circular economy, they need the courage to start the process from exploring the opportunities that the materials bring.

Category	Driver	Barrier
Environment	Reduce the consumption of virgin materials Lower carbon footprint with durable products Reducing emissions with improved maintenance	
Economic	Business models with lower investments more accessible Cost savings with efficient use of materials	Unclear business case and cashflow Limited resources in small firms
Customer	Increased customer awareness and demand Engaging in the second-hand markets Limited knowledge and skills regarding product maintenance	Existing shopping habits Not all customers are interested With fashion items, the purchasing decision still strongly based on the appearance
Society	External pressure Community among the small fashion actors	
Regulatory	Separate collection of textiles in the new EU waste legislation	
Supply Chain & Technology	Improved access to recycled materials Finnish material innovations Finding and establishing suitable partnerships	Recycling technologies to separate fibre blends High demand for innovative materials No reverse logistics for recycling Challenges with logistics for second-hand
Product	Relatively easy to make changes with own product-related decisions Protecting the product quality with own repair service	Challenge to create high-quality products from recycled materials Trade-off: Sustainable material vs. longevity
Organisational	Employees' strong motivation Founder's own motivation at small firms Organisational characteristics (size, maturity) Fit with existing operations and brand	Organisational characteristics (size, maturity, geographic presence) Reuse innovations require a new kind of mindset
Fashion Industry		Cyclic and seasonal industry Long time horizon between the design and actual sales moment

Table 12: Summary of the observed drivers and barriers

5. Discussion on the Findings

The previous section has introduced the findings from this research. However, they should be reflected in the light of previous studies as well. Thus, this section discusses the findings from the six case companies by comparing the findings to the previous studies. This section first discusses the identified circular business models, while the latter part focuses on the observed drivers and barriers for adopting circular business models. The framework created in section 2.4, is revised in this section to consider if it is applicable in this context and supported by the findings.

5.1. Discussion of the Circular Business Models

Three categories for circular business models have been identified in the previous literature: 1) substituting primary material input with secondary production, 2) extending the useful life of products and parts, and 3) closing material loops and recycling (Nussholz, 2017). The study from Nussholz combines prior studies regarding circular business models to create the categories and it is not based on a specific industry. The first category identified by Nussholz (2017) excludes designing the product or service, which Fontell and Heikkilä (2017) identify as a key goal in the fashion industry. These case companies have adopted circular business models related to design, substituting primary material with recycled material and aiming for efficiency in the production. Thus, these identified circular business models do not fit with the category "substituting primary material input with secondary production" as the business models that can be adopted before the finished product are wider than only decisions regarding the materials. The study by Fontell and Heikkilä (2017) focuses on the circular business models in the fashion industry, but they mostly focus on the business models that take place after the product is created. However, according to this study, there are also other circular business models at the beginning of the loop found in the fashion industry. This study uses the wording 'circular business models before the finished product' when referring to business models at the beginning of the loop. Three types of business decisions need to be made before a product is created and these concern design, materials and production. The case companies describe that while using recycled material fits with the idea of the circular economy, equally using durable virgin materials and monomaterials support the transition towards the circular economy. They describe that many virgin materials are durable and thus enable the product to be used for a long time. Additionally, monomaterials are easier to recycle, hence fitting the idea of a circular economy.

The second category identified by Nussholz (2017) is extending the useful life of products and parts. This is supported by the findings from the case companies, as they design for longevity and are increasingly exploring how they can support the customer for using the product longer. Business models that belong to this category are product-service-systems, classic long-life (high-quality product, maintenance and repair), resell and sharing platforms (Nussholz, 2017). While these business models present circular business models in general and are not related to the fashion industry, clothing rental or restyle services are examples of PSS in the fashion industry. However, currently, none of the case companies has engaged in these types of PSS business models. Regarding the classic-long life model, it implies that the product is high-quality and aimed to last for a long time (Bocken et al., 2016; Moreno et al., 2016). As all of the companies produce long-lasting and durable products, it can be stated that all of them engage in classic-long life models. With high-quality garments and accessories last longer in the use, and with repair and maintenance, the lifetime can be extended further. Concerning circular business models in the fashion industry, Fontell and Heikkilä (2017) describe in more detail how "repair and maintenance" and "re-using as the product" are business models that aim to lengthen the use of the product in its original format. Both types of circular business models can be found among the case companies, but currently, the focus is on providing maintenance instructions. Among the case companies, only one is engaging in the second-hand business through a partnership. As the study from Fontell and Heikkilä (2017) and reports from Ellen MacArthur Foundation (see e.g. 2017) mostly describe what type of circular business models can be identified in general in the fashion industry, they do not describe if some circular business models are more adopted than others. However, Fontell and Heikkilä (2017) make a statement that generally transiting from a linear economy to a circular economy needs a new kind of mindset and increased engagement from customers. The findings support these, as we can identify that design for longevity and maintenance instructions are adopted by all of the companies and these are described as easier business models to adopt mostly due to the lower financial investment. On the other hand, reuse solutions such as rental and repair services and second-hand business are almost nonexistent currently, and they are business models requiring further commitment from consumers side.

The same implies to recycling, which refers to the third category identified by Nussholz (2017). In this phase, the material is recovered to be used in a new format and extending the material value (Bocken et al., 2016; Lacy et al., 2014). The recycling business models are also described by Fontell and Heikkilä (2017) who identify two opportunities in this space: 1) reusing as

material in which the material is downcycled to be used as a lower application, and 2) recycling-related activities and business models for post-consumer textiles. According to the case companies, many of their suppliers downcycle their textile waste to be used in other lower-value industries. However, the case companies shared the challenge that there currently are not many places to which they can take their textile waste and where the textile waste could be used as material. The same implies to the post-consumer textile waste. As the technologies are not yet fully developed, the companies state that they do not have the resources to take care of the textile waste from their customers. This is especially because both the recycling as material and technologies to recycle post-consumer waste are not yet commercially available. This is an interesting comparison between the findings and existing literature. While the previous publications highly encourage for recycling the post-consumer waste to material and to be further used in the fashion industry, little emphasis is given to the current state of recycling technology. A study by Sandvik and Stubbs (2019) studied textile-to-textile recycling and state that while there is developed technology, it may not be ready for scalability. However, they do not go deeper with the topic. Based on this research, the companies share the desire to increase the recycling of textiles, but currently the technology strongly has created a challenge to adopt the recycling business models.

To conclude this discussion of circular business models, while there are some prior categorisations and descriptions of the models, they are only partly supported by these findings. According to these findings, the number of circular business models in the fashion industry is larger than described in previous studies. Additionally, not all circular business models are adopted equally. While the previous studies have for example identified recycling as a key circular business model in the fashion industry, currently successfully engaging in it does not seem possible. These findings create a good space for further research, which are discussed further in section 6.3.

5.2. Discussion of the Drivers and Barriers

The existing literature has studied circular business models both generally (see e.g. Tura et al., 2019; Ranta et al., 2018) and in the fashion context (see e.g. Stål and Corvellec, 2018; Sandvik and Stubbs, 2019). Some of these studies have explicitly aimed at understanding what influences the adoption of circular business models, while others have stated these factors more as part of their findings. Based on the drivers and barriers and circular business models

identified in the literature, a framework was created in Section 2.4. Now as the findings of this research have been introduced, the framework is revised and considered if the findings of this research support the framework (see Figure 6).
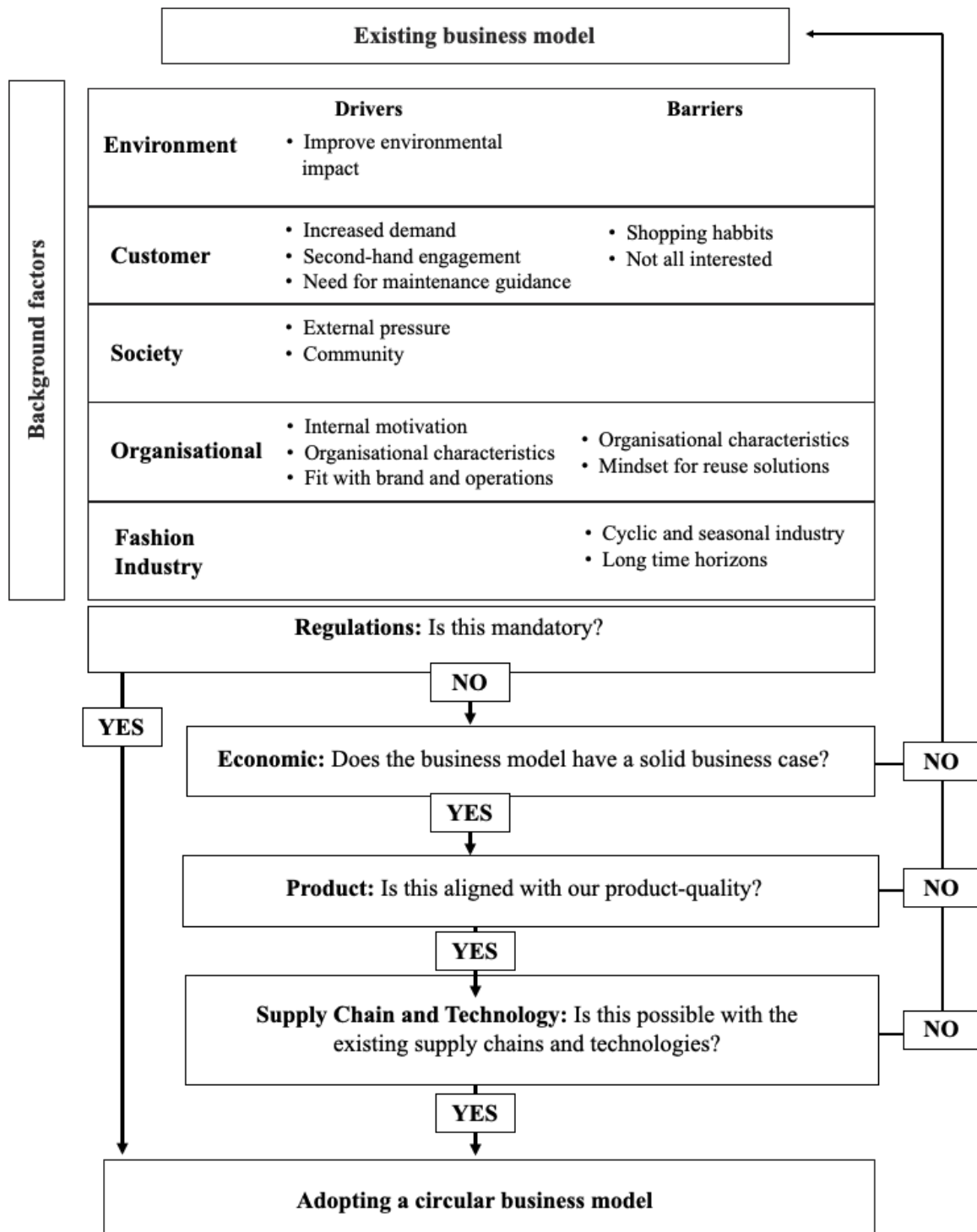

Figure 6: Revised version: Framework of drivers and barriers for adopting a circular business model

As the textile industry currently copes with many environmental concerns, circular business models have been identified as a potential solution to the global textile waste problem and a way to replace the need for some virgin materials (Fontell and Heikkilä, 2017). This is also identified in the study by Tura et al. (2019), whose first circular business model category is the environment, and the potential to reduce environmental impact is described as a driver to adopt circular business models. The findings of this study support this, as the companies state that especially aiming to lengthen the use phase of garments and accessories is a way to reduce the carbon footprint. Additionally, recycled materials can help to reduce the reliance on virgin materials. Thus, the first category in the framework is the environment. Further, customers, society and organisational factors were included in the categorisation by Tura et al. (2019). These themes also emerged in the findings, including both drivers and barriers to towards circular economy. Increased awareness of both customers and employees were identified as drivers to adopt circular business models, and factors for the companies to aim to develop their business towards more sustainable operations. Interestingly, this research did not find improved brand image and lack of employees' knowledge or skills as factors to influence the engagement in the circular business models.

Regarding the existing shopping habits is clearly a fashion industry-specific barrier, as the companies share how the customers are used to low prices and continuously changing collections. Thus, this research identifies the fashion industry and its two fundamental characteristics as barriers: cyclic and seasonal practice and the long time horizon. The idea of providing varying products for different seasons is naturally linked to customers as well and their demand, but the change in weather between the seasons also drive the need to have varying collections for example between summer and winter. This type of changing need between seasons was not described in the study by Tura et al. (2019) nor in other studies having a focus on the fashion industry. Long time horizon may be present in other industries as well, but this was not either brought up in previous studies.

The five categories, environment, customer, society, organisation and fashion industry, can be viewed as factors either driving or preventing the company to adopt a circular business model. These categories could be described to be the factors that influence in the background the adoption, and they have a significant influence on the decisions, but four categories emerged as stronger factors influencing if the business model is adopted: regulations, economic, product, and supply chain and technology.

Regulations was identified by Tura et al. (2019) in their institutional-category. The case companies describe that the new EU textile waste collection acts as a driver to engage further in the textile collection and recycling. In the previous literature, the complexity and difference in the regulations between countries has been described as a key barrier by Karell (2018). The case companies did not raise concerns regarding complex regulations, and thus regulations are not identified as a barrier in this research. Same implies to policymakers and government support, as none of the case companies described anything related to the government institutions as drivers or barriers. While the current government of Finland strongly encourages transition towards carbon neutrality and circular economy (Valtioneuvosto, 2019), it may be that these words or actions are not yet influencing the companies. Another possibility can be that other factors have a stronger or more proximate influence, and thus the role of government was not brought up by the companies. In the revised framework, regulations have a clear role. If the law concerns the circular economy, the company is obliged to adopt it regardless of the economic, product-related and supply chain and technological factors. However, if the law is not mandatory or it does not concern the company, and the company has drivers from the previous categories, it may move to consider the economic factors.

A key question that emerged among the case companies was the concern of finding a clear and profitable business case. Thus, the second key question in the revised framework concerns the economic factors of adopting circular business models. This is also identified in the previous literature, where circular business models are both viewed as ways to improve efficiency and bring cashflows, and as high investments with uncertain cashflows and potential to cannibalise own business (EMF, 2017; Linder and Williander, 2017). The same concerns were described by the companies, who clearly stated that finding a suitable business case, deciding the scope and figuring out all large and small economic decisions is vital but challenging. Circular business models were modestly viewed as a way to bring cost savings in production or create new cashflows. Thus, the companies stated that especially if the investment is high, the business case and financial requirements need to be clear. If the circular business model only brought negative cashflow, then the company would not adopt it and hence would continue with the existing business model.

If the company has found a clear business model, such as deciding to use recycled materials and is convinced it is economically a good investment, then a question regarding the product

emerges. As the case companies design for longevity, the products need to be durable and fit the company's quality and brand. The existing literature has not approached the adoption of circular business models from the product perspective and none of the articles addressed how the products and the quality are influenced by circularity. However, from the case companies it became evident that in the fashion industry where the concrete product is the output, the material is one key issue in influencing the quality. Thus, if the quality of the recycled materials does not meet the requirements of the company and its customers, engaging in the circular economy may not be possible. According to the case companies, they have needed to make tradeoffs between sustainable materials and longevity of the materials. It can be said that for these companies, the current quality of the recycled materials can be a barrier to adopt a circular business model.

The last question that the company needs to answer concerns if adopting the circular business model is feasible taking into account the existing supply chain, logistics and technology. Supply chain and technology were also categorisations by Tura et al. (2019). However, in their research, these two factors were separate, but in the findings of this research they are introduced jointly. In the previous literature, the complexity of the supply chains in the fashion industry is described as a barrier to the circular economy (Kozlowski et al., 2012), but this was not brought up by the companies. They do share they have many suppliers and thus do not have a final word on the decisions the suppliers make, but jointly a positive collaboration between the companies and their partners emerged. The reason why this research combines supply chain and technology is due to the case that in a circular economy and especially in the fashion industry, the companies need to collaborate to succeed in circularity. As noted in the previous paragraphs, the companies are facing challenges with the quality of recycled material, which comes from the material suppliers. As technology, especially for post-consumer textile waste, is not yet fully developed, the companies cannot supply this material. Thus, in the fashion industry, the technological state of material development can be viewed to be linked to the supply chain. The research and development are described to be very expensive in the fashion industry, and none of the case companies is developing their recycled materials in-house. The same applies to reverse logistics with recycling textile waste. While there are some pilot projects in place, the companies describe there are no places where they could take their textile waste for utilisation or create new material from the waste. This implies that the challenge with technology is also in place in the reverse supply chain. This supports the findings by Sandvik and Stubbs (2019) who studied textiles-to-textiles recycling found that while there is developed

technology, it may not be ready for scalability. This is evident in this study, as the companies share strong support for new material innovations but are concerned when they will be commercially available.

If the company has the background factors driving the adoption of the circular business model and the model is financially applicable, meets the quality requirements and it is supported by the existing supply chain and technology, the company should according to the framework adopt a circular business model.

To conclude this discussion, it can be stated that the findings of this study support partly the findings in the previous studies. While all of the categories by Tura et al. (2019) were identified in this research, the specific drivers and barriers in some cases were varying. However, this was also noted by Tura et al. (2019) as they state that the impact is highly depending on the context. Additionally, this research found two more categories influencing the adoption of circular business models in the fashion industry: product-related factors and characteristics of the fashion industry.

6. Conclusion

This section concludes by summarising the main findings and the theoretical contribution of this research. Additionally, it provides managerial implications. At the end of this section the limitations of this research and areas for future research are introduced.

6.1. Main findings and theoretical contribution

This study identified that all of the case companies have adopted some circular business models. The circular business models are identified in two categories: 1) circular business models before the finished product and 2) circular business models after the finished product. One of the key findings of this research is that while the aim was to include companies that are at different levels of engagement in the circular economy, based on the sample there are almost no differences between the companies. Only one company could be described as further engaged in the circular economy, and this company uses only waste as a material for their products. Other five companies have adopted some circular business models but could develop their circular business models further. Hence, these Finnish fashion companies can be described to be relatively forward-looking with their circular economy initiatives, but a true transformation towards full circularity in the industry is not yet happening.

Based on the findings the companies have more adopted business models at the beginning of the loop. All of the companies designing for longevity, while in the material decisions the quality of the fibre was more important than if the material is recycled or not. Regarding the production, while there are some implications of using own leftover material, this is not yet fully adopted by the companies or their suppliers. These circular business models add to the existing studies of circular business models in particular in the fashion context, which have mostly focused on the design, reuse and recycling business models. Regarding the circular business models after the finished product, these are currently less present among the case companies. None of the companies provides renting services and only one is engaged in the second-hand business through a partnership. One company is providing a "warranty of a lifetime" and takes care of the repair. However, these business models are more individual examples rather than models that are actively adopted across the companies. What this study on the other hand finds is that all of the case companies provide some type of maintenance instructions to lengthen the use of the product. Regarding recycling, the companies have the interest in improving the recycling of textile waste, but currently the recycling logistics and

technologies are not yet at a level where the companies could easily design for circularity or ensure the textile waste is utilised. Currently, most of the textile waste is incinerated, which does not support the transition to the circular economy. While the existing literature highly encourages to textile recycling, the challenge of recycling and the current state of recycling technologies is less addressed in the previous studies.

The challenges with recycling link well the next clear findings of this research – the nine identified themes of drivers and barriers for adopting circular business models. These themes are: 1) environment, 2) economic, 3) customer, 4) society, 5) regulatory, 6) supply chain and technology, 7) product, 8) organisation and, 9) fashion industry itself. These are mostly supporting the categorisation by Tura et al. (2019), who created seven categories of drivers and barriers supporting the introduction of new business concepts for circular economy. However, the previous literature has not addressed the relative effects of these factors in adopting a circular business model and whether some factors have a stronger influence than others. This research contributes to this by the following three observations. Firstly, some factors act more in the background as initial drivers or barriers. These factors in this research were: 1) environment 2) customer 3) society 4) organisation and 5) fashion industry. Secondly, if there are regulations concerning the industry and circular economy, these will be adopted regardless of whether it is a good business case or not. Thus, these types of regulations act as drivers to adopt circular business models. Thirdly, the business model needs to have a clear business case and a positive economic impact. The economic impact can be identified as a stronger factor than for example organisational drivers because even if the company has a strong drive to adopt a circular business model, but cannot find a solid business, the model will not be adopted. Finally, even if the factors from all the other categories are driving the adoption, but the company cannot create a product meeting their quality criteria, it most likely will not be adopted. This is, in particular, the issue with recycled material. The companies have many factors driving the use of recycled materials, and it is increasingly more accessible for them, but currently, the quality of the material often does not meet the requirements by the company. However, with recycled materials, the companies describe being more challenged to create products that both meet their customers' expectations and fit with the company brand and idea of longevity. These factors and their relative influences were gathered to the revised framework, which illustrates the drivers and barriers impacting the adoption of circular business models.

To conclude, this research has reduced the identified research gap concerning circular business models in the fashion industry by identifying and explaining what type of circular business models can be found in the Finnish fashion industry. Further, it has also introduced and discussed circular business models that are currently less adopted or absent in the industry. Finally, this research has contributed to the literature of drivers and barriers for adopting circular business models, and in particular created research in the fashion industry. As a further contribution, this research has identified that while many factors are influencing the adoption, they are not impacting at equal weight.

6.2. Managerial implications

This research provides practical implications for both businesses and society. For businesses, this study provides information on what type of factors influence the adoption of circular business models. In particular, it found that not all factors impact at equal weight. Some factors have a stronger influence which may be barriers that cannot be easily overcome even if smaller factors are driving the adoption. The five background factors are environmental, organisational, society, customers and characteristics of the fashion industry. Further, regulations, economic, supply chain and technology, and the product quality are factors that were identified to have a stronger influence. Acknowledging the drivers ideally helps the companies to know what factors enhance the adoption, helping them to possibly increase the focus on these factors. Further, knowing the barriers can help to influence and even overcome these.

Secondly, this research provides companies with insights on how adopting the different circular business models in the fashion industry is not considered equally easy. Some business models, such as design, decisions regarding the materials and providing maintenance instructions were identified as smaller and easier actions for the companies to take. Some business models, especially the ones that require engagement from the customer, were described as more challenging to adopt. Many of these circular business models, such as establishing a second-hand business, were described to require a higher investment, and a secure business case was viewed still relatively uncertain. Thus, a company that is not yet engaged in the circular economy can start its transition towards the circular economy with the business models that this research has described being easier to adopt and requiring lower initial investments.

Finally, this research provides an implication for the whole society by reminding that in the circular economy, no actor can make the change alone. In the circular economy and especially in the fashion context, many different actors from the company to consumers and from policymakers to NGOs should act together and collaborate to ensure the fashion industry can operate in the circular economy. As noted with the findings, customers, partners and regulators influence the adoption of circular business models and thus different members at the society are part of the circular economy. As Stubbs and Cocklin (2008) state that even companies that are committed to sustainability find it difficult to become sustainable unless the system surrounding them also becomes sustainable. The same applies to circular economy, where a system level change truly needs collaboration between different actors.

6.3. Limitations and Suggestion for Future Research

Throughout the research, I have aimed at creating good-quality research. In the methodology section, the decisions and considerations regarding the research design and process were introduced and discussed. Now after conducting the research, the chosen methodologies can be evaluated to identify limitations and areas for future research. As a whole, it can be stated that the methodologies relatively well fitted with this research and brought insightful findings. However, several limitations based on my methodological approach can be identified.

First, this multiple case study aimed to include different types of companies regarding their sizes (small, medium, large) and their approach to a circular economy (existing circular economy business models or not). Despite this aim, the sample discovered to be relatively homogenous. This brings a limitation, which may have occurred due to the research context – fashion companies in Finland, as currently there are no Finnish fast-fashion companies. Another reason could be that in purposive sampling I compared the companies based on their approach to circular economy, and not all of the companies communicate their circular economy initiatives. The categorisation of the companies' circular economy initiatives was mostly based on the information found online, and not all companies describe their approach to circular economy. Hence the sampling may have failed to include companies that are not at all engaged in the circular economy. For future research, a sample with more heterogeneous fashion companies could find different factors. Especially interesting could be research fast fashion companies and their view on the circular economy, as their current operating model is the opposite to circular economy.

Secondly, the reason for relatively similar responses and approaches to circular economy may be due to the social desirability bias. This means that during the interviews, the interviewees gave more socially desirable responses compared to the true nature of their businesses. The key data in this research is from semi-structured interviews and each company was only interviewed once, which may create a limitation. Maintaining anonymity of the companies was one way to reduce the bias, but a future research could conduct anonymous surveys to further reduce any incentives for providing socially desirable responses. Further, if Finnish NGOs continue to publish reports regarding the fashion companies' commitment to sustainability, these reports could provide valuable data for future research. With suitable data, mixed-method research could further reduce the potential social desirability bias. In this research, while the collected data ensures validity and reliability for the scope of this research, collecting further data could strengthen the findings.

Thirdly, as this research studied the factors to adopt circular business models, the findings present how the company can engage further in the circular economy. However, adopting a circular business model is not the same as transforming the business into the circular economy. According to the findings of this research, most of the companies have adopted different types of circular business models, but not yet transformed their business. To fully operate in a circular economy, the process of designing a product should start from considering what materials are available instead of starting with design and then searching for suitable materials. Thus, future research could build on the findings of this research and explore how fashion companies can transform their business to be more circular. Further, researching the successful implementation of circular business models would provide valuable practical implications for the fashion companies considering a transformation towards the circular economy.

Fourthly, this research is purely from the fashion companies' perspective. Thus, it does not cover what factors influence the engagement in the circular economy from suppliers or customers' perspectives. As noted, in the circular economy collaboration between many different actors is important. Thus, future research could research what are the drivers and barriers to adopt a circular business model in the fashion industry for example from the material suppliers, fibres innovators or retailers' perspectives. This research introduces only the perspective of the fashion companies, thus presenting only one actor in the entire loop in the fashion context.

Finally, this multiple case study has focused on the fashion context, and hence the findings are only generalisable and applicable in this industry. However, I assume that similar type of findings could emerge from similar type of consumer goods industries, for example in the home furnishings industry. Conducting similar research in a different context represents a good space for a future research and it could provide information if similar factors are impacting the engagement in a circular economy across industries.

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Appendix

Interview Questions (freely translated by the author)

1. Could you tell what is your role and responsibilities at the company?
2. How long have you been with the company?

Sustainability at the company

3. Could you describe how sustainability is part of your organisation?

Circular economy at the company

[Introducing the illustration of circularity in the fashion industry, see Figure 3]

4. If you look at the illustration, do you identify anything that your company is currently doing? If yes, what?
5. How long has your company had the [identified] business model?
6. Do you remember where did you get the idea for the business model?
7. Could you describe more the decision process and how the implementation went?
8. What type of challenges did you face during the process and how did you overcome those?
9. What type of impact has the business model had on your company and business?
10. Are there any circular business model that your company has been considering trying? If yes, what?
11. Why are you interested in trying the business model?
12. Why have you not yet piloted the business model?
13. Do you think you will try the business model someday? What would make you try the business model?

Circular economy & the future

14. How do you see the future of the circular economy in your company?