Towards a Circular Fashion Industry

A multiple case study of circular business models in the fashion industry

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Abstract

The fashion industry is the second most polluting in the world, and despite rising costs of labour, materials, and energy inputs, clothes are cheaper than ever before. To accommodate the negative environmental impact of the industry, the notion of circular economy has recently gained ground. This concept promotes innovative business models that reintegrate used clothes, which would otherwise be discarded, into supply chain structures. Although the number of fashion companies pursuing circular business has increased, the knowledge and understanding of such practices are still limited. This study contributes to the understanding of circular business models by conducting a multiple case study of eight circular pioneers in the fashion industry. Its main objective is to uncover key success drivers of circular business models for the eight case companies, based on a qualitative empirical foundation. Building on interviews with company management, each company’s business model is analysed at an actor-level and subsequently categorised according to how they pursue circular business. By doing so, the study finds that the companies bundle in three main clusters. With an outset in these clusters, the study explores the key drivers of success related to their supply chain operations, and to their external environment. Finally, the study draws on these insights to discuss how key success drivers vary across the clusters, and identifies the most important drivers of success for each cluster at an actor, supply chain, and macro-environmental level.
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1. Introduction

The global fashion industry is estimated to be worth USD 1,781 trillion, and employs around 60-75 million people worldwide (Stotz & Kane, 2015). Recently, clothing consumption has increased dramatically, and today an average person consumes four times as much clothing than 20 years ago (Adamczyk, 2014). Although fashion companies have experienced rising costs of labour, raw materials, and energy in this period, the price we pay for our clothes is cheaper than ever before. For instance, clothing prices from 1982 to 2006 decreased by 26 percent in Europe and 17 percent in the US (Brooks, 2015). In the 1970s, the three biggest exporters of clothes to the US were Japan, UK, and Canada, whereas the top three exporters in 2011 were China, India, and Pakistan. Production and consumption have increased drastically due to increased international trade and the abolishment of import quotas on textiles in Western Europe and North America as a result of the Multi Fibre Agreement (MFA) being out-phased from 1995 to 2005. Moreover, production of textiles has increasingly been outsourced to low-wage developing countries, exemplified by the increase in US textile imports from USD 10 billion in 1982 to USD 96 billion in 2006 (ibid).

Today’s fashion markets are relatively unstable due to variations in demand resulting from fast-changing consumer preferences and short fashion lifecycles (Christopher, et al., 2014). Therefore, it is important for fashion companies to stay agile and responsive, while simultaneously having to rely on cheap labour and materials. In order to adapt to these changes, the industry has seen the emergence of fast-fashion business models, such as Zara, which has a lead time of two weeks from initial design to end-user (Munkgaard & Steentoft, 2013). The global supply chain for the fashion industry is buyer-driven, since fashion companies generally determine what should be produced, where it should be produced, and how much it can cost. These buyers are typically retailers and fashion brands from developed countries in Europe, US, and Japan, which undertake branding, design, and marketing in-house while outsourcing low value-adding activities such as fibre production and textile manufacturing. With increased available income and higher living standards worldwide, consumers have become more demanding and presses fashion companies to mass-produce fashion items, which should be easily available and reasonably priced (Stotz & Kane, 2015).

Since year 2000, global clothing production has more than doubled, and while the average person buys significantly more clothes, it is only kept for about half as long as 15 years ago (Ditty, 2015). The massive growth in fashion consumption and premature disposal has resulted in a ‘throw-away
culture’, which ultimately causes massive amounts of post-consumer textile waste that ends up as landfill or is incinerated. The most common reasons for disposing clothes are wear and tear, poor fit, and fashion obsolescence (Laitala, 2014). Brooks (2015: 82) argues that: “As clothes age, they lose their aura of newness, becoming unfashionable or worn out in the eyes of the owner”. In the European Union, it is estimated that 5.8 million tonnes of clothes are thrown away each year, of which 25 percent is collected by charity organisations or private companies with the purpose of reusing or recycling, and the remaining 75 percent is sent to landfills or municipal waste incinerators (Briga-Sá, 2013).

The increased consumption of clothing globally has a positive effect on the bottom line of fashion companies, but as McKinsey highlights “[...] global population growth, climate change, land and water scarcity, and the increasing cost of key resources have a direct impact on the bottom line of every company” (Amed, et al., 2016). In this sense, CO2-emissions, use of hazardous chemicals, violation of human rights and labour standards, high water consumption and waste production pose a threat to fashion companies, why responding to these issues represent important areas to address (ibid). The most common approach to deal with waste in the fashion industry is to implement waste management strategies such as reuse and recycling (Fletcher, 2008). In recent years, more fashion companies have developed new business models that focus on closing the loop in the supply chain in order to reduce waste, while simultaneously securing a stable and cost-efficient inflow of materials. This study therefore seeks to explore key success drivers for companies pursuing circular business models in the fashion industry by answering the following research question:

What are they key success drivers for companies pursuing circular business in the fashion industry?

- What are the major categories of circular business models within the fashion industry?
- How are circular business models within the fashion industry affected by actor-, supply chain and macro-level factors?

1.1 Structure
In order to answer the research question, this paper will be structured in the following manner: firstly, it will introduce its stance on philosophy of social science and account for the scientific method and the methodological considerations behind. Following this, it will proceed with a section defining key concepts utilised throughout the study, before it will continue with an account of the study’s
theoretical foundation. Having provided a theoretical foundation, the following section will introduce each of the eight case companies followed by an actor-level analysis, which serves to categorise the companies according to type of business model and operational loop identified. Next, the study will proceed to an analysis of each of the identified clusters of companies on a supply chain and macro-environmental level, in order to discuss the drivers of success for companies in each cluster. In the last part of the discussion, the study will reflect upon how the drivers of success are comparable between the clusters. Finally, the study will sum up with a conclusion and touch upon possible areas for further research.

1.2 Limitations

This study is limited to explore the key success drivers of fashion companies pursuing circular business models. The exploratory nature of such research agenda sets out to identify and compare these success drivers across different business models, but does not seek to explain how these can be utilised at a managerial or operational level. The qualitative nature of this study as well as its narrow geographical scope (only including Northern European and mainly Danish companies) limit the generalizability of the findings. Moreover, the study is limited in scope by time, length, and resources, why it has not been possible to include additional case companies in the study or to conduct more than one interview with each case company. Studying companies in the fashion industry pursuing circular business, therefore serves to provide insights on their drivers of success based on similarities between the companies and the identified business model categories. However, as the conclusions of this study is based solely on the included case companies, it is not possible to eliminate the possibility of other major business model categories. Moreover, this study is unable to determine the degree of success for each circular business model, as well as to assess the relative importance for each of the identified success drivers.
2. Methodology

2.1 Philosophy of Social Science

There are two major streams of philosophical paradigms within social science, one being naturalism/positivism and the other being constructivism. The naturalist approach relies on a foundational belief that a real world exists independently of the human beings living within it, and as such downplays and rejects the importance of context, embeddedness and individual perceptions (Moses & Knutsen, 2012). In this sense, the naturalist philosophy of social science will not properly apply to the nature of this study, which aims to explore and understand the drivers of success for closed loop business models in the fashion industry. As such, the objective of this study is not to explain but to understand, why it will not be appropriate to apply a naturalist research design.

The ontological background that underlies this study is thus founded in a constructivist view of the world, built around the idea that the world is socially constructed by human beings, who interpret experiences and impressions from the world around them and attribute meaning to them accordingly (Moses & Knutsen, 2012). Consequently, the ontological vantage point of this study is the belief that there is not one, but many perceptions of the real world contingent on the individual human observer, and that we cannot obtain proper knowledge of social phenomena without accounting for the social discourses and meanings that inform human behaviour. Following this line of thought, constructivist epistemology thus acknowledges that knowledge and ideas are contextually bound to their origin, meaning that the insights gained from different points of origins are not straightforwardly comparable and will depend on their geographic, socio-economic and communicative starting points. Thus, facts and insights are never free of bias (ibid).

This underlying principle is closely linked to hermeneutics, also defined as the ‘art of interpretation’, recognising that knowledge is a product of the way people deal with reality (Gjesdal, 2011). Thereby, the process of understanding and interpreting is interchangeable and is facilitated by the use of language (Gadamer, 2004). When acknowledging this logic of hermeneutics, it is clear that human beings may interpret phenomena in infinite ways, which accentuates the constructivists ontology that there is not only one truth. It is furthermore emphasized by hermeneutics that a pre-understanding is not something negative, but rather a good starting point for a continuous development of new understandings (ibid). Within the constructivist line of thought, social science research can therefore be considered a ‘double-hermeneutic’ process consisting of “a mutual interpretative interplay
between social science and those whose activities compose its subject matter” (Giddens, 1984: 32). This implies at a more concrete level that we, when conducting this study, already have a pre-determined idea of the social world that we are studying, but also that each of the actors and activities we study are entangled in an individually and socially constructed context. This ‘double-hermeneutic’ process thus develops our comprehension of our reality.

2.2 Scientific Method: A multiple case study

This study is placed within the overall branch of qualitative research. According to Gilham, qualitative research focuses primarily on “[...] the kind of evidence that will allow you to understand the meaning of what is going on” (Gilham, 2015: 10). Qualitative research is thus concerned with the processes leading to a certain outcome, why it is very well suited to the process-driven and open-ended focus of this study, which aims to explore and discuss the drivers of success for companies pursuing circular business models in the fashion industry. The particular type of qualitative research method applied in this study is the case study method defined by Yin as an “[...] empirical inquiry that investigates a contemporary phenomenon in-depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin, 2002: 18). Following this definition, the case study method is highly suitable to pursue constructivist research, as it allows for a context-dependent analysis of a current phenomenon, thus underlining the idea that obtained knowledge is context-dependent and not necessarily generalizable to other cases.

This case study relies on inductive reasoning, entailing a bottom-up scientific approach. Inductive research observes and analyses the particular research settings, and on this basis, researchers detect patterns in order to make grounded theoretical conclusions built on empirical evidence (Gilham, 2015). According to Yin (2002) there are three conditions that need to be fulfilled in order for the case study to be appropriate as a research method. Firstly, the research question must be of an explorative and not merely of a descriptive character; secondly, the area of study must be of a contemporary nature, as it deals with direct observations and interviews; and thirdly, case studies typically take place in situations, where the observer is not dependent on the ability to control the behaviour of the participants, which is rarely possible in real-life cases, because you cannot control all variables influencing participants’ behaviour (ibid).

When assessing the abovementioned conditions in relation to this study, all three of the criteria are fulfilled. Firstly, the study is explorative in its character, as it sets out to assess, understand and discuss
the drivers of success for circular businesses in the fashion industry. Secondly, the area of study is contemporary in its nature, as there have been a significant up-rise in the awareness of circular business models in the fashion industry and likewise an increase in the number and exposure of new business models operating with circular focus (Remy, et al., 2016). Lastly, it is not possible to control for all variables, why it is important to be aware of the fact that there is a likely discrepancy between what interviewees believe to be success drivers for the company, and what actually drives the success of their circular business. This is a complexity this study will have to take into account when analysing our findings. For these three reasons, a case study is deemed the most appropriate research method to conduct the study.

Yin furthers distinguishes between three overall categories of case study research: explorative, descriptive, and explanatory case studies. This study is placed within the first category, as it sets out to explore key drivers of success and thus enables further examination of the observed phenomena of circular business models (Zainal, 2007). Explorative case studies are furthermore characterised by no hypothesised outcome and hence have an ‘explorative’ nature, which is in line with this study (Yin, 2002).

There are several proposed taxonomies within each of the three abovementioned categories. However, this study will, in line with Yin (2002), argue that these are simply different variants of the same archetypal case study methodology, why many of the same insights and techniques can be utilised for various case study research designs (ibid). This study is designed as a multiple case study including eight different business cases. When deciding whether to conduct a single or multiple case study, the benefits of each has to be weighed against each other. A single case study enables a more in-depth analysis and insights, whereas multiple case studies generate insights that can be considered more compelling due to the fact that the findings are arguably more robust (ibid). This research has prioritized the latter, as it allows for a ‘replication logic’, meaning that a multiple case study enables a comparison of the eight carefully selected cases. This allows the study to draw more robust cross-case conclusions, when the findings converge, as well as contrast and discuss areas where the findings diverge. The particular research process of this study thus progresses through three main phases depicted in Figure 1.
Figure 1: Research process

Figure 1 depicts the three main phases of the research process. The first phase of the research design includes choice and development of relevant theoretical understanding of the study area. The study pursues a holistic and explorative research design with a single unit of analysis, namely the key success drivers for companies pursuing circular business in the fashion industry. The first phase also involves administrative and organisational tasks of planning interviews and determining specific interview questions. The second phase of the research entails conducting the interviews, exploring and analysing the different business models, as well as evaluating the single case study findings. The third phase of the research is comprised of a cross-case analysis of the multiple case studies in order to discuss their contextual meaning and to draw a coherent conclusion summarizing the findings of this study.

Finally, it is relevant to touch upon the areas of criticism that the case study research approach has typically been subject to. Although, case studies have generally gained ground and become increasingly prevalent within various fields of study, the method has also been subject to a great deal of critique (Yin, 2002). One of the most dominant concerns is that case studies are arguably biased in the direction of the interviewer, which in turn also influences the direction of the findings and conclusions. Another main concern is that case studies provide little basis for generalisation (ibid). However, such critique fails to recognise that the aim of qualitative case studies is neither statistical generalisation nor the desire to uncover a single truth. Rather, case study research aims to get an in-depth understanding of a contemporary social phenomenon, embedded in its current sociological context. Therefore, the cases included in this study has been deliberately chosen to ensure that each
case adds new insights to an understanding of the research area, but not to establish conditions for generalisation and comparison with other areas of study (Kvale, 1994). However, an important takeaway from this critique, not to be disregarded, is the fact that conducting a good case study requires a careful focus on presenting all observed data in a fair and equitable way (ibid).

2.3 Data collection

This study overwhelmingly relies on qualitative sources of data for a number of reasons. At a general level, qualitative data is well suited to the nature of a case study research method, since it allows for a more in-depth and nuanced understanding of complex insights that do not easily translate into quantitative data. Secondly, the concept of circular economy is subject to many different interpretations and applications, and it is furthermore a comprehensive concept dealing with a variety of inputs. This complexity is best dealt with using qualitative data, as it is difficult to determine causal effects from the viewpoint of this study, if it were to employ a quantitative research design. Therefore, this study will not be able to control for all variables influencing the analytical findings to a degree that will speak in favour of relying on quantitative data. Additionally, the limited number and heterogeneous nature of the case studies included makes it irrelevant to compare them on a quantitative foundation.

To properly account for the data collection, it may prove useful to explain in-depth how the case interviews have been conducted. As described above, qualitative research interviews aim to obtain a better understanding of how a certain phenomenon is understood from the perspective of the interviewee, why the main role of the interviewer is to understand what the interviewee says (Kvale, 1996). The specific approach applied to conduct the interviews is a ‘general interview guide approach’ or ‘semi-structured interview approach’, where information about the same general areas is collected from all interviewees, but still within a scope of relative conversational freedom and adaptability (Valenzuela & Shrivastava, 2002). This is deemed important due to the heterogeneous nature of the cases, as well as the complexity of the research area of circular economy. Each interview lasted approximately one hour, where two interviews were conducted online through Skype, one interview were conducted via telephone, and the remaining five were conducted in person. Conducting the interviews in person has several advantages including no time delay, the ability to ensure that all questions are answered and the ability to observe social cues, such as tone of voice, enthusiasm etc. (Opdenakker, 2006). However, it is important to note that a possible drawback of the qualitative interview technique is that interviewers have the monopoly of interpretation and that there
might be a conflict between this interpretation and what is meant by the interviewee (Opdenakker, 2006).

The qualitative data employed in this study can be divided into primary and secondary sources. The former is described as original documentation obtained directly from the people or event in question, whereas the latter is documentation once removed from the time of the event, i.e. secondary work based on primary sources (Moses & Knutsen, 2012). The main primary sources utilised in this study are the eight interviews conducted with the involved case companies. The advantage from the use of primary sources is the inclusion of original information not interpreted or contextualised by others. However, this also means that the information contained is subjective to the eye of the interviewee, which should be taken into account when analysing and discussing the findings. The study also makes use of a considerable degree of secondary sources in terms of empirical knowledge obtained from newspaper articles, academic journals, company websites etc. The use of both primary and secondary sources will thus provide a solid foundation to conduct this explorative case study.
3. Definitions of key concepts

In order to conduct the analysis on a solid and meaningful ground, the following section will define important concepts employed throughout the study.

3.1 The fashion industry

Defining the fashion industry is essential to be able to limit the scope of the study. A fashion item goes through many stages throughout its life, e.g. design in Italy, fibre production in India, cutting and dyeing in China, assembling and sewing in Turkey, and distribution to retailers and consumers in Europe. After ended use, it is possibly donated to charity, sent to sorting in Poland, and re-consumption in Kenya. The fashion industry, which is part of the global textile industry, covers all activities throughout this journey: from design to fibre and fabric production, manufacturing, distribution and retail. When this study refers to fashion, it is considered “[…] a broad term that typically encompasses any product or market where there is an element of style that is likely to be short-lived” (Christopher, et. al, 2014: 367). The term is used interchangeably with terms such as textiles, garments, or simply clothes, but is limited to products that can be worn, and therefore products like towels, curtains, and bedding are excluded from the scope of this study. Moreover, other types of wearable apparel such as sportswear, footwear, and protective clothing are considered outside the scope of this study. In this sense, fashion is regarded as products subject to consumption. Following this definition, fashion companies provide their customers with fashion through one or more of the following activities: design; fibre, fabric, and clothing manufacturing; distribution; and retail.

Ross and Harradine (2010) establish two ends of a fashion product spectrum: high-price brands like Chanel and Dior, which have low production volumes and long fashion cycles; and low-price brands like Primark, which have high production volumes and short fashion cycles. Drawing upon this classification, the study will distinguish between five generic price levels in a descending order of 1) haute couture brands, 2) luxury brands, 3) high-end brands, 4) high-street brands, and 5) value brands. Companies providing fashion in the haute couture, luxury, and high-end segments tend to have a greater focus on design, while companies serving the high-street and value segments sell more generic products and are therefore driven more by market forces and costs. This study focuses on brands that operate mainly within the high-street and high end price segments. Short-life cycles and mid-
price products pollute the most, and the volume in these segments likewise give them the highest potential of recycling in terms of unused resources, why this study mainly focuses on the possibilities of reusing and recycling in these segments (Stotz & Kane, 2015).

### 3.2 Business model

Defining the term business model is important to be able to use the concept for understanding the similarities, differences, and key drivers of success for the case companies. The term ‘business model’ first occurred in the 1990s and quickly gained attention among business scholars (Richardson, 2008). Since the introduction of the term, scholars have and continue to propose several competing and overlapping definitions of the concept, but all definitions share a focus on the implementation of business strategy and on business processes (ibid). This study will apply a value-driven understanding of the concept in line with the circular economy’s aim to extend and capture value at the end of a product’s conventional life cycle. Following this line of thought, the study relies on the definition proposed by Osterwalder et al., who define business models as:

*A business model is a conceptual tool containing a set of objects, concepts and their relationships with the objective to express the business logic of a specific firm. Therefore, we must consider which concepts and relationships allow a simplified description and representation of what value is provided to customers, how this is done and with which financial consequences* (Osterwalder et. al, 2005: 3).

The reasoning for employing this definition in the study is twofold. Firstly, it allows for exploring the key elements of each circular business model in the study, and secondly, it enables a comparison and discussion of success drivers for the different categories circular business models.

### 3.3 A conventional supply chain in the fashion industry

The supply chain in the fashion industry is characterised by numerous stages from product design to end use, often spread across several geographical areas. Low value-adding activities such as sewing and dyeing processes often take place in developing countries, while high-value adding activities, such as design and marketing, often take place in developed countries. In addition to this, a fashion supply chain is driven mostly by buyers such as large retailers, marketers, and traders, who have a great influence on where production takes place, which products are being produced, and general price level of the products (Stotz & Kane, 2015). In a traditional supply chain of a fashion item, the
first stage is the design process, where not only the physical design of the product is decided, but also the types of materials to be used. The second phase includes the production of fibres, after which the fabric is manufactured and dyed in the third phase. Depending on the particular supply chain, the dyeing process can alternatively take place at a later stage. The fourth stage of the supply chain includes clothing manufacturing activities, after which the product is sent to a retailer in the fifth stage. In this stage the product is sold from the retailer to the end user through either a physical or online retail channel, and in the sixth and final stage, it is bought and used by the end consumer (Guldmann, 2016).

![Figure 2: Typical fashion supply chain (Adapted from Guldmann (2016))](image)

### 3.4 Towards a circular economy

The use of the term circular economy has grown in recent decades both within scholarly literature and within the business society (Beaulieu, et al., 2015). However, due to the complex and comprehensive nature of the concept, it can be difficult to grasp what the term actually covers. Consequently, utilising its insights to transform current linear ways of doing business into circular ones can be problematic. Before being able to determine what the term circular economy specifically implies, it may prove useful to understand what its counterpart ‘linear economy’ is, and why it by many is considered to be long-faded in the modern world of business (Lovins & Braungart, 2013). The linear economy was born out of the boom in productivity and prosperity that followed the industrial revolution in the Western world. Production costs decreased, labour productivity increased, and ever-growing demand for new products enabled a culture of mass consumption. The linear economy thus works in a mechanical way, where the whole is merely the sum of its parts. However, it has become apparent that the linear way of doing business is not viable in the long term due to a
wide range of parameters, such as a rising world population, a growing global middle-class, and global production patterns all depleting natural resources needed to enable increasing growth (ibid). As early as 1972, the revolutionary book, ‘Limits to Growth’, depicted multiple scenarios around population and resources questioning the possible durability of current economic patterns (Meadows, et al., 1972). In 1976, Walter Stahel sketched his vision of an economy in loops and its impact on job creation, waste prevention, resource savings, and economic competitiveness (Stahel, 1976). This ‘closed loop’ approach to production processes has received increasing attention as resources have become more scarce. The circumstantial background of the development of a circular economy is thus grounded in two developments. First, an increasing pressure on natural resources, effectively impeding mass production and consumption. Second, different technological, complex, and interdependent ways of doing business have changed the patterns of interaction between business and consumers. Currently, consumption patterns are increasingly influenced by consumer awareness of quality and environmental footprint of the end product (Lovins & Braungart, 2013).

Alongside this development, the circular economy has become a topic on the political agenda in recent decades. On a global level, the benefits from a circular economy were identified by the World Commission on Environment and Development (The Brundtland Commission), which presented the concept of sustainable development in 1987: “Sustainable development seeks to meet the needs and aspirations of the present without compromising the ability to meet those of the future ” (Brundtland, 1987: 39). This paved the way for the adoption of the 2000 Millennium Development Goals, and more recently for the adoption of the Sustainable Development Goals in 2015. More specifically, Goal 12 (ensure sustainable consumption and production patterns), urges countries to "by 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse", which should be measured in national recycling rates, and tonnes of material recycled (UN General Assembly, 2015: 23). The European Commission adopted a Circular Economy Package in 2015, which set aside €5.5 billion for investments in waste management in order to help the transition of European businesses and consumers towards a more circular economy (EC, 2015). The Commission estimates that efficiency improvements in supply chains will reduce material input needs by 17-24 percent by 2030, which ultimately gives circular economy the potential to boost EU’s GDP by up to 3.9 percent (EC, 2014). As the Commission acknowledges, “Business and consumers remain the key actors in the transition to a more circular economy”, why the textile and fashion industry represents
a particularly well-suited case study for discovering opportunities in closed loop supply chains and circular business models (EC, 2014: 7).

3.4.1 Circular economy definition

The building blocks of circular economy encompass elements from several concepts among others Sustainable Development, Green Economy, Life Cycle Thinking, Shared Value, Reverse Logistics and Closed Loop Economies (Beaulieu, et al., 2015). Due to the complexity and comprehensiveness of each individual concept, it is not in the scope of this study to further analyse the differences between each. Instead, we will draw upon relevant elements from each concept and, more importantly, focus on the similarities that exist between them. What all of these concepts share is the inclusion of multiple stakeholders, the idea of decoupling economic growth from resource consumption, and a holistic focus on the entire process of production and consumption (ibid).

In this study, the terms circular economy and circular business refer to redistribution, reuse, refurbishing, remanufacturing, and recycling of fashion items. Stahel (2010) identifies two main loops in a circular economy. The first loop is product-specific and entails reuse, repair, reconditioning, and upgrading, where the goal is to extend product life and thereby enable an indirect cost advantage. The second loop is material-specific and entails recycling of materials, where a direct cost advantage is possible, because the need for virgin materials is reduced. The first loop relates to business models that either undertake maintenance, reuse/redistribution, or refurbishing, whereas the second loop relates to business models that undertake recycling of materials. The Ellen MacArthur Foundation (2013a) divides the loops identified by Stahel (2010) into subcategories and identifies four main loops in the life cycle of products and materials. Following that line of thought, this study will utilise the definition of the circular economy provided by the Ellen MacArthur Foundation:

“The circular economy is restorative and regenerative by design. Relying on system-wide innovation, it aims to redefine products and services to design waste out, while minimising negative impacts. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural and social capital.” (Ellen MacArthur Foundation, n.d.).
The definition above builds upon the widespread model of the circular economy shown below:

![Outline of a Circular Economy](image)

*Figure 3: Outline of a Circular Economy (Ellen MacArthur Foundation, 2013)*

This model provides an overview of a generic circular economy, where the entire system is restorative. The left-hand side of the model depicts the flows of renewable energy and the biological nutrients, whereas the right-hand side of the model shows the stock management and the technical nutrients (Ellen MacArthur Foundation, 2013a). Although the left-hand side of the model is essential for the successful transformation towards a circular economy, this study will focus exclusively on the loops in the right-hand side of the model. The model deals with different types or loops of circular business models operating at different levels of the production process. The four different loops are categorised and defined in the table beneath:
<table>
<thead>
<tr>
<th>Loops</th>
<th>Definition</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maintenance</td>
<td>The use of a product by the same customer for the same purpose in its original form, with little or no enhancement or change.</td>
<td>Original</td>
</tr>
<tr>
<td>2. Reuse/Redistribute</td>
<td>The redistribution of used products to new customers, with the purpose of extending its useful lifetime and to be reused in its original form.</td>
<td>Original</td>
</tr>
<tr>
<td>3. Refurbish/Remanufacture</td>
<td>A process of replacing or repairing major components of the product at a cosmetic and/or component level, meaning that reusable parts are manufactured into new products.</td>
<td>Original/new</td>
</tr>
<tr>
<td>4. Recycle</td>
<td>A process recovering and breaking down products to a material level with the purpose of manufacturing new products.</td>
<td>New</td>
</tr>
</tbody>
</table>

Table 1: Overview of loop activities

The table provides an overview of different possible loops, where three of them share the characteristic that they extend the lifetime of products, while the fourth loop entails recycling of materials to replace virgin materials. All four loops differ in the degree to which the product is changed before being resold to a new customer or returned to the initial customer. It is important to note that these generic loops depend on the nature of the industry as well as of the state of the product in question, and that none of these are superior to one another. The maintenance loop operates solely at a customer level, and it is thus the customer that initiates a repair of a product, e.g. by patching a hole in the knee on a pair of jeans (Ellen MacArthur Foundation, 2013a). However, as this study purely considers business drivers, the maintenance loop will not be further dealt with.

Within the reuse/redistribute loop, companies seek to prolong the useful life of products to keep them in as many consecutive cycles as possible. This aims to ensure a long lifetime of clothes for the initial consumer, by e.g. providing high product quality followed by service schemes for easy repairs or upgrades, and also aims to prolong the lifetime of clothes by offering them to subsequent users, thereby making sure that all value from each product is properly extracted (ibid). An example of successful value extraction in the fashion industry is second-hand stores that redistribute used products to new customers. This loop operates to create value through extending the useful life of products, which includes a service provider and thus takes the product one step back in the supply chain.
In the refurbish/remanufacture loop, major parts of clothes or textiles are effectively removed from its original use, and used as a component when manufacturing new clothes. This typically involves upgrading valuable materials to designs that capture value by offering unique or vintage properties, or downgrading textiles from the clothing industry e.g. to be utilised in the furniture industry, or as insulation material for construction. In other words, this loop often entails use of textiles from other industries to remanufacture clothing, and use of textiles from the clothing industry to remanufacture products for other industries (ibid). This includes a product manufacturer and thus brings the product back one additional step in the supply chain. However, this loop does not directly replace virgin materials, but creates value through indirect cost-savings by extending the life of existing materials in either similar or different forms (Stahel, 2010).

The recycling loop, on the other hand, provides value through a direct cost-advantage by replacing virgin materials with recycled materials (ibid). This includes a parts manufacturer and thus brings the product back to the furthest level possible in the supply chain. An example in the fashion industry is a manufacturer that recovers the basic materials from used clothes or other textiles, e.g. cotton fibres, to produce new clothing items (Ellen MacArthur Foundation, 2013a). Since this loop takes the product back to the initial stage of production to replace material inputs, it may prove the most important loop for reducing environmental impact of producing textiles, but may also constitute the most difficult loop to close. This is mainly due to the fact that textiles are often mixed, or simply too fragile for the recycling process to be technologically feasible and financially viable (Møgelgaard, 2017).
4. Theoretical basis

Having defined important key concepts, the study will in this section explain and account for the theoretical basis that it is founded upon. A three-level theoretical basis has been chosen in order to most accurately explore the research question. The first and most important theoretical level is an actor level analysis and will contain an application of the Business Model Canvas framework outlined below.

4.1 Business Model Canvas

The Business Model Canvas framework is developed Osterwalder et al. (2010) and describes how a business model is composed of nine building blocks based on three main areas. The first area is denoted as the ‘back-stage’ of a business and entails the key building blocks that take place away from customers. The second area is the ‘front-stage’ and contains the activities that deal directly with customers. The last primary building block is the company’s value proposition, which is developed on the basis of the eight other building blocks and thereby aims to connect all activities of the business. The nine building blocks, which are accounted for beneath, provide an overview of how the company in question intends to create value throughout its operations.

The nine building blocks are:

1) *Value Proposition*: Identifies which products and services that create value - what is most important - for a certain customer segments.

2) *Customer Segments*: Define the different key customers of the business in order to design business activities according to customer needs.

3) *Channels*: Relate to how the company can best connect to customers throughout phases of both marketing, sales, distribution and after-sales service.

4) *Customer Relationships*: Ensure that the nature of the company’s customer interactions enables both the acquisition of new customers as well as the retention of existing customers.

5) *Revenue Streams*: Categorise the company’s different revenue streams, i.e. how to capitalise on the above activities, and their relative importance for overall profitability.
6) **Key Resources:** Identify which key resources are required to create value and ensure that each of the other building blocks functions in the best possible way.

7) **Key Activities:** Describe the most important activities of the company and how key resources are utilised in order to make the different building blocks work coherently.

8) **Key Partnerships:** Assess the key relations with suppliers and partners that enable efficient business activities.

9) **Cost Structure:** Describes the cost structure related to the above operational building blocks and allows for an evaluation of the different cost units in the company.

On the basis of these nine key elements, the authors have developed a now widespread and acknowledged tool for evaluating and comparing different business models, known as the Business Model Canvas. The canvas allows for a plot of the company’s operations across the nine key areas of their business model and thus facilitates a holistic view of a company’s business model. If applied correctly, the canvas thus enables companies to obtain an overview of their operations, and be able to identify where the largest potential for value creation is placed according to the nature of their business model (Osterwalder, et al., 2010). Below, an archetypal plot of how a business operates is shown. This plot allows companies to consider the different value-adding parts of their operations and understand how to maximise value in the scope of their individual business model.
The Business Model Canvas framework enables the study to compare the operationalization of different circular business models, as well as to analyse how their value propositions and key building blocks of their business model differ. Furthermore, the canvas allows for an analysis of the business model of each company in this study, which serves to identify major business model categories of circular business in the fashion industry and consequently reflects upon similarities and differences within each category.

4.2 Front end, engine, and back end
Having accounted for the first theoretical level applied in the study, this section will explain and account for the second theoretical level utilised to answer our research question. When analysing a company’s operations, it is imperative to consider the company’s individual operations as done above but also the embedded network of operations, within which the company exists. An analysis of the supply chain, in which a company operates, will provide a more comprehensive understanding of the activities of single actors within the supply chain, and the interdependencies of all supply chain actors. In their theoretical framework, Guide and Van Wassehove (2009) consider closed loop supply chains, which combine traditional forward supply chain activities with reverse supply chain activities. They
define the management of closed loop supply chains as “the design, control, and operation of a system to maximise value creation over the entire life cycle of a product with dynamic recovery of value from different types and volumes of returns over time” (Guide and Van Wassehove, 2009: 10). Reverse supply chain activities include activities such as used-product acquisition, reverse logistics, sorting, testing and grading of products, remanufacturing/repairing and remarketing. Based on these activities the authors distinguish between three main processes in their framework within a closed loop supply chain: product return management (front end processes); market development for remanufactured products (back end); and operational issues of remanufacturing (engine) (Guide and Van Wassehove 2009).

The first set of processes, which regards the product returns management (front end), mainly considers the issue of sufficient access to used products, which is needed to enable a profitable closed loop supply chain. This is specifically related to the timing, quantity and quality of used products as well as the management of the product procurement. In order to make remanufacturing an economically viable alternative, it is necessary to have an adequate supply of used products in terms of quantity, but also in terms of a sufficient quality, a competitive price, and at the right timing.
The second set of processes regards the technical and operational issues (engine). Once acceptable quantity, quality, price and time of supplied products are secured, it is necessary to consider whether it is technically feasible and economically viable to remanufacture. The company needs to possess the right facilities and capabilities for the remanufacturing process to be technically feasible. Once technically feasible, it is furthermore important to consider whether the prospective value of recovery will exceed the costs of recovery actions. Thus, the central question becomes if it is possible to recover value from returns at a reasonable cost. This set of processes, therefore, mainly deals with reverse logistics, testing, sorting, disposal, disassemble, repair and the remanufacturing of products.

In the event of sufficient supply of used products and a technically and economically viable operational process, the final necessary condition for a profitable closed loop supply chain is the existence of a market for remanufactured products. Thus, the development of markets for remanufactured products (back end) constitutes the third set of processes. This set of processes mainly deals with development of distribution channels, remarketing of products, development of secondary markets, and finally the prevention of cannibalisation of primary markets. Once the management of these three set of processes are coordinated, it is possible to realise the total potential value of the supply chain. However, if a shortage of accessible used products, technical remanufacturing issues or fear of market cannibalisation arises, this will inhibit the profit potential of the supply chain (Guide & Van Wassehove, 2009).

4.3 PESTEL

Having accounted for the two first levels of theory used to analyse the case companies, this section of the study will briefly describe the third and final theoretical framework used in this study: the well-known macro-environmental PESTEL framework, which serves to gain an understanding of the general environment in which the case companies operate. The PESTEL framework, which traces back to Aguilar (1967), outlines the macro-environmental factors, necessary for companies to consider when doing business. This study has chosen to add environmental and legal factors to the original PEST-framework due to the importance, these specific areas constitute for an analysis of the external environment for circular businesses operating in the fashion industry. Being a global industry worth 1.7 trillion dollars with global supply chains, the fashion industry is highly exposed to changing factors in the macro-environment. Therefore, an analysis of the main external factors influencing fashion companies will conclude the theoretical foundation for this study.
The political factors influencing the external environment include issues related to areas such as political stability, taxation policy, regulation and incentives. Companies gain an advantage when positioning themselves appropriately in relation to their nonmarket environment (Baron, 2010). Economic factors, external to businesses, consist of macroeconomic tendencies such as inflation, interest rates, unemployment and exchange rates. In periods of economic boom, most industries benefit from increased economic activity, but the extent of these effects varies across and within industries. Social factors emanate in cultural changes, and are therefore also referred to as socio-cultural trends. Companies are subject to general changes in consumer preferences, which are affected by education, health consciousness, religion, family structures, population growth, etc. In regards to technological factors, technological innovation may enable new business opportunities, but may also have a disruptive effect on existing industries. Environmental factors affect both availability, consumption, and management of energy and resources. The issue of climate change is therefore inevitably intertwined with environmental factors and affects natural resource conservation and management. This includes water, oil and other resources, which have become subject to an increasing frequency of adverse weather events. Finally, legal factors are intertwined with political factors, but whereas political factors encompass government attitudes and approaches, legal factors specifically refer to existing legal frameworks. They thus have a direct influence on business activities, as companies are obliged to comply with laws that restrict how they operate.

4.4 Three-level analytical model

The three theoretical levels, accounted for above, serve to provide a holistic understanding of the different success drivers for companies pursuing circular business in the fashion industry. By employing this three-level analytical framework, the study will be able to analyse the individual company in their business context (actor-level), as well as consider how supply chain factors affect each company’s operations (supply chain-level). Finally, broader external factors will be analysed in order to understand the general environment that the business operates within (macro-level).

The below model is built from the merger of the three previously described theoretical frameworks. It illustrates how a company’s business model (actor-level) is linked to its supply chain (supply chain-level), while simultaneously being influenced by factors in the broader external environment (macro-level).
The study will firstly employ an actor-level analysis that focuses on the individual firm, using the Business Model Canvas framework. The nine elements of the canvas will provide insights into how the company creates value throughout its operations. By applying this framework, the study is able to identify how circular businesses capture value by reusing/redistributing, refurbishing/remanufacturing or recycling used products. Employing this actor-level analytical framework allows the study to explore the success drivers in a transition towards a circular fashion industry from a business perspective. Furthermore, it allows for a consideration of a company’s
operations in relation to its interactions with other actors in the supply chain and its external stakeholders.

Next, the study will integrate the actor-level analysis with an analysis of the firm’s supply chain, by employing the work of Guide and Van Wassehove (2009). An analysis of a fashion company’s supply chain addresses the activities of managing product returns (front end), operations and technical issues with remanufacturing and/or recycling clothes (engine), and finally the market development for used clothing items (back end). By analysing the network of activities in which the company operates, it is possible for this study to identify the interdependencies among actors and possible impediments/bottlenecks in the supply chain.

Lastly, the study will employ the PESTEL framework, in order to analyse how the case companies are affected by forces in the external environment. The macro-level analysis of the external environment integrates wider political, economic, social, technological, environmental, and legal factors that affect the individual company as well as the embedded network of its supply chain. Companies are affected by consumer trends, regulation, interest rates, technological innovations, financial incentives, etc., and therefore it is essential to understand the broader societal context, in which a company operates, to fully comprehend the factors driving success of circular business models in the fashion industry.

The case companies will be assessed on all three analytical levels, but this study will mainly emphasise the actor-level analysis of the companies, focusing on how they are able to create value in their respective circular business models. However, applying a comprehensive three-level analytical framework is deemed necessary due to the global and multifaceted nature of the fashion industry. A clothing item today is the result of a global supply chain, where the stages often take place in different geographical areas. In addition, fashion companies are largely impacted by legal, cultural, and technological innovations as well as changing consumer preferences.
5. Case study analysis

Having built a theoretical foundation for the case study analysis, this study will now continue to an introduction of the individual case companies. The multiple case study covers eight fashion companies, which differ in size, origin, and type of operations, but share the element that they all pursue circular business in different ways. Initially, the study will provide a short introduction to each of the cases, including general company facts, types of business models and operational structures. Furthermore, the study will touch upon the loops in which the companies operate, according to the distinction introduced previously. After having obtained an overall understanding of the companies, the study will continue to explore the research agenda in an analysis following the levels in the previously set forth analytical model. Firstly, the study will conduct an actor level analysis in order to explore the factors driving the success of circular businesses at a company-specific level. This first part of the analysis will culminate with a categorisation of the cases according to their business model, as well as the loop in which they operate. We will utilise this categorisation in the second part of the analysis, originating in the second level of the analytical model, namely a supply chain analysis. Thirdly, the study will conduct an analysis of the macro environment in which the companies operate, thus operationalising the third level of the analytical model.

5.1 Introducing the case companies

5.1.1 Bag to Life

Bag to Life is a German company, founded in 2010, headquartered in Bayreuth (Appendix 1). Bag to Life is an up-cycling brand, which produces fashion items of disposed materials from airlines, such as life vests and belts. A typical life vest has a durability of 10 years after which it is replaced for safety reasons. Bag to Life buys the used life vests at a low price from airlines and uses the materials to manufacture accessories such as bags, key holders, purses etc. (ibid). The otherwise discarded materials, used to manufacture the products, are typically of high quality and durability, which enables Bag to Life to produce high-quality and durable products, priced at a high-end-level (Bag to Life, n.d.). Bag to Life currently partners with the airlines Lufthansa and Condor, and has recently experienced increasing interest from airline suppliers offering otherwise discarded materials for sale (Appendix 1). As Bag to Life produces up-cycled products, their business operations are placed in the refurbish/remanufacture loop.
5.1.2 H&M

Hennes & Mautitz (H&M) opened their first store in 1947 in Västerås, Sweden, and is today the world’s second largest fashion retailer with several brands in their portfolio (H&M, n.d.). The company currently operates in 4,351 stores in 64 markets and is present in 35 online markets (H&M, 2016). The company specialises within fast fashion, offering customers value through high-street priced fashion items for both men, women, children and within the make-up, accessories, and home decor segment. In addition to this, H&M has a mission to eventually operate sustainably, which has driven recent initiatives to produce from sustainable materials such as organic cotton, recycled polyester, and recycled wool. These materials make up an increasing share of the company’s products. In 2013, H&M launched their garment collecting initiative, which enables the company to recover clothing by facilitating the return of used clothes and home textiles in H&M stores in return for a 15 percent discount voucher. The result of this initiative was the recovery of 15,888 tonnes of clothes and home textiles during 2016, and their goal is to reach a total of 25,000 tonnes annually by 2020 (ibid). Once the garments are collected, they are sorted by H&M’s partner, I:Collect, which either redistributes or refurbishes, and then redistributes the products. Used products in too poor condition to enter either of these two loops are instead recycled, after which they re-enter into H&M’s supply chain. Here, they are used to produce new fashion items in distinct collections, of which the first was launched in 2014 (H&M, 2016). These operations place H&M in the loop of recycling. While this model currently makes up only a fraction of H&M’s overall activities, their goal is to increase the number of products that contain recycled fibres, in order to reach their goal of eventually becoming 100 percent circular (Appendix 2).

5.1.3 Mud Jeans

Mud Jeans was founded in 2011 by Bert van Son in Almere, the Netherlands, with the aim of becoming a circular pioneer within the fashion industry (Mud Jeans, n.d. a). Initially, the company sold jeans produced from a mixture of recycled materials (30 percent) and organic cotton (70 percent), but quickly faced challenges with recovering jeans for remanufacturing and recycling purposes (Ellen MacArthur Foundation, 2013b). Therefore, Mud Jeans expanded their business model in 2013 to include the option of leasing a pair of jeans. Customers thereby have the opportunity to purchase jeans either in a conventional way or by leasing a pair of jeans for €7.5 per month. After leasing the jeans for a period of 12 months, customers can either choose to keep the jeans and gain ownership; swap the jeans for a new pair and continue their monthly subscription; or return the jeans and cancel
the subscription. In order to ensure that jeans are returned, and to encourage customers not to keep their jeans, Mud Jeans offers a financial compensation to those who return their jeans with the purpose of incentivising this behaviour (ibid). Thus, Mud Jeans operates within three different loops. If the condition of the returned product is sufficient, the product will be redistributed to other customers without using further resources. If the condition of the product is sub-optimal, it will be refurbished and then enter into either their conventional or leasing businesses, and finally, if the condition of the product is too poor, it will be recycled and used to manufacture new products.

5.1.4 Redesign CPH

Salvation Army was founded in 1865 in the slums of East-London by William and Catherine Booth. Today, the Salvation Army operates in 128 countries and their vision is – then, as well as today – to incorporate social and evangelical work, which is evident in the organisation’s work to collect and reuse clothes (Frelsens Hær, n.d.). These operations serve two main purposes: to sponsor social activities, and to reduce environmental impact. The Danish Salvation Army collects 7,000-8,000 tonnes of clothing annually, which are sorted and then resold in their stores (ibid). 10 percent of the collected clothes are considered first tier and sold directly in second-hand stores, whereas 60 percent are considered second tier clothes that are not immediately ready for sale. Finally, 30 percent of the collected clothes are considered waste or otherwise unable to be reused (Appendix 4). The business division included in this study is Salvation Army Redesign CPH, a subsidiary of the Danish Salvation Army. Redesign CPH transforms two thirds of the second tier clothing to accessories (bags, bow ties, wallets, etc.) and children’s clothes priced at high-end-level, why they operate in the refurbish/remanufacture loop (Redesign CPH, n.d.).

5.1.5 Resecond

Resecond was founded in 2013 by Claus and Stine Skytte and initially operated as a Copenhagen-based physical store for the exchange of dresses, placed in the ‘hip’ area of the Nørrebro district. The store was the first of its kind in the world, and was founded to promote a ‘sharing economy’ in the fashion industry by completely removing cash at the time of the exchange of dresses. Instead of customers, the store operates with users, who pay a monthly subscription fee, which allows them to use the store to exchange their own dresses for the dresses from other users (Quass, 2012). In return for a dress, the user is handed a coupon, which can be exchanged for a new dress in the store. The small store at Nørrebro quickly became popular, boasting more than 400 users, and started to exceed
its physical capacity. The large customer base also led to administrative problems such as the ability to control for exploitative behaviour from customers who systematically used the store to hand in low-quality dresses in exchange for high-quality dresses (Appendix 5). These challenges led the owners to reconstruct the concept of the initial dress exchange, and the store is today placed in a less central location at Nordhavn in Copenhagen, where it is incorporated in a larger sharing economy platform that also includes shared office facilities. As a consequence, the number of customers using the dress exchange has drastically reduced to approximately 50 (Appendix 5). Resecond thus purely operates in the reuse/redistribute loop, by facilitating contact and a physical meeting space between their users.

5.1.6 Sort Slips Hvidt Slips
The company Sort Slips Hvidt Slips (SSHS) was founded in 2011 by the two Danish designers Victoria Ladefoged and Rikke Nogel and is based in central Copenhagen. SSHS designs, produces, and sells clothes for men, women and children as well as wooden figures and home products (Pang, 2011). All their fashion items are handmade and priced in a high-end category, and the majority of their sales take place through their physical store, although they also operate online. The fashion items are 100 percent produced from used textiles delivered by De Forenede Dampvaskerier (DFD), one of the largest service companies within laundering and leasing of textiles in Denmark. The partnership is based on DFD supplying disposed hospital and kitchen products, such as dishtowels and other textiles, and delivering them to SSHS free of charge (Appendix 6). SSHS remanufactures used textiles to sell new fashion items through their store. Therefore, SSHS operates in the refurbish/remanufacture loop.

5.1.7 Tradono
Tradono was founded in 2014 and is headquartered in Copenhagen. The company provides an online second-hand market designed to work as a mobile app, which is inspired by the popular social media app, Instagram, where users may like, follow or comment on ads, or other users in their news feed. The platform offers the opportunity of selling, buying and exchanging items all taking place through the app (Appendix 7). The app also provides a location service, enabling users to see which products are put up for sale in the area around them. In addition, Tradono occasionally arrange small-scale physical flea markets in major Danish cities. Their main market is Denmark, but they also have established operations and offices in Switzerland. The total number of ‘Tradonees’ globally
constitutes more than 750,000 users (Tradono, n.d.). Putting up fashion items for sale on Tradono is free for all users, and product offerings range within many categories from high-street to luxury fashion for women, men, and children and also includes non-fashion product categories such as home decor and bicycles (ibid). Tradono mainly capitalises from selling promotions and from TradonoPay, a newly introduced secure payment system. When paying through TradonoPay, Tradono holds the money until the buyer has marked the item as received, after which Tradono transfers the money (less a 7.5 percent fee) to the seller’s account (Appendix 7). Providing an online flea market, Tradono operates within the reuse/redistribute loop, as they establish contact and relation between their users, which allow them to facilitate redistribution of used items to new owners.

5.1.8 Trendsales
Trendsales was founded in 2002 and was in 2014 bought by the Swiss-based media company Tamedia (Sommerand, 2016). The company is headquartered and primarily operates in Denmark, where it is one of the largest sharing platforms for selling, buying, and exchanging fashion items, but also operates in the rest of Scandinavia and Germany (Appendix 8). In total, Trendsales has more than 900,000 registered users and more than 500,000 items are put up for sale each month. Trendsales operates with different user types, free users, which is the largest user group, and subscription/VIP users, who pay a monthly fee of DKK 69 that allow them to utilise additional functions (ibid). In addition to providing a sharing platform for fashion exchange, Trendsales also has various other features, such as a secure payment system (with a 4 percent fee), parcel label purchase, and a Personal Shopper system that allows them to match users according to past trades and product/brand preferences. Especially, the payment system has become a vital part of Trendsales’ business model, as it enables them to control and steer the process of exchanging products, and thus allows them to ensure a secure trade (ibid). When analysing Trendsales from a circular perspective, they operate in the reuse/redistribute loop by offering a sharing platform for fashion exchange.

5.1.9 Size of the companies
The size of the companies is useful for the study’s further analysis. In order to include this dimension, the study has evaluated the companies according to the number of employees. Small-size companies are defined as employing 1-10, mid-size companies as employing 11-100, and large-size companies as employing more than 100 personnel. The below table provides an overview of the sizes of the eight companies.
<table>
<thead>
<tr>
<th>Company</th>
<th>Number of Employees</th>
<th>Source</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bag to Life</td>
<td>4</td>
<td>Appendix 1</td>
<td>Small-size</td>
</tr>
<tr>
<td>H&amp;M</td>
<td>161,000</td>
<td>(H&amp;M, 2016)</td>
<td>Large-size</td>
</tr>
<tr>
<td>Mud Jeans</td>
<td>16</td>
<td>Appendix 3</td>
<td>Mid-size</td>
</tr>
<tr>
<td>Redesign CPH</td>
<td>2-4</td>
<td>Appendix 4</td>
<td>Small-size</td>
</tr>
<tr>
<td>Resecond</td>
<td>4</td>
<td>Appendix 5</td>
<td>Small-size</td>
</tr>
<tr>
<td>Sort Slips Hvidt Slips</td>
<td>2</td>
<td>Appendix 6</td>
<td>Small-size</td>
</tr>
<tr>
<td>Tradono</td>
<td>26</td>
<td>Appendix 7</td>
<td>Mid-size</td>
</tr>
<tr>
<td>Trendsales</td>
<td>50+</td>
<td>(Trendsales, n.d.)</td>
<td>Mid-size</td>
</tr>
</tbody>
</table>

Table 2: Size of the case companies measured by number of employees

5.2 Actor level analysis

Having introduced the companies, the first part of the analysis will consider actor-level factors by employing the Business Model Canvas framework described by Osterwalder et al. (2010). This actor-level analysis constitutes the first level in the three-level analytical model, and serves to identify how firms create value, and from which part of their business model value is mainly derived. Doing so will allow the study to identify similar business models pursued by the different companies in this study, and map them in major categories. In the following section, this study will: 1) consider the key resources, key activities, key partners and cost structure (left side of the canvas); 2) consider customer segments, customer relationships, channels, and revenue streams (right side of the canvas); 3) evaluate the value proposition of the case companies; and finally 4) sum up the analysis by mapping the case companies according to their type of business model and the loop in which they operate (for a complete overview of the companies’ building blocks, see appendix 9).

5.2.1 Key resources, activities, partners and cost structure

Key resources

A successful business model is dependent on specific key resources in order to function in the best possible way. Trendsales and Tradono share key resources such as technical and IT-specific capabilities, necessary for operating as an online platform (Appendix 7, 8). In addition, they benefit from a pool of online data about customers, a key resource that especially Trendsales leverages in order to match customers with certain items. Thus, data about customers constitute a key resource for
Trendsales, as they have gathered customer data for more than 15 years (Appendix 8). For the smaller companies Resecond, Bag to Life, Redesign CPH, and SSHS, human capabilities constitute vital resources. For Resecond these mainly comprise the founder, as a creative concept driver, whereas for Bag to Life, SSHS, and Redesign CPH, these human capabilities constitute creative design and sewing capabilities of their founders/personnel. Additionally, the store location is a key resource for SSHS and Resecond, which operate on a small scale and only through a physical channel (Appendix 1, 4, 5, 6). For larger companies, such as H&M and Mud Jeans, key resources stem from intangible assets such as brand value and intellectual capacity (know-how). Additionally, H&M, and to some extent also Mud Jeans, may benefit from more tangible key resources such as well-developed manufacturing capabilities, distribution networks and existing infrastructure (Appendix 2, 3). H&M, in particular, may also benefit from key resources derived from their conventional operations, i.e. existing economies of scale and best practices within their overall production (Appendix 2).

**Key activities**

The key activities of the companies are closely related to their different business models and thus differ accordingly. For Trendsales and Tradono, main activities include the development and maintenance of their online platforms. Especially for Trendsales, key activities also include providing technical and legal support for their customers as well as utilising their customer data (Appendix 8). Resecond differs, as their key activities mainly revolve around maintaining the wardrobe and physically facilitating their sharing platform (Appendix 5). For Bag to Life, Redesign CPH, and SSHS, key activities include designing and sewing their products, and for Redesign CPH it additionally includes a sorting process of the materials. Furthermore, Bag to Life takes on a larger degree of marketing activities than Redesign CPH and SSHS (Appendix 1, 4, 6). Likewise, product design activities are key for Mud Jeans and H&M, while these companies also conduct garment collecting activities. However, for Mud Jeans these activities are of relatively higher importance compared to H&M, whose key activities rather include marketing as well as general management of their retail stores both physically and online (Appendix 2, 3).

**Key partners**

Circular business activities often require key partners with technical expertise and know-how that differ from those of typical fashion companies. Tradono and Resecond both report that they have no key partners (Appendix 5, 7). Trendsales, operating in the same loop, has outsourced a small part of
their business including the sale of advertisement space on their platform, and reports that this is an opportunity to focus on their core competences (Appendix 8). For Bag to Life, SSHS, and Redesign CPH, key partners constitute the companies/organisations from which they source used products. Bag to Life sources used products from different airlines, which therefore constitute key partners for them. (Appendix 1). Redesign CPH’s parent organisation, the Salvation Army, can be characterised as their key partner, as Redesign CPH receives all input materials from them (Appendix 4). Finally, SSHS’s key partner is DFD, which acts as a single partner providing input materials for the production of clothing (Appendix 6). On the contrary, H&M and Mud Jeans are not to the same extent reliant on a single partner for sourcing materials, but rather on their many individual customers to bring back clothes for recovery purposes. Due to this way of sourcing used products and their larger scale of operations, H&M and Mud Jeans are instead more reliant on their key partners I:Collect (H&M) and Repack (Mud Jeans) for sorting, recycling, and logistic purposes. Whereas Mud Jeans produces new fashion items from new and used fibres in-house, H&M relies on external production partners globally (Appendix 2, 3).

**Cost structure**

Supply chain activities become more complicated, when the loop entails activities further back in the supply chain. Therefore, loop activities are closely related to the cost structure of each company. Trendsales, Tradono and Resecond, which operate in the reuse/redistribution loop – the smallest of the three loops – have a cost structure very different from companies operating in larger loops. For these three companies, the main cost components are not directly related to the fashion items but rather to the daily operations of their platforms. For Resecond, main costs include rent of the space for the sharing platform, and for Trendsales and Tradono, main costs include developing and maintaining their online platforms (Appendix 5, 7, 8). For Redesign CPH, Bag to Life, and SSHS, which operate in the refurbish/remanufacture loop, main cost components are labour inputs used in the remanufacturing process, i.e. sewing the products. For Redesign CPH and SSHS, there are no costs of material supply, as they receive the materials for free from their partners, whereas Bag to Life pays a small fee related to the acquisition of materials for remanufacturing products. Additionally, the fact that all fashion items are produced manually adds to the dominance of labour in the cost structure of these companies (Appendix 1, 4, 6). In relation to this, Victoria Ladefoged from SSHS explains: “The clothes need loving attention. Because it is used, it often has holes or other
defects that requires a human eye” (Appendix 6). This stresses the dominance of labour inputs in the refurbish/remanufacture loop.

H&M, which operates in the recycling loop, states that sourcing sustainable materials and using recycled fibres are more expensive for them than sourcing regular virgin fibres. H&M prices products at the same level regardless of the materials they are produced from, why sustainable products lead to higher costs. However, they state that “[...] it is a large investment for us now, but we expect in the long run that an increased demand will help stabilise prices” (Appendix 2). Finally, Mud Jeans has different cost structures across their business operations, as they are present in all three loops with different business models. For operations taking place in the reuse/redistribute loop, Mud Jeans’ costs differ from the other companies operating in this loop, as they offer a €10 voucher to customers, who return their jeans (Mud Jeans, n.d. b).

5.2.2 Customer segments, customer relationships, channels and revenue streams

Customer segments

Overall, the customers of all companies in this case study share several general features, and are mainly women aged between 18 and 45 and aware of major fashion trends. Moreover, each company’s customer base is generally broader and more varied, the larger the company. For example, H&M, the largest company in this study, has the broadest range of customers including women, men, teenagers, children, and babies (H&M, 2016). H&M identifies a specific segment of its customers with an ‘environmental and financial surplus’, who are more consciously evaluating products based on environmental impact (Appendix 2). Redesign CPH, Tradono, Trendsales, and Mud Jeans serve both men and women of all ages, but identify their main customer segment as young women, whereas Resecond and Bag to Life mainly serve mid-aged women (Appendix 1, 3, 4, 5, 7, 8). SSHS differs from the other companies, since they observe their customers being equally distributed across gender and age (Appendix 6).

This study additionally identifies several main purchase motivators for customers of the different companies, such as quality and design. However, all companies describe environmental concerns to be less than first priority for customers and sometimes not even relevant for their purchase decisions. For Trendsales and Tradono, the main purchase motivator is the economic value of the product (i.e. purchase price less the value of the product to the customer) (Appendix 7, 8). H&M mentions similar motivators among their customers, and ranks the purchase motivators of their customers to be 1)
design, 2) price, 3) quality and 4) sustainability (Møgelgaard, 2017). Similarly, Victoria Ladefoged from SSHS states: “Customers concern for design and environmental issues are connected, but with clothes, the environmental concern cannot be the the primary driver; that has to be the design. You do not buy something if it does not fit well and feel good, and then we as a company are responsible of producing it sustainably” (Appendix 6). For SSHS, Mud Jeans, Redesign CPH, and Bag to Life, the main purchase motivators of their customers seem to be uniqueness and the story of the products, which is provided by the fact that fashion items are remanufactured using materials previously used for another purpose (Appendix 1, 3, 4, 6). Redesign CPH describes how their customers request that the brand labels of the used products are clearly visible – a testament to the fact that customers value the unique story of the products they buy (Appendix 4). Resecond differs from the other companies in this study, as their customers are mainly driven by a sense of community derived from being part of the shared ‘wardrobe’, rather than price or other concerns (Appendix 5).

Customer relationships

When considering customer relationships, the study can draw on the above insights and conclude that the relationship between each company and its customers depend on the type of customer as well as the main purchase motivators described above. For Redesign CPH, SSHS, and Bag to Life, customer interactions are generally of a personal nature. These companies have face-to-face contact with their customers through their stores (SSHS, Redesign CPH) or via fairs and festivals (Bag to Life) (Appendix 1, 4, 6). Due to the strength of H&M’s brand, the company has a relationship to a broad base of customers, and in addition to this, they utilise their garment collecting initiative to establish and strengthen these customer relationships (Appendix 2). Mud Jeans and Resecond’s relations to their customers are best characterised as community. Mud Jeans reports that their customers are happy and more than willing to share the story of the company on different social media platforms (Appendix 3). Likewise, Resecond describes an intimacy between users of the shared ‘wardrobe’, as the physical platform facilitates personal interactions between a small number of users (Appendix 5). On the other hand, Trendsales and Tradono do not experience the same direct relationship with their customers as they facilitate a distribution of a wide range of brands on an online platform (Appendix 7, 8).
Channels
Mud Jeans, H&M, Bag to Life, Trendsales, and Tradono utilise online channels to reach their customers, where the smaller companies Redesign CPH, Resecond, and SSHS only operate through their physical store, although SSHS recently started selling a limited number of products online. SSHS views the online distribution channel as an unavoidable aspect of modern retail, but have faced challenges when doing so, as it is difficult to get a feel for the unique design, quality, and story of the products online (Appendix 6). On the contrary, Trendsales and Tradono mainly operate through an online channel, which is largely a consequence of their business model being dependent on the larger customer base that an online channel enables (Appendix 7, 8). The limited scalability of physical sharing platforms is evident when considering Resecond’s channels. The company reach their 50 customers through the physical platform and relies solely on word-of-mouth advertising (Appendix 5). On the contrary, Mud Jeans and H&M distribute online and through physical stores. Due to their relatively smaller size, Mud Jeans have prioritised to partner up with retail stores to distribute their products in order to establish a broader market presence, instead of being limited by operating fewer wholly-owned stores (Appendix 3). H&M, on the other hand, has the sufficient size and resources to continuously open new stores, why they operate all their distribution channels themselves (Appendix 2). Mud Jeans mainly reach their customers through word-of-mouth advertising on social media, whereas H&M employs a broad marketing strategy through several channels (Appendix 2, 3).

Revenue streams
H&M, Mud Jeans, SSHS, Redesign CPH, and Bag to Life all have a conventional revenue streams, where they earn revenue on the basis of the sale of a product (Appendix 1, 2, 3, 4, 6). Trendsales and Tradono, on the other hand, have a different way of generating revenue that is indirectly dependent on the number of products sold. They generate revenues based on the sale of an item through their platform, by charging customers a transaction fee to use their secure payment systems (Appendix 7, 8). Trendsales additionally capitalises from add-on services, promotions and sold advertisement space on their platform (Appendix 8). In comparison, Resecond’s revenue model is completely unrelated to the number of products traded and is instead dependent on the number of monthly subscribers in the ‘shared wardrobe’ (Appendix 5). Finally, Mud Jeans generates revenues from a traditional purchase model, as well as a leasing model, where customers pay a monthly fee of €7.5 in order to lease the jeans (Appendix 3).
5.2.3 Value proposition

When analysing the cases in this study, it becomes clear that their value propositions differ, why they also have different business models to bring this value proposition about. A value proposition is the promise of delivering value either through solving customers’ problems or satisfying their needs, which ultimately constitutes what customers are willing to pay for. The value proposition is the epicentre of a business, around which all other building blocks of the business model revolve. Therefore, a successful value proposition can generate a competitive advantage over competitors, and lead customers to receive greater (perceived) value from buying a product or service from the particular business (Osterwalder, et al., 2010).

Trendsales and Tradono offer their customers an online shared platform, where users can buy, sell, and exchange used clothes. The value that customers receive is the ability to enter a single platform, where they can sell their own clothes, and the availability of buying thousands of other users’ used clothes. In this sense, both platforms function as online flea markets for fashion items, where the real value added stems from the fact that all activities happen in a centralised and connected hub, available for all users at all times (Appendix 7, 8). This business model tackles availability and time issues of physical flea markets and other second-hand initiatives, while differentiating itself from other online platforms for used items, like Ebay.com and DBA.dk, by mainly focusing on fashion. However, the two companies differ in the focus of their value-adding activities. Trendsales is mainly focused around providing a platform that facilitates a secure trade of pre-owned products, whereas Tradono mainly creates value for their customers through easy access to a social media platform (Appendix 7, 8).

Resecond offers its customers many of the same benefits as Tradono and Trendsales, but operates on a smaller scale. As a consequence of their small size and physical platform, Resecond creates value for their customers by providing them with a sense of community (Appendix 5). Furthermore, Resecond distinguishes itself from Trendsales and Tradono by pursuing a subscription-based approach to sharing used clothes, where customers have free access to exchange clothes in the ‘wardrobe’. Resecond’s value proposition thus differs, as the focus on making a good bargain is to some degree replaced by a focus on providing users with a larger ‘wardrobe’ constantly updated with new clothes provided by users. Nevertheless, Resecond’s value proposition shares general similarities with the value propositions of the two other sharing platforms.
Redesign CPH relies more on creating value for their customers by providing them with unique pieces of fashion, remanufactured from existing pieces of clothing, thereby decreasing the negative environmental and social impact. A part of Redesign CPH’s value propositions stems from the unique story of each item’s path to the end consumer. Redesign CPH thus creates value by upcycling and selling unique fashion items after remanufacturing them from used products, thereby adding value to otherwise discarded clothes (Appendix 4). Similar to this value proposition, Bag to Life, which also operates in the refurbish/remanufacture loop, generates value to their customers by designing bags from used materials, provided by airlines. The uniqueness of their designs stems from the exclusive availability of the particular materials used for their products and from upcycling otherwise discarded materials (Appendix 1). By creating unique designs through upcycling, Bag to Life creates value to their customers in similar ways as Redesign CPH.

SSHS offers a value proposition that holds certain similarities to Redesign CPH and Bag to Life and likewise refurbishes/remanufactures used products. The main value that SSHS offers its customers originate in unique products of good design produced from materials that are built to last. As Victoria Ladefoged from SSHS explained, “Customers do not buy something if it does not fit well and gives you a good feeling. It has to work as a design” (Appendix 6). SSHS thus provides value by offering their customers good design and high-quality products made from remanufactured kitchen and hospital textiles.

The core of H&M’s overall value proposition is to provide their customers with high-street fashion at affordable prices, while continuously creating new collections to keep track of recent trends. Specifically for their Conscious collections and garment collecting initiative, this value proposition also includes providing customers with a choice of buying environmentally friendly clothes at the same price level as their other products. With regards to sustainability and recycling, “to unite the cool design with sustainability, priced at a level where anyone can play along, that is what I think is clearly one of our strengths when looking at the overall market” says Sustainability Manager, Mia Møgelgaard (Appendix 2). In addition to this, H&M offers direct financial value to their customers by providing them with a 15 percent discount voucher, when returning used clothes (H&M, 2016).

Mud Jeans has several different value propositions, as they operate in different loops and with different business models. The option of leasing a pair of jeans adds value by offering a monthly payment schedule rather than a large up-front payment and the opportunity to replace jeans with a new pair after 12 months of usage without any extra fees. For their conventional purchase model and
their leasing model, Mud Jeans creates value for their customers by offering jeans with a comfortable fit, good quality, and design with a unique story (Appendix 3). Moreover, the most important driver of value proposition for Mud Jeans’ customers is the sustainable aspect of buying their jeans, and therefore they offer what they denote “guilt free consumption,” which is a central part of their value proposition (Mud Jeans, n.d. b).
<table>
<thead>
<tr>
<th></th>
<th>BMC Analysis</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>RS</strong></td>
<td>Subscription model</td>
<td>Mid-aged women. Relationship: Community. Channel: Physical store. Rental costs. Location and creative concept driver. No key partners. Facilitating physical wardrobe.</td>
</tr>
<tr>
<td><strong>BL</strong></td>
<td>Conventional</td>
<td>Mainly women, frequent travellers. Relationship: Personal contact. Channel: Online, via airlines, and through fairs. Legal administration, production, sewing and design. Design and sourcing. Unique design and exclusive materials. Condor and Lufthansa. Unique design from upcycled materials.</td>
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Table 3: Summary of BMC analysis
5.2.4 Mapping companies in the matrix

Having introduced and analysed each of the case companies at an actor-level according to the Business Model Canvas framework, this study is able to answer the first part of the research question: to identify different categories of circular business models and to place each case company according to this categorisation. After conducting the analyses of the case companies, the study is able to identify important similarities and differences across the companies according to the loop in which the company operate and the type of circular business model it pursues. According to the first dimension, the study identifies four companies operating in the reuse/redistribute loop including Mud Jeans, Trendsales, Tradono, and Resecond. In the refurbish/remanufacture loop, the study identifies the four companies: Mud Jeans, SSHS, Redesign CPH, and Bag to Life. Finally, the study identifies two companies operating in the recycling loop, namely H&M and Mud Jeans. In this first dimension of the categorisation, there is an equal amount of companies placed in the reuse/redistribute loop and refurbish/remanufacture and half as many companies operating in the recycling loop. Additionally, it is observed that Mud Jeans is the only company operating in more than one loop.

In the second dimension, which is the type of circular business model that each company pursues, this study will distinguish between major types of business model categories, inspired by the categories identified by Lacy et al. (2014), and according to the empirical data collected from the case studies. The study identifies four different types of circular business models: 1) material life extension, 2) product life extension, 3) sharing platform and 4) product as a service. The first category, material life extension, include businesses that utilise materials from used products to produce new products and thus include five of the case companies, namely Redesign CPH, Bag to Life, SSHS, Mud Jeans, and H&M. The second category, product life extension, applies to companies that prolong the life of the initial product and therefore include Mud Jeans. The third category identified is sharing platforms, which enables customers to share/exchange their own products, and include Trendsales, Tradono, and Resecond. The fourth and last category identified is a ‘product as a service’ model, which includes Mud Jeans. For the case companies in this study, only Mud Jeans operate in more than one type of business model.

In addition to the two dimensions identified above, the categorisation will also include size of the companies as an additional descriptive variable. The companies are differentiated in size based on table 2. H&M is the only large company, where Mud Jeans, Tradono, and Trendsales are mid-sized companies, and Resecond, Tradono, Redesign CPH, SSHS, and Bag to Life as small companies.
Having placed each case company according to two dimensions: loop and circular business model category, the study is able to map all of the companies in the matrix beneath.

![Matrix of the major categories of circular business model and loops](image)

From this map, it is visible that the included case companies are clustered in certain combinations of the included variables. The study thus identifies a cluster in the junction between the reuse/redistribute loop and sharing platform business model category, where the small- and mid-sized companies Trendsales, Tradono, and Resecond operate. This cluster will be referred to as Cluster A in the rest of the study. The second cluster identified is placed in the combination between the refurbish/remanufacture loop and the material life extension business model category, where the small-sized companies Redesign CPH, Bag to Life, SSHS, and the mid-sized company Mud Jeans operate. This cluster will be referred to as Cluster B. The last cluster found is located in the junction between the recycle loop and the material life extension business model category, and includes the mid- and large-sized companies Mud Jeans and H&M. This cluster will be referred to as Cluster C.
These major clusters of companies are distinct in the sense that each company is exclusively located within one combination of loop and business model category. Nevertheless, it is important to note that this pattern does not apply to Mud Jeans, which operates in several loops as well as business models and therefore stands out when compared to the remaining companies. Mud Jeans therefore constitutes an impure Cluster B and Cluster C company, which might affect the findings in these clusters. This is especially relevant for Cluster C that only consist of one other company besides Mud Jeans, why generalisations about findings in this cluster might be weakened.

The nature of some of the business model categories identified above inherently prevents them from successfully operating in specific loops, why these combinations are eliminated. An example of such an impossible combination includes the combination of a reuse/redistribute loop and the material life extension business model. As this circular business model presupposes that a new product is sold, it cannot take place in the reuse/redistribute loop, where the used products are not altered. Furthermore, it is important to note that the categorisation is made according to the empirical data from the case companies included, why it limits itself to look at circular business model categories that are represented in the study. Therefore, this study will operate only with the categories outlined above.

5.3 Supply chain analysis

Having analysed the case companies at an actor-level and plotted them according to loop and business model, the study will continue the analysis by identifying how these business models are affected by factors related to their supply chain. Efficient supply chain activities are vital for extracting the maximum possible value from operations, why it is important to continuously streamline the supply chain in order to avoid possible bottlenecks that may may slow down processes or decrease the quality of production. Utilising the theory of Guide and van Wassehove (2009) introduced previously in the study, it is evident that companies employing circular business models operate with different supply chain designs, and therefore also face different challenges when managing supply chain activities. A closed loop supply chain is typically longer when compared to a linear supply chain and include various activities otherwise not undertaken by conventional fashion manufacturers. Additionally, the above analysis demonstrates that circular business models in the fashion industry vary considerably, why their supply chain activities are likewise dependent on both the loop that each company operates in, as well as the type of circular business each company pursues.
5.3.1 Front end

In general, companies operating in the reuse/redistribute loop have a simpler supply chain than companies operating in the refurbish/remanufacture and recycling loops. Supply chain activities for circular businesses are more complicated depending on the size of the loop. Hence, the more a product is ‘changed’ before being remarketed to customers, the more complex the supply chain activities are. Following this line of thought, companies operating in Cluster A have a more limited supply chain, as users of the platforms supply used clothes themselves. For these companies, possible issues may arise within front end activities regarding timing, quality, and quantity of used products, of which the companies facilitate the redistribution. An example of such front end issues for Cluster A companies is illustrated by Resecond, which experienced problems of an above adequate supply of dresses, and in the end exceeded capacity, when operating in their initial store in the Nørrebro district. After moving to the Nordhavn district, the company is now faced with the opposite problem, namely an inadequate supply of dresses, due to a decreased number of users of the platform (Appendix 5). This is a good example of how Cluster A companies are dependent on the timing and quantity of used products supplied. Additionally, Resecond has faced problems with the quality of the dressed handed in at the exchange, as certain customer segments traded lower quality dresses for higher quality dresses, which led to a continuous lowering of the quality of dresses exchanged at Resecond’s shared ‘wardrobe’ (Appendix 5). Such front end issues may be less outspoken for the larger companies in Cluster A such as Trendsales, as they experience a greater and constant supply of items. Their overall supply is thus less unstable, and timing and quantity does not constitute as crucial an issue. However, the larger Cluster A companies may also face supply issues during demand peaks for certain products (Appendix 8).

Cluster B companies likewise face front end challenges, though different in nature. Whereas Cluster A companies mainly face timing and quantity front end issues, Cluster B companies mainly face front end issues regarding the quality of the sourced products. The quality of used textiles varies significantly, why it is necessary for companies in this cluster to carefully sort the recovered products according to quality. Out of the clothes recovered by Redesign CPH’s parent organisation, The Danish Salvation Army, 60 percent are considered second tier. Out of the total amount of second tier clothes received, Redesign CPH cannot use one third of the sourced materials, meaning that there is a distinct variability in the quality of supplied materials. This represents a significant bottleneck for Redesign CPH’s production (Appendix 4). Similarly, SSHS receives a large amount of used products from their partner DFD, which vary significantly in quality due to different use conditions. Therefore,
it requires SSHS to manually sort these products before being able to produce new products of sufficient quality (Appendix 6). Cluster B company, Bag to Life, has been able to enhance the sufficient supply of used products by increasing brand awareness. Initially, the company had problems finding airlines willing to supply old materials, but today experience a situation where several airlines independently have reached out to the company to offer to sell old materials (Appendix 1). These examples demonstrate the fact that Cluster B companies may face front end issues in terms of ensuring quality of the sourced used products.

For Cluster C companies, the most prominent front end issue is related to sourcing an adequate quantity of used products. Companies operating in Cluster C are of a certain size, why they need a greater absolute supply of used products. Especially H&M, the largest company in Cluster C, has faced challenges in terms of incentivising their customers to use their channels for returning used textiles, and thereby experience a bottleneck in ensuring a sufficient supply of used clothes. Even though accessible and easy channels for the return of used items are set in place, many customers do not use this opportunity, despite the fact that they receive a voucher of 15 percent discount when doing so (Appendix 2). A main reason why quantity is more important than quality for Cluster C companies is that the used textiles are recycled and split into fibres before being used for new production. However, quality may also constitute a bottleneck for Cluster C companies, since different types of textile material requires different recycling techniques and resources. Both H&M and Mud Jeans explain that denim fibres are more robust and thus easier to recycle when compared to synthetic fibres such as viscose (Appendix 2, 3).

5.3.2 Engine

The second set of processes considers the operational issues related to remanufacturing and recycling, and is referred to as engine processes. It is important to consider whether it is technically feasible and economically viable to produce when analysing engine processes. In comparison to front end activities, which are relevant for all loops, engine activities are mainly relevant for companies operating in the refurbish/remanufacture and recycle loops. As Cluster A companies operate in the reuse/redistribute loop, and does not undertake production, the analysis of engine processes will not apply to these. Mud Jeans as a case company stands out by operating in all three loops as well as within several different circular business model categories. Consequently, Mud Jeans’ supply chain entails many parts and include many actors, why the company may face problems with streamlining all its engine processes.
Cluster B companies face engine issues that are mainly related to whether their engine processes are economically viable. The engine processes of these companies include the sewing/production process, which takes up a large amount of resources due to the fact that production takes place in Northern European countries, where labour costs are high (Appendix 4). An additional operational challenge facing Cluster B companies is the difficulty of hiring skilled craftsmen, which are needed to sew and manufacture the products (Appendix 6). A general tendency for these companies is thus that engine challenges are characterised by issues of economically viable processes.

Cluster C companies face engine issues regarding both the technical feasibility of the recycling processes as well as issues of economic viability. Currently, Mud Jeans is only able to produce jeans with 40 percent recycled fibres, since the industry is not yet technically capable of producing jeans with 100 percent recycled fibres (Appendix 3). H&M mentions similar problems of having to add a mixture of virgin fibres and recycled fibres in order to produce (Appendix 2). Furthermore, Mud Jeans and H&M’s current technical capabilities, which allow them to recycle and produce new items from used materials, are limited to production of items made of denim and similar textiles. Although it is technically feasible to manufacture from other type of recycled fibres than denim, it is only possible by either using extensive amounts of chemicals, which is not in line with the values of the companies, or by producing it in a way that is not economically viable (Appendix 2, 3). At this point, Cluster C companies therefore mainly manufacture products made from recycled denim fibres.

5.3.3 Back end
Back end processes entail the development of a market for the redistributed, remanufactured, and recycled products. There are several general trends shared by all clusters when it comes to the development of secondary markets for clothing items. As the awareness of environmental and social issues in the fashion industry have recently become more outspoken, marketing second-hand, remanufactured, and recycled fashion items has generally become easier (Appendix 8). However, the study also identifies differences across the three clusters regarding the back end activities of developing markets for remanufactured products. Cluster A companies may face challenges to create a market for all products due to the variability in quality, brand, and condition of the products on their platform (Appendix 5, 7, 8). For instance, it is easier for companies in Cluster A to facilitate a trade of high quality products, such as designer bags, because users more proactively search for such items. Contrarily, it is more difficult to sell lower quality or no-brand products, because the prospects of a good trade are lower for these items. To accommodate such a challenge, Trendsales actively aids their
users to find products suitable for their preferences via their Personal Shopper function (Appendix 8). Not only does this benefit Trendsales in terms of increasing the number of trades and thereby revenues from transaction fees, but also helps developing the market for used products further, as customer find it easier to find and exchange suitable products. Another factor related to back end activities is the distribution of products to the customer, where Cluster A companies have no distribution channels, and thus do not face issues or bottlenecks in this regard (Appendix 5, 7, 8).

Cluster B companies face different back end issues, as they remanufacture used products into completely new products, why the initial brand value of the used products does not affect the market development for these products. As the Cluster B companies operate at a relatively smaller scale, market development for these products does not constitute a critical bottleneck. Their small scale operations also include a limited number of distribution channels, which are generally physical (Appendix 1, 4, 6). Bag to Life (a pure Cluster B company) and Mud Jeans (an impure Cluster B company) also employ partners to distribute their products. The two companies have thus chosen to employ partnerships with retailers/distributors in order to reduce issues regarding market development in the final part of their supply chain (Appendix 1, 3). Furthermore, all Cluster B companies serve niche customer segments, why they do not face direct issues of establishing presence in a broad market, but rather issues related to attracting the right customers in a smaller niche market. Pursuing this niche strategy, companies to a greater extent rely on word-of-mouth marketing and social media (Appendix 1, 4, 6).

Although Mud Jeans and H&M are positioned in the same cluster, they face different back end issues due to the fact that Mud Jeans’ operations are not restricted to this cluster. Mud Jeans relies on similar market development strategies as companies in Cluster B, which is related to the fact that they also operate in this cluster. Thus, their market development activities resemble the niche marketing strategies of the other Cluster B companies described above. In addition, Mud Jeans distribute their products solely via retail partners and their own online channel, why they rely more on partners within certain parts of their supply chain, including back end operations (Appendix 3). Likewise, H&M relies heavily on partners in their supply chain, but not regarding back end issues such as market development. H&M, contrary to Mud Jeans, spends significant resources on market development for their recycled products and has invested significantly in promoting a sustainable brand image. This might stem from the fact that market development for their recycled products may be more difficult, as they have an already established brand image that has not previously immediately been associated
with sustainability (Appendix 2). Following this line of thought, it is potentially more difficult for e.g. H&M as a brand to create awareness of their sustainability profile and their circular business activities than companies promoting niche second-hand fashion such as Cluster B companies. Other potential back end issues H&M might face are related to market cannibalisation of their other product lines, since customers buying recycled H&M fashion items may forgo other H&M purchases. In this sense, back end issues of cannibalisation may be more critical for companies offering parallel product lines of both virgin products as well as recycled products.

This part of the analysis has provided several insights on how supply chain activities of circular businesses to a large extent differ according to cluster. Having analysed the second level of the three-level analysis, the study will continue with the third and final analytical level, which is an assessment of the macro-environmental factors influencing the operations of the companies in each cluster.

5.4 Macro-environmental analysis

The fashion industry has repeatedly been affected by external issues such as consumer trends, multilateral climate agreements, and economic fluctuations. The global textile industry has a highly complex value chain that generally lacks transparency, why fashion companies are subject to the bad publicity that may occasionally arise due to protests by labour unions and activists. Especially large fashion companies are prone to this negative publicity, since it hurts their reputation and damages their brand, which is at the heart of their business (Welford & Frost, 2006). Here, companies pursuing circular business models can utilise a momentum if they position themselves according to their nonmarket environment (Baron, 2010). For instance, after the Rena Plaza incident in Bangladesh where 1,129 textile workers were killed, politicians sharply increased regulations in the industry, while consumers became more aware of unethical practices (Butler, 2013). With regards to climate change and resource depletion, the Paris Agreement represents an opportunity for fashion companies working with circular business, both in terms of foreseeing and handling increased regulation, but also in terms of utilising the opportunities that arise from promoting a sustainable agenda. For instance, companies may tap into the €5.5 billion earmarked for the transition of European businesses and consumers towards a more circular economy, as previously mentioned (EC, 2015).

5.4.1 Political factors

The companies in Cluster A all disregard political regulation as either a driving force or as an obstacle (Appendix 5, 7, 8). Ole Kristensen from Trendsales states: “I don’t believe in legislation, and I don’t
The companies in Cluster B identify increased political regulation as a long-term opportunity. Policies and agendas that promote circular economy by e.g. offering financial support to high-risk/unconventional projects is an opportunity for this cluster, which may ultimately benefit their business, but Cluster B companies do not consider it an urgent necessity. Companies in Cluster B aim to influence the political agenda by promoting public awareness on circular business initiatives by participating at public political festivals, summits etc. (Appendix 1, 4, 6). For Cluster C, which operate at a larger scale, political initiatives may prove more crucial. Bert Van Son from Mud Jeans reports: “Finance is the biggest challenge, because regular finance (institutions red.) have difficulties believing in this venture, and today it is not possible to get government support” (Appendix 3). Cluster C company, H&M, agrees that regulations and incentives to promote circular economy might incentivise other major players in the industry to pursue circular business, which in the end may pressure manufacturers to increase their use of sustainable and recycled materials. Being a large and influential player enables H&M to work closely with regulators, which creates opportunities to affect the political agenda, e.g. by sending occasional open letters regarding political obstacles to legislators (Appendix 2). As mentioned, Mud Jeans also hopes to influence legislators to impose more restrictions and promote circular economy, but unlike H&M they do not rely on the same degree of influence due to their comparably smaller size. Rather, they seek to promote circular economy by being a pioneer within the fashion industry (Appendix 3).

5.4.2 Economic factors
When it comes to economic factors, the companies in this study mainly show attitudes that can be connected with their size and the products they sell. The companies in cluster C are larger and therefore more vulnerable to economic cycles, because their supply chain can experience ineffective stacking and bottlenecks stemming from lower sales activity (Appendix 2, 3). Contrarily, companies in Cluster B can operate more agilely in such situations due to their small scale operations. For instance, SSHS operates with almost no inventory but produces most of the clothes, when people pre-order it in the physical shop (Appendix 6). With regards to pricing of the products, companies operating in the high-end price segment are more vulnerable to economic swings, because consumers tend to buy cheaper brands when faced with less disposable income (Perloff, 2014). In this sense, SSHS and Bag to Life might be more exposed to economic downturns than high-street brands like H&M. Conversely, Cluster A companies, in particular Trendsales and Tradono, incorporate some counter-cyclical elements in their business models, since users tend to shop for used products instead
of buying new ones in economic downturns, while they also have more users selling products when in financial distress (Appendix 8).

5.4.3 Social factors

Socio-cultural factors are pivotal in the fashion industry, both circular and conventional, and in this regard consumer preferences are key. On a general level, there has been an increase in consumer awareness regarding environmental factors, and this trend has proven to affect the clusters to various degrees. Socio-cultural factors such as fashion trends and consumer preferences do not significantly affect the companies in Cluster A, since the content of their platforms automatically vary with changing fashion trends (Appendix 5, 7, 8). In fact, increased consumption and faster fashion cycles only increases the activity and therefore also revenue of the shared platforms. They are, however, affected by a socio-cultural trend regarding the perception of used clothes. Previously, used clothes have been perceived as waste, but are today perceived as a more valuable resource by both consumers and companies, why buying used clothes has become more socially acceptable (Appendix 8). With regards to consumers’ environmental awareness, this study identifies a cleavage between companies in Cluster B and C on the one hand, and companies in Cluster A on the other. Companies in Cluster B and C like Mud Jeans and Redesign CPH observe increased business activity due to changing consumer preferences and increased environmental awareness (Appendix 3, 4). Furthermore, H&M have recently identified a more environmentally aware segment which they cater to with their Conscious collection (Appendix 2). This tendency is not apparent for Cluster A companies, where e.g. Tradono and Trendsales do not identify the environmental impact of buying used clothes as a driver for customer acquisition (Appendix 7, 8).

The companies in all three clusters agree that changing socio-cultural attitudes are the primary driving force for a comprehensive circular economy in the fashion industry to become a reality. This regards customers as well as companies designing the clothes. Jette Skov from Redesign CPH states: “I believe that the industry wants it (to produce in a circular way red.), but at the same time this requires a massive change in people’s mind-sets across the entire industry” (Appendix 4). Currently, the lack of transparency in the fashion industry makes it hard for consumers to make an informed choice on sustainability, and as Mia Møgelgaard from H&M expressed it, “in the end, those who are interested in it (sustainability red.) are also the ones who have some kind of social and financial surplus” (Appendix 2).
5.4.4 Technological factors

Technological factors have changed the way the fashion industry operates, and companies pursuing circular business models are no exception. Without the internet, online sharing platforms like Trendsales would not exist, and neither would Tradono without mobile devices and app technology. Likewise, technologies that allow companies to handle used clothing and eventually to break down fibres to generate new materials are crucial for the development and growth of the circular economy in the fashion industry. Companies in Cluster C are heavily dependent on technologies that enable them to increase the effectiveness of their recycling processes, while being able to turn larger amounts of used textiles into new products. Mud Jeans and H&M currently face significant challenges regarding recycling technology, why they both identify this as a barrier to scale up their recycling operations. However, they also see business opportunities in developing recycling technologies that enable them to scale up (Appendix 2, 3). For instance, H&M have recently started to invest more in small start-ups that pursue this line of technology (Appendix 2). Mud Jeans identifies similar challenges mainly regarding the level of technology for their recycling activities. Although recycling technology has recently developed significantly, Mud Jeans reports that the industry is still far from being able to produce clothes from 100 percent recycled fibres: “right now the best we can get is 40 percent recycled materials, but three years ago it was around 23 percent” (Appendix 3). Companies in Cluster B, such as Redesign CPH and SSHS, do not identify any technological factors representing either barriers or opportunities, since their remanufacturing processes are mainly undertaken manually (Appendix 4, 6). Finally, Cluster A companies all believe that the necessary technology for their current operations is already in place but is not currently being utilised to its full potential. For Cluster A companies, it is therefore more important to develop capabilities to utilise existing technology, rather than develop new technologies (Appendix 5, 7, 8).

5.4.5 Environmental factors

Environmental factors can be considered to influence macro-environmental factors at a general level and may thus affect both socio-cultural and political trends, such as consumer preferences, public agendas, as well as the costs of sourcing. As such, environmental factors are key in many aspects when analysing companies pursuing circular business models. The clusters differ with respect to how exposed they are to the influence of environmental factors. For Cluster A companies, the importance of such environmental factors is not as critical, due to the nature of their business model and the fact that they only redistribute used clothes (Appendix 5, 7, 8). When operating in the
remanufacture/refurbish loop that takes the used products one step further back in the supply chain, environmental factors become somewhat more important. Therefore, Cluster B companies are affected by environmental factors to a slightly greater extent, because their remanufacturing activities require some natural resources, including water and energy (Incentive, 2015). When analysing companies in Cluster C, this study identifies environmental concerns to be of greater importance due to the rising costs of raw materials stemming from deterioration of natural resources. The recycling activities for Cluster C company, H&M, is not currently as economically viable as their conventional activities, but they view these operations as a long-term strategy. When they pursue recycling activities, they invest with “a belief that prices at some point in time will stabilise, and may even be lower compared to conventional materials” (Appendix 2). In this sense, it is clear that fashion companies in Cluster C are more affected by environmental factors leading to resource depletion, why they are also the ones taking this into account in their business models.

5.4.6 Legal factors
Companies in the fashion industry are also highly influenced by legal factors affecting their operations. Companies with longer supply chains and transnational operations are especially subject to such influence. In this regard, cross-border trade and waste management legislation in local governments are the main factors that affect the companies pursuing transnational circular business. For instance, H&M faces significant obstacles when engaging in different legal environments, where regulation about waste differs. Mia Møgelgaard from H&M states: “Some municipalities are interested in getting waste to their incineration plants. If you look at it (used clothes red.) as waste, it is theirs to handle, whereas if you see it as a resource, it is okay for companies to take back the products” (Appendix 2). Being the largest company in this study and present in 64 countries, they are generally more subject to transnational trade barriers and restrictions than smaller companies in all clusters, and have e.g. experienced legal challenges with exporting used clothes from Turkey to their partners’ recycling station (Appendix 2).

Cluster A companies face legal challenges that mainly concern domestic legislation, which include dealing with fraud, scams, and dishonest users. For the online platforms Tradono and Trendsales, dealing with fraud and scams represents a key challenge (Appendix 7, 8). Fraudulent behaviour is difficult for them to eliminate, unless they introduce identity recognition requirements. This has prompted Trendsales to introduce a non-obligatory option to verify user profiles by use of the Danish NemID validation service. Additionally, Trendsales face challenges related to navigating in the legal
Tradono, contrary to Trendsales, does not provide identity recognition services, since they fear that a more extensive process of creating a user account will lead to a potential loss of customers (Appendix 7). For Resecond, the problem is of a more moral character, because people exchange bad or broken clothes for clothes of better quality and more expensive brands (i.e. trading up). On a broader level, Resecond identifies significant legal obstacles to be overcome in order for the circular economy to be more viable in the future. The founder of Resecond, Claus Skytte, says “we’ve already started sharing our personal data, and even our houses. Now we need to share our cars and our wardrobes. But existing regulation and power structures hinders that” (Appendix 5).

Moreover, it is important to consider issues related to tax legislation, when analysing legal factors that influence the case companies. Currently, customers pay a value-added tax (VAT) for each purchase, if they buy recycled products from Cluster C companies or remanufactured/refurbished products from Cluster B companies pay, because the fashion items are legally considered to be new products (Appendix 4). On the contrary, customers buying or exchanging products through the sharing platforms, facilitated by Cluster A companies, do not pay additional VAT for the products they buy or rent from other users. This difference might thus constitute an advantage for Cluster A companies, as VAT exemption might lead users to sell more clothes, which ultimately benefits the companies.
6. Key findings

Having conducted the three-level analysis of the major categories of circular business models within the fashion industry, and assessed how they are affected by actor, supply chain, and macro-environmental factors, this section of the study will discuss the key findings. First, the study will separately discuss the findings for the three clusters with the purpose of identifying the key success drivers for each cluster. Second, the study will compare the key success drivers between the three clusters and discuss their differences and similarities.

6.1 Cluster A

The companies in Cluster A consist of small- and mid-sized companies and are classified by operating in the reuse/redistribute loop with a sharing platform business model. Cluster A companies mainly derive value from providing their users with a platform that is accessible and easy to use. What is distinct about Cluster A companies is that they provide a platform that facilitates interaction between their users with the purpose of exchanging/buying/selling clothes, and does thus not generate revenue in a conventional way, but rather through other channels such as transaction fees, membership fees, add-ons, and advertisement. Costs mainly consist of maintenance and development of the platforms, why companies in Cluster A are also very dependent on human resources and IT capabilities. Another common feature is that the companies pursue most activities in-house, why they have a relatively large degree of control over their business activities. The nature of Cluster A’s business model creates a community for the users of the platform, where customers enter into a relation with one another rather than with the company. Although the customers vary in terms of age, gender, and preferences, they are all mainly motivated by the prospect of a good deal, and environmental concerns are of less or no importance.

The business model of Cluster A companies is characterised by a relatively lean cost structure, since they do not design, produce, or market clothes, but only facilitate the redistribution of used clothes between users. Thus, they have no engine processes, and are not faced with supply chain issues in this regard. They may, however, face front end issues regarding the timing and quantity of their supply, as the successful operation of a sharing platform necessitates a supply of clothes to be traded. Therefore, they are highly dependent on their users for supplying clothes for their platform and have little control over both the quantity and timing of supply. Additionally, a sharing platform such as
Resecond may face front end issues related to continuous downgrading of the quality of supplied clothes, since customers do not pay according to the product they exchange, but instead pay a fixed monthly fee. With regard to back end issues, Cluster A companies face challenges with developing the market for several types of used products, as opposed to conventional market development for a single product brand, due to the fact that a broad variety of fashion items are traded on the platforms. The need for developing several markets is highlighted further by the fact that the user pool of the platforms is diverse.

When it comes to the influence of macro-environmental factors, Cluster A companies likewise share several key features. Cluster A companies differ from the other clusters in this case study, as they promote circular business without being driven by environmental concerns, and therefore they are only to a small extent affected by political and environmental factors. These companies are likewise relatively unaffected by changing demand patterns caused by socio-cultural trends, because their platforms’ supply of clothes automatically changes according to fashion trends. This mechanism is caused by the nature of their business model, where private users supply their own used clothes, which presumably follows recent trend patterns. They are, however, affected by a socio-cultural trend regarding the perception of second-hand fashion, as buying used clothes recently has become more widespread. Another characteristic that applies only to Cluster A companies, is that purchasing used clothes is exempt from value-added tax, which potentially lowers the effective price of the products and thereby may incentivise the purchase of used clothes. Finally, a feature exclusive to Cluster A companies is that their demand is somewhat counter-cyclical, in the sense that customers may purchase/sell more used clothes in times of economic distress due to lower disposable income.

Overall, this study identifies the ability to develop a scalable platform as a key success driver for Cluster A companies. The importance of scalability is related to front end issues of having an adequate supply of used clothes. Large-scale operations enable the companies to obtain a sufficient number of users, who will supply a larger amount of used clothes, which will ultimately make the platform more attractive to new and existing users. The importance of scalability is exemplified by Resecond’s capacity issues, related to limited opportunities of upscaling, which eventually caused the company to close their store in the Nørrebro district and relocate. Another key success driver for Cluster A companies, is to sustainably capitalise on their sharing platform. This, however, may prove difficult due to low switching costs and competition among incumbents, why charging customers a fee for using the platform might cause users to switch to a competitor’s platform. Trendsales has overcome
this challenge by establishing a model where they generate revenues from multiple sources, including VIP subscriptions, advertisements, add-on features, etc.

Because the companies in Cluster A operate with no engine process, they do not face any logistic challenges related to production, sorting, repair, etc. The inherent adaptable and inexpensive features of such operations thus constitute a further driver of success for Cluster A companies. Relatedly, the fact that supply of clothes on the platform automatically adapts to changing consumer preferences, as previously described, represents a clear benefit in terms of conforming to recent consumer trends. An additional key success driver for Cluster A is socio-cultural attitudes towards used clothes, as the success of a sharing platform, redistributing second-hand fashion items, is highly dependent on positive societal attitudes towards wearing/buying pre-owned clothes. Moreover, the inherent countercyclical features of a sharing platform business model entail an advantage, but is not a primary element driving success in this cluster. Finally, the companies in Cluster A face significant legal challenges related to administering cash accounts and transactions, limiting fraudulent behaviour, and ensuring fair exchange of clothes. Being able to navigate in a complicated legal environment, while still ensuring ease of use and accessibility, is therefore a necessary success driver for companies in Cluster A.

### 6.2 Cluster B

Cluster B is characterised by small companies operating in the remanufacturing/refurbishing loop with a material life extension business model. The key success driver for these companies is the uniqueness of their products. Each company offers a product with an inherent ‘story’, which serves as a dominating purchase motivator for their customers. At a general level, Cluster B companies are characterised by being niche players, which consequently limits their potential size and target customer group. Important in this regard is the fact that each company serves a different niche customer segment, and therefore the cluster have no archetype customers. Key for all companies, however, is to maintain a close relationship with their customers. Furthermore, the store location is an important success driver, as it is key to be physically positioned in a place, where the companies are able to reach the right customers and thereby communicate the story of their products in person. When it comes to the production of fashion items, human resources are key for Cluster B companies, since they are heavily dependent on manual labour processes to sort the supplied materials, and to design and produce unique products of good quality. The cost structure of the companies is thus
dominated by high labour and production costs, as a consequence of remanufacturing being time consuming and dependent on skilled labour. A last common feature for Cluster B companies is that they are largely dependent on key partners, due to their limited size and internal resources, and due to the fact that production materials are solely supplied by key partners. This makes the success of Cluster B companies contingent on external partners for maintaining their operations.

The supply chain activities of Cluster B companies are likewise characterised by their niche focus. Engine processes are key for this cluster, because the design, sewing and sorting processes constitute essential activities. Therefore, it is important to maintain engine costs at a reasonable level, despite time-consuming production processes, a high dependence on skilled labour, and limited prospects of economies of scale. A crucial front end issue for Cluster B companies is to ensure a sufficient quantity of used textiles at the right time for remanufacturing purposes. Furthermore, the quality of the supplied materials might also pose a front end challenge, since they produce high-end priced products of good quality, why they are also dependent on the used items supplied being of a certain quality. Due to these front end issues, Cluster B companies are highly dependent on few external partners for supply of production materials. Lastly, a common feature for Cluster B companies is the relatively small back end issues, mainly due to the fact that they serve niche customer segments and are therefore not critically dependent on market development activities. The companies mainly rely on social media and word-of-mouth advertising by existing customers and benefit from the fact that loyal customers are likely to spread brand awareness to like-minded peers.

The most prevalent macro-environmental factors influencing Cluster B companies regard economic and socio-cultural factors. Due to high engine expenses, products are consequently priced at a high-end level. This leads to Cluster B companies being more exposed to economic downturns, where customers typically forego more expensive purchases due to a relatively lower level of disposable income. Regarding socio-cultural factors, Cluster B companies have benefitted from the trend of consumers becoming more environmentally aware and consequently more willing to pay a premium for sustainable products. The companies in Cluster B are not exempt from VAT, which presents a legal factor that might lower their profit potential. Following this line of thought, companies in Cluster B may benefit from political incentive schemes promoting sustainable production, such as the possibility for exempting companies remanufacturing used products from e.g. VAT. Lastly, Cluster B companies are influenced by neither environmental nor technological factors due to their
limited size, manual production processes, and the fact that they are not dependent on sourcing virgin materials.

For Cluster B companies, one of the most important success drivers is the unique story and design that they offer a niche customer segment. The design, the former life of the materials used to remanufacture, and the manual sewing process all constitute important elements in creating the unique story about the company and the products they sell. However, it is difficult for companies in this cluster to scale up their operations and simultaneously maintain their exclusive and individual image, because replication and mass production impedes the uniqueness of their products. In this sense, the small size of the companies aids them in their efforts to provide a unique design and an exclusive product, and can therefore be considered a key success driver. As Cluster B companies operate on a smaller scale, where they cater to a niche customer segment, they enjoy close relationships with their customers. These relationships are part of their success drivers, because they help companies in Cluster B to overcome issues related to the development of a market for remanufactured products, and because their customers effectively provide them with word-of-mouth advertising.

Given that the story and exclusivity of the products originate from the materials being used to produce, the stable sourcing of used materials is of vital importance to Cluster B companies. In this case study, all companies in Cluster B operate with one or few partners providing them with all their materials, and they would not be able to successfully operate without them. Such partnerships with companies/organisations delivering used materials therefore constitute a key success driver. The companies are to some extent affected by socio-cultural trends, such as increasing environmental awareness among consumers, and this has been a success driver for these companies, because the social and environmental benefits of buying their products are clearly visible to consumers. Due to the inherent small size of the companies in Cluster B, they are less exposed to changes in other macro-environmental factors compared to the other clusters, mainly because their operations are limited to a regional/local scale. Therefore, macro-environmental factors, besides socio-cultural, generally do not constitute immediate success drivers or significant risks for these companies.

6.3 Cluster C

The companies in Cluster C are mid- and large-sized companies operating in the recycling loop with a material life extension business model. Pursuing business in the loop of recycling demands a larger
amount of resources due to extensive supply chain operations, why Cluster C companies must be of a certain size in order to handle these operations. A sufficient size furthermore allows Cluster C companies to benefit from economies of scale in their operations, which can be crucial, since recycling are cost-intensive compared to conventional production. Main competitors for Cluster C companies are conventional mainstream brands, and therefore, they emphasise that affordability of recycled products is key. The customer segments of Cluster C companies are broad, and their purchase motivators mainly include design and price. However, H&M and Mud Jeans’ customers differ in terms of how much they care about environmental issues. Mud Jeans’ customers are characterised by being driven more by environmental factors than H&M’s customers. This tendency may result from the fact that Mud Jeans also operates in Cluster B, characterised by niche customer segments and a different type of customer relationship. Finally, companies in Cluster C have the potential to broaden their customer base compared to the other clusters, as they produce genuinely new products and consequently have the potential to attract customers, who are not willing to buy used or remanufactured products.

The two companies in Cluster C are highly dependent on intellectual capacity (know-how) in facilitating cost-efficient recycling processes. Despite drawing on already existing capabilities within design, marketing, and distribution, H&M currently operates with a lower profit margin for their recycled product lines compared to conventional product lines. Mud Jeans prices their products relatively higher than H&M, which gives them more leeway in terms of absorbing higher production costs. However, Mud Jeans similarly expresses that high costs of recycling are a main concern. Another common feature of Cluster C companies is a reliance on key partners in their supply chain, which may originate in their efforts to lower production costs. Partners undertake all sorting and logistics activities in the engine process, allowing Cluster C companies to focus on core competences within design and marketing.

An additional activity deemed necessary to undertake in-house for Cluster C companies is the garment collection process, because a sufficient supply of used garments has proven to be a significant front end challenge. To accommodate this challenge, H&M has introduced their garment collection initiative incentivising customers to hand in used garments by offering a voucher of 15 percent discount, whereas Mud Jeans has developed their leasing model in order to recover used jeans from customers. In addition, engine processes (mainly recycling) have proven to be both technically difficult and cost-intensive if done in a sustainable way. An important issue for companies in Cluster
C is thus to focus on technological development, which may lower the costs of their engine processes. Lastly, back end issues related to developing a market for pre-owned products is not as relevant an issue for Cluster C companies, since the recycling process allows the companies to produce genuinely new products with recycled fibres. Furthermore, H&M may benefit from existing distribution channels, but may also face possible issues from cannibalisation of their conventional product lines.

Cluster C companies are generally larger and operate across borders, why they are more exposed to changes in the macro-environment. The companies may be able to influence political processes as a consequence of their size and resources (H&M), or as a consequence of their position as a pioneer within circular business models (Mud Jeans). Cluster C companies are more exposed to economic fluctuations than the other companies in this study, due to their multinational nature and high fixed costs resulting from large-scale operations. In addition, Cluster C companies are influenced by socio-cultural trends such as broad changes in consumer preferences towards a demand for more sustainable products. In general, it is important that they are able to adapt to fast-changing consumer preferences, since they serve mainstream customers segments, contrary to companies operating in Cluster B. Technological factors are likewise critical, as technical innovations for recycling processes can lower production costs, which are currently the main impeder for higher profitability. Contrary to the other clusters, environmental factors may in the long term influence Cluster C, due to rising costs of natural resources. Their current recycling activities can therefore be considered a long-term strategy, which will ensure future profitability. Lastly, legal factors may also influence Cluster C companies due to the transnational nature of their operations, where different tax legislation and regulations regarding waste management are important to accommodate.

Overall, Cluster C companies require large-scale operations in order for their recycling activities to be economically viable. This is due to the fact that undertaking recycling activities are currently cost-intensive, why obtaining cost reductions from economies of scale is a necessary success driver. Moreover, large-scale companies have the sufficient amount of resources to operate in the recycling loop, which implies managing an extensive and complicated supply chain. To obtain a sufficient size and scale, Cluster C companies are heavily dependent on attracting broad customer segments and generating a large base demand for their recycled products. In order to attract customers, a key success driver is the ability to compete with mainstream brands that produce conventionally. Attracting customers from such brands depends on the ability to price competitively, which again relates to the benefits obtained through economies of scale. However, current recycling technology does not
provide sufficient cost reductions in the engine processes to price competitively, why a key success driver for Cluster C companies is technological innovation that reduces costs related to engine processes.

Another important success driver for companies in Cluster C is being able to form strong and reliable relationships with key partners, who are able to carry out activities related to engine processes such as sorting and handling logistics. Furthermore, ensuring a sufficient supply of used products to be recycled is a crucial success factor for Cluster C companies. Currently, Mud Jeans and H&M have both developed initiatives to increase recovery of used clothes in order to accommodate this front end bottlenecks. At a macro-environmental level, Cluster C companies have some influence on the political environment due to their size, resources, and pioneer position within circular business models, which they may utilise to draw attention to regulation impeding successful circular operations in the fashion industry. Another key success driver is therefore being able to leverage these resourced to effectively influence the legal environment to the advantage of a circular economy. Finally, environmental issues stemming from climate change and mass production patterns will affect the availability and prices of natural resources such as cotton, oil, water etc. In a long-term perspective this can benefit Cluster C companies in the sense that costs of virgin fibres may increase, leading to a relative price stabilisation between virgin and recycled materials.

6.4 Comparing the clusters

Having discussed key success factors for each of the three clusters independently, the study will in this section compare the clusters in order to assess whether the success of circular businesses is driven by comparable or different factors in the three clusters.

For Cluster A companies, the need to develop a generic, scalable platform is an important driver, since a sufficient scale is necessary to ensure an adequate supply, which will allow them to acquire more customers. Therefore, operating at a sufficient scale is a key success driver for Cluster A companies. Likewise, Cluster C companies are dependent on large-scale operations, as they must possess enough resources to handle the lengthy and expensive engine processes of recycling fibres. Additionally, they are dependent on economies of scale to lower engine costs. On the contrary, Cluster B companies are smaller niche players, which do not rely on large operations to drive success. Operating at a sufficiently large scale is therefore a key success driver for Cluster A and C companies, but not for Cluster B companies.
When comparing profitability drivers between the three clusters, differences are similarly observed. Cluster B and C companies have conventional revenue streams, where they earn revenue based on each product sold, whereas Cluster A companies do not operate with these conventional revenue streams. Rather, companies in Cluster A are dependent on the effective inclusion of other revenue streams in their business model to drive success. On the cost side, Cluster A companies possess significant advantages compared to the companies in the other clusters. This is due to the fact that Cluster A companies only redistribute already produced fashion items, why they have no costs related to engine processes. Engine processes make up a significant part of costs for both Cluster B and C companies, due to high labour costs, lengthy manual production (Cluster B), and expensive recycling processes (Cluster C). A key success driver for Cluster B and C companies is thus their ability to decrease costs related to engine processes.

Acquiring customers is a key success driver for all three clusters, but their type of customer, and the relationship they have to these, are different. As niche players, Cluster B companies are less dependent on attracting a large number of customers but are rather dependent on attracting the right customers. A success driver for Cluster B companies is thus to develop and maintain close customer relationships, which allows them to communicate the uniqueness of their products, and ensures that customers will advertise their products through word-of-mouth. Cluster C companies, on the contrary, are dependent on attracting mainstream customer segments in order to be competitive. For companies in this cluster, a key success driver is therefore the large number of customers, as opposed to the right type of customers. Lastly, Cluster A companies are distinct, as they have no direct relationship with their customers, because users trade and interact directly with each other. However, Cluster A companies are, like Cluster C companies, heavily dependent on a sufficient quantity of users to drive success. Cluster A companies furthermore distinguishes themselves, as their customers are mainly driven by the prospects of good and secure trade, rather than a unique design and story (Cluster B), or sustainable and affordable design (Cluster C).

Analysing the importance of partnerships for the three clusters also yield different results. Partnerships are of great importance for companies in Cluster B and C, which utilise partnerships for supply (Cluster B) and operating engine processes (Cluster C). Finding the right partners is therefore a key success driver for Cluster B and C companies, but not for Cluster A companies. For companies in Cluster B, entering into successful partnerships will ensure a stable and sufficient supply, but since they depend solely on a few partners for supply, it can be argued that front end activities also
constitute a vulnerability for these companies. In line with this, Cluster C companies have faced issues of inadequate supply of used textiles, why boosting clothing recovery activities from customers are an important success driver for Cluster C companies. The nature of supply chain activities for Cluster A companies is different, because they have no engine process, but these companies are likewise dependent on a large supply on their platforms to attract users.

Generally, Cluster B companies are less exposed to macro-environmental factors due to their small size and niche area of business. Nevertheless, their success is to some extent driven by the socio-cultural trend of consumers becoming more environmentally aware. This trend does not motivate customers of the companies in Cluster A, but the socio-cultural attitudes towards wearing second-hand clothes highly influence these companies. Another important success driver for Cluster A companies is to possess the administrative and IT capabilities to handle legal and technical issues related to the operation of their platform. Companies in Cluster C, which are largest in scale, are comparably more exposed to macro-environmental influence than companies in both Cluster A and B. Important factors that may influence the success of Cluster C companies are legal issues of handling differing cross-border regulation and waste management, as well as technological developments that may reduce costs of recycling. In addition, environmental factors in terms of depletion of natural resources, may increase costs of conventional production and consequently reduce relative production costs of recycled products. Thus, macro-environmental developments that affect the companies in Cluster C are important in driving their success.
7. Concluding remarks

This study has endeavoured to identify the key success drivers of circular business models in the fashion industry, which entailed a categorisation of the major business models employed by the case companies as well as an analysis of the factors driving success on an actor, supply chain, and macro-environmental level. By categorising the case companies, the study identified three major clusters of circular business models operating in three different supply chain loops.

Cluster A is characterised by small- to mid-size companies undertaking reuse/redistribution activities through a shared platform business model. A key success driver for Cluster A is to develop and maintain a scalable platform that does not limit their ability to obtain a sufficient amount of users, which they are dependent on to secure an adequate supply of used clothes. These companies have the ability to attract a broader customer segment, because their customers are not primarily motivated by environmental concerns, but rather by the prospects of a good and secure trade. Moreover, due to their non-conventional revenue model, a key success driver is their ability to incorporate other sources of revenue in their business model. Cluster A companies benefit from having a lean cost structure with no engine process, which drives their success. Finally, companies in Cluster A are dependent on possessing administrative and IT capabilities to handle legal and technical issues related to the operation of their platform.

Cluster B is characterised by small companies undertaking remanufacturing/refurbishing activities in a material life extension business model. Cluster B companies are mainly smaller niche players, where a unique design and story make up a key success driver for attracting customers. This cluster mainly caters to a smaller and more niche customer segment, why developing and maintaining close customer relationships is a key success driver for these companies, allowing them to benefit from word-of-mouth advertising. For companies in Cluster B, another key success driver is partnerships with companies/organisations that supply them with used materials, from which they remanufacture new, unique products. As they are dependent on supply from few key partners, it is furthermore essential for Cluster B companies to ensure that these partners provide a stable supply of used materials.

Cluster C is characterised by mid- and large-sized companies operating in the recycling loop with a material life extension business model. For Cluster C companies, large-scale operations constitute a key success driver, because economies of scale allow them to lower costs of a resource-intensive
recycling process. As the engine process currently creates profitability issues due to the level of costs associated with recycling, reducing engine costs is one of the most important success drivers identified for companies in Cluster C. Related to this, technological development within decomposition and recycling of fibres is key in driving the success of this business model. Cluster C companies are dependent on key partners to undertake activities in the engine process, which are outside their core competences, why finding efficient and reliable partners is a success driver. As large-scale operations are necessary for companies in Cluster C, attracting a larger segment of mainstream customers inherently drives success. In addition, it is necessary to ensure a large and stable supply of used textiles in order undertake recycling activities, and therefore, garment collection/recovery activities are key success drivers for this cluster. Lastly, a macro-environmental driver of success is the potential future stabilisation between prices of virgin and recycled fibres stemming from the depletion of natural resources causing prices of virgin materials to increase.

7.1 Further areas of research

This study has contributed to the debate on the development of circular business models in the fashion industry. Due to the explanatory nature and scope of the research question, the study is primarily limited to exploring the key success drivers of fashion companies pursuing circular business, and therefore, does not explain specifically how to utilise these success drivers, when pursuing circular business in the fashion industry. For that reason, this study suggests that a relevant area of further research is to develop cluster-specific business strategies drawing upon the success drivers identified in this study. A natural further research area might thus be to develop specific ‘best practice’ strategies for the companies in each of the three identified clusters. As this study is characterised by a qualitative nature, another area of possible further research is to investigate whether it is possible to conduct a quantitative study, which would test the generalizability of the findings. Furthermore, the fashion industry was chosen as the focus area of study, based on the fact that this industry is the second most polluting in the world. Following this line of thought, it might also be relevant to replicate a similar research design in other highly polluting industries such as consumer electronics. Lastly, the study has been limited to consider companies founded in Northern Europe, why a natural area for further research is to explore companies founded in other parts of the world such as North America or Asia in order to explore whether other drivers of success exist for these companies.
Bibliography


