



**A Circular Economy Approach in Textile Industry: Perceived Drivers and Barriers
Towards Circular Business Model Innovation**

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ABSTRACT

The textile industry is one of the most polluting industries in the world (*UN Alliance Aims...*, 2018; Niinimäki et al., 2020). With the accelerating climate crisis, there is a rising urgency to change the unsustainable practices of the sector. Transitioning from linear to circular business models (CBM) could potentially offer a solution to this acute problem. This thesis aimed to shed light on the perspectives of the Estonian textile industry on circular economy (CE) and discover the drivers and barriers of circular business model innovation (CBMI) in a less researched Eastern European textile industry. To achieve these results, the method of semi-structured interviews was implemented. Seven interviews with micro, small and medium-sized companies from different textile sectors were conducted. The findings indicate that even though CE is a rising trend in the textile industry, there exists a difficulty in grasping how circularity could efficiently work in the sector. Furthermore, ten drivers and 14 barriers for CBMI were identified and clustered into four categories of: mindset, market, operations and legislation. Some of the noteworthy drivers were found to be aligning organizational values with circularity and having a database for sourcing textile waste materials and partners. For the prominent barriers of CBMI, it was found how companies struggle with financial constraints, little demand for circular products from customers and competition with fast fashion brands. With the CE trend on the rise, the findings of this study provide a valuable overview of what could be potential bottlenecks and facilitators for businesses who are interested in becoming more circular. Moreover, the results can help the policymakers, and other facilitators make more informed choices in promoting circular fashion. Further quantitative research is advised to analyze the dynamics of drivers and barriers for CBMI in the non-Estonian textile industry.

Keywords: circular business model implementation, circular business model, circular economy, textile industry.

TABLE OF CONTENTS

ABSTRACT	2
TABLE OF CONTENTS	3
INTRODUCTION	4
LITERATURE REVIEW	7
Overview of the textile waste problem	7
Recycling textile waste	8
EU regulations for the textile industry	9
Circular Economy	9
Circular business model and circular business model innovation	11
Drivers to shifting towards CBM in the textile industry	13
Barriers to shifting towards CBM in the textile industry	14
METHODOLOGY	17
Study design	17
Data collection	18
Data preparation and analysis	19
Ethical Considerations	20
RESULTS	21
Overview of the perspectives on circular economy	23
Drivers	25
i) Mindset	25
ii) Market	25
iii) Operations	26
iv) Legislation	27
Barriers	27
i) Mindset	27
ii) Market	28
iii) Operations	29
DISCUSSION	32
CONCLUSION	36
REFERENCES	38
APPENDIX	44
Appendix 1	44
Appendix 2	48
Appendix 3	52
Appendix 4	55

INTRODUCTION

The current state of sustainability of the textile industry is concerning (Chen et al., 2021). In the last two decades, the global consumption of new clothing has risen by 400% (Chen et al., 2021; Jia et al., 2020). This growth has made the textile industry one of the most polluting sectors in the world, amounting to 2-8% (4-5 billion tonnes) of global CO₂ emissions and consuming 79 trillion liters of water per year (*UN Alliance Aims...*, 2018; Niinimäki et al., 2020). The European Union (EU) countries create 12.6 million tonnes of textile waste yearly (*Circular Economy for...*, 2023) and most of the new textiles put into the European market end up thrown away into landfills as part of mixed waste or are burnt already after their first use (Watson et al., 2020). Many of these textiles are sent to Global South for disposal. Every week, around 15 million used clothes from the Global North arrive in Ghana's capital, Accra, saturating the expansive apparel market in the area. An estimated 40% are of such low quality that, upon arrival, they are declared worthless and are disposed of in a local landfill (Cobbing et al., 2022).

To combat these problems, the EU has proposed that all the member states establish a separate textile waste collection and enable easier recycling of materials by 2025 (*Circular Economy for...*, 2023). Moreover, in 2023, the European Commission proposed an amendment to the Waste Framework Directive created in 2008 and suggested the implementation of mandatory Extended Producer Responsibility (EPR) for textile companies across the EU. This means that the textile businesses would be responsible for the life-cycle of their products and obliged to take care of the waste at the end of the garment's life (*Waste Framework Directive*, n.d.). However, as the research of Watson et al. (2020) has stated, the bigger problem in many member states, such as Estonia, is not the collection of textile waste but rather the fact that when it is gathered, it is almost impossible to reuse due to the low quality, complex mix of materials and lack of technology for recycling. Thus, there is a need to address and understand the root of the textile waste problem by focusing on simplifying the material compositions,

designing products that last longer, and restricting fast fashion. Shifting from a linear to a circular economy (CE) is crucial to fulfill these goals. The core of the CE lies in the practices of reducing, reusing, recycling (Chen et al., 2021) and continuing the use of resources in a closed-loop system (Jia et al., 2020).

The shift towards a CE is not easy due to many complexities on different levels. Policymakers and company managers need strategic information and a clear overview of how CE would look like in the textile industry. Therefore, more insights into the challenges and facilitating factors are needed to promote the development of efficient circular policy strategies to support companies in this transition.

This study focuses on how Estonian textile industry companies perceive the circular economy and what the barriers and drivers are towards the implementation of circular business models. Throughout this thesis, the term textile industry will refer to the processes of textile and clothing design, production and distribution. To narrow the research scope further, this research focuses on the incumbent textile industry companies. There has been a growing number of born-sustainable companies in recent years (Ostermann et al., 2021). However, the journey to sustainable business models differs significantly for fashion start-ups and incumbents (Todeschini et al., 2017). Even though there has been research on this topic (Geissdoerfer et al., 2023; Todeschini et al., 2017), it is typically outside the Eastern European context. According to the author's findings, there is no existing research about the drivers and barriers of circular business model innovation of Estonian textile industry companies. Thus, the Estonian perspective is a representative example that the author has unique access to. If a new company is interested in becoming more circular, it could benefit from knowing the typical drivers and barriers businesses encounter on their circularity journey. This study is meant to fill this research gap by investigating what facilitates and prevents textile and clothing enterprises from implementing circular business models through conducting semi-structured interviews.

To achieve this goal, the following research questions are established:

- What are the perspectives within the Estonian textile industry towards a circular economy?
- What are the drivers of shifting towards more circular business models in the Estonian textile industry?
- What are the barriers to shifting towards more circular business models in the Estonian textile industry?

This thesis is divided into four parts. The first section provides a literature review of the textile waste problem. Moreover, it provides a theoretical foundation of circular economy, circular business model, and circular business model innovation in the textile industry. The second part describes the methodology of this research and ethical considerations. The third section provides the results of the study based on the previously established research questions. The thesis concludes with a discussion and conclusion that describe this study's final implications and limitations and give suggestions for further research.

LITERATURE REVIEW

Overview of the textile waste problem

The prominent fast fashion business model and Western consumers' readiness to over consume cheap fast fashion items play a significant role in the severe crisis of the global textile industry (Beyer & Arnold, 2020). Clothing has a shorter lifespan now than ever before due to customers' purchasing patterns, quantity of purchases, product types, and methods of use and disposal. Moreover, the low costs of garments and constant availability have made the repairing practices unappealing and time-consuming, leading to discardment (Niinimäki & Hassi, 2011).

Currently, more than 68% of textile fibers are derived from non-renewable resources like fossil fuels to create products with a short life span that are disposed to landfills or burned after usage. The sorting of these textiles is complicated due to blended materials with different characteristics (such as natural mixed with synthetic), making it difficult to separate the fibers without damaging their chemical elements (Chen et al., 2021). In 2018, cotton contributed 25% (26 million tonnes) of textile manufacturing, while polyester accounted for 51% (54 million tonnes) (Niinimäki et al., 2020). According to estimates, synthetic fibers will make up approximately 98% of all fibers in the future, with polyester accounting for 95% of this total (Qin, 2014). The fibers used in synthetic materials do not degrade and, thus, end up harming the environment for a long time. In addition, due to their smaller fiber size, the synthetics contribute to microplastic pollution in waterways, harm marine ecosystems, and eventually damage human health by for example, increasing chances of unwanted immune responses and hypersensitivity (De Oliveira et al., 2023; Campanale et al., 2020).

Furthermore, in the quest for cheaper production costs, the production of textiles and clothing has dramatically expanded and shifted from the West to primarily Asian countries (Niinimäki & Hassi, 2011). This has led to a system that prioritizes profit maximization from value creation overseas over environmental and social sustainability (Beyer & Arnold, 2020). The

global textile industry has faced frequent criticism due to its ethically and morally questionable practices such as low wages, insufficient safety laws, and child and forced labor (Köksal et al., 2017). Moreover, Western countries have been criticized for their traditional practices of exporting their textile waste to the Global South. Because of the increasing waste creation, developing countries have started to ban these imports to protect their local textile manufacturers (Niinimäki et al., 2020).

Recycling textile waste

Out of the 73% of the clothing fibers that end up in landfills globally, only 12% get recycled. The intensive recycling process damages the quality of the fibers and therefore, merely 1% of the recycled fibers have the potential to be used again (Chen et al., 2021). In 2015, less than 1% (0.5 million tonnes) of total textile production was recycled into products with the same or comparable quality. The majority of recovered textiles (6.4 million tonnes) were used to make alternative lower-value products like mattress filling and wiping cloths (Niinimäki et al., 2020).

A simple method to achieve a balance between sustainability and quality is to mix fresh fibers with previously recycled ones. However, the two primary obstacles to this method are sorting and finances. Chemical fiber recycling has shown to be economically costly, producing significantly more expensive fibers than virgin fibers. Sorting garments can be tricky since they are typically composed of blends, such as synthetic and natural fibers or synthetic blends with distinct qualities that are difficult to separate into their constituent chemical components (Chen et al., 2021).

Therefore, it is clear that the EU's new 2025 directive of mandatory separate collection of textile waste will not be sufficient in itself to ensure circulation (Watson et al., 2020), and systematic changes in the industry are required. It is necessary to increase innovations in textile recycling, put stronger responsibility on businesses through legislation, advocate for designing

garments that are durable and suitable for recycling and change the consumer culture of overconsumption (Niinimäki et al., 2020). Shifting towards a circular economy is crucial to address these concerns.

EU regulations for the textile industry

The seriousness of the textile waste problem has led to the creation of many regulations to address the issue. The EU is introducing a new directive of mandatory textile waste collection from 2025 (*Circular Economy for...*, 2023). However, the EU's ambitions for tackling the root causes of the unsustainability of the textile industry are not limited to only this directive and are more elaborately presented in the EU's Strategy for Sustainable and Circular Textiles (European Commission, 2022). For example, the European Commission (EC) is creating a legally binding Ecodesign for Sustainable Products Regulation of textile products to promote durability, reusability, recyclability, etc. Moreover, the EC is planning to ban the incineration of unsold and unused textiles, introduce tools such as the Digital Product Passport for textiles and Extended Producer Responsibility, and regulate the use of environmental claims to prevent greenwashing (European Commission, 2022).

In general, these prospective regulations indicate that promoting sustainability in the textile industry is high on the EU agenda. Therefore, it is essential for the textile companies to critically reflect in which areas they might feel pressured in the future and how the EU's ambitions for transitioning towards a circular economy may affect them.

Circular Economy

The term circular economy (CE) is inspired by Boulding's (1966) work. He emphasized that for the environment and the economy to cohabit in balance, the Earth should be viewed as a closed-loop system or, using his term, as a "closed spaceship economy" (Geissdoerfer et al., 2020). Several definitions of CE have been proposed since then. After reviewing 114 definitions

of CE, Geissdoerfer et al. (2020) suggested a comprehensive definition in light of their analysis and defined CE as *“an economic system in which resource input and waste, emission, and energy leakages are minimized by cycling, extending, intensifying, and dematerialising material and energy loops.”*

In the last decades, CE has become increasingly more popular largely due to the work of the Ellen MacArthur Foundation which has created a large number of reports on the topic (*A New Textiles...*, 2017; *Towards a Circular Economy...*, 2015; *Towards the Circular...*, 2013). According to MacArthur (2013), CE is the opposite of the traditional linear economy model of “produce-use-toss” and is regenerative and restorative at its core. It seeks to prolong a product’s life cycle and eliminate waste by designing materials, products, processes, and business models with greater quality and eventually decoupling economic growth from exploiting finite natural resources (MacArthur, 2013).

Ellen McArthur Foundation (2013) believes that the implementation of CE could lessen several of the strategic difficulties that businesses currently face. Firstly, by recycling or reselling the materials, the businesses could significantly lower their warranty risks and material costs. The warranty risks could also be reduced by designing elements to last. CE has the potential to create new interaction possibilities between consumers and producers and increase customer loyalty. Secondly, in CE, the idea of a consumer is mainly replaced by that of a user. Durable goods are, in contrast to buying and consuming, rented out, shared or leased whenever possible. If there is a need to buy a product, it is returned to the maker once the product’s usage cycle is over.

CE regimes view waste as a resource, and through reverse logistics, textiles can be used and reintegrated into the supply chain at various points (De Aguiar Hugo et al., 2021). Currently, the textile industry operates in an almost entirely linear way and has a record high level of production (Salmi & Kaipia, 2022; Ellen MacArthur Foundation, 2017). The linear system depletes scarce natural resources, puts pressure on the environment, hinders innovative

economic possibilities (Chen et al., 2021), and is socially destructive (Savini, 2023). Shifting towards a CE can create great economic value and it is estimated that if fashion industries would tackle the current issues of linear economy and move towards circularity, the world economy could increase by 192 billion dollars by 2030 (Morlet et al., 2017).

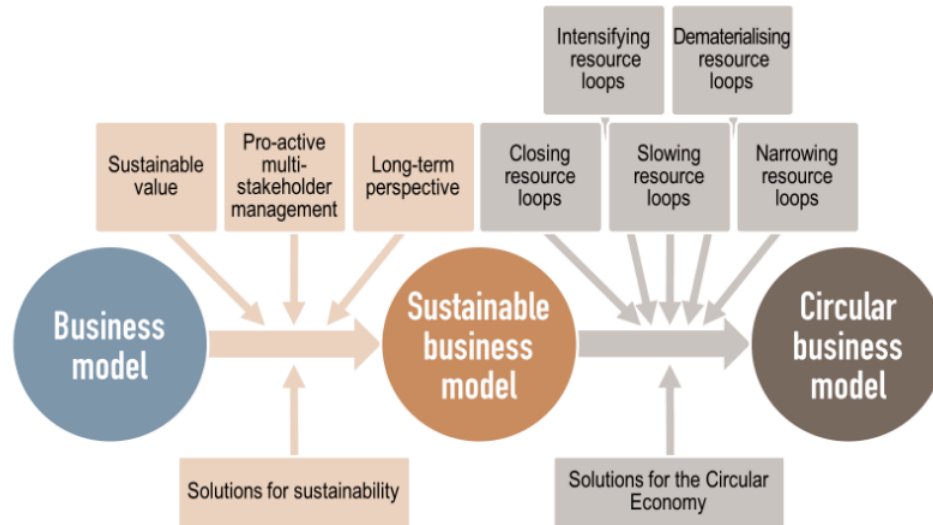
Nevertheless, CE should be implemented with caution. Savini (2023) argues that it is essential that CE does not become a form of green consumerism. This implies that circular production will face the same imperatives as other industrial sectors that rely on growth - either growing more or dying out. By bringing commodity-mediated relations into the waste management space, it expands the economy as opposed to "downscaling" it. Therefore, Savini advocates for a more degrowth-circularity approach where more socio-environmental value of circulation is stressed and where collective responsibility is put on the consumers to downscale their consumption patterns in the first place (Savini, 2023).

Circular business model and circular business model innovation

Compared to CE, circular business model (CBM) is a relatively new term that captures a more straightforward representation of the value proposition, value creation and delivery, and value capture aspects, as well as the interactions between these elements within an organization (Geissdoerfer et al., 2023). Figure 1 adopted by Geissdoerfer et al. (2018) illustrates the differences between traditional, sustainable, and circular business models.

Figure 1

The pathway from traditional to circular business model (Geissdoerfer et al., 2018)



The work of Geissdoerfer et al. (2020) identified four main common practices of CBM: (1) cycling, (2) dematerialising, (3) extending and (4) intensifying. Cycling enables the recycling of materials and energy in the organizational system by, for example, refurbishing and remanufacturing. Dematerializing implies the process of substituting physical products with services and product-service systems while increasing utility. Extending the resource loops helps to increase the usage phase of products by focusing on durable design and encouraging maintenance and repair. Intensifying, on the other hand, allows the prolongation of the use phase of products through establishing sharing economy practices such as clothes rental.

Consequently, circular business model innovation (CBMI) is defined as the creation and implementation of circular business models. There have been various attempts to capture the essence of CBMI. Geissdoerfer et al. (2020) identified four categories of CBMI in the literature and outlined them as (1) CBM diversification, (2) CBM transformation, (3) CBM acquisition, and (4) circular start-ups.

Transitioning towards CBM in the textile and fashion industry is challenging due to the continuously changing nature of the transition processes (Salmi & Kaipia, 2022). There have been many attempts (Salmi & Kaipia, 2022; De Aguiar Hugo et al., 2021; Ostermann et al., 2021; Jia et al., 2020) to identify drivers and barriers to adopting CBM on different stakeholder levels in the textile industry. Followingly, the drivers and barriers to CBM transition in the textile industry will be presented.

Drivers to shifting towards CBM in the textile industry

Jia et al. (2020) list organizational, institutional, and customer drivers as the major facilitators of shifting toward circularity in the textile industry. An important driver that was found on an organizational level is having enthusiastic employees, and especially company leads, who are confident in the benefits of CBM (Ostermann et al., 2021; Jia et al., 2020). A great incentive to implement circular practices could come from the competitors who are ahead on their circularity journey and who can become more attractive to potential customers (Jia et al., 2020). In addition, pressure from NGOs can also influence companies' pace of action for CBMI (De Aguiar Hugo et al., 2021).

The key institutional drivers identified by De Aguiar Hugo et al. (2021), Ostermann et al. (2021) and Jia et al. (2020) were established government assistance, clear legislation, and monetary incentives. Government intervention can significantly decrease the high investment costs of CBMI. Making investment costs for CBMI comparable to linear business models would ideally help to eliminate the argument of circularity being too costly (Jia et al., 2020). In contrast to what is generally believed in the relevant academic publications, the research of De Aguiar Hugo et al. (2021) found CBM to be profitable in many cases because of increased revenues and higher cost savings attributable to more efficient energy and packaging usage.

Lastly, the customer drivers were named as one of the most powerful enablers. Consumers are becoming increasingly more aware of sustainability and ethical issues due to increased public debate and governmental incentives (Mishra et al., 2021; Jia et al., 2020). As a result, many of them have begun to avoid fast fashion companies, prefer more sustainable options, and pressure the industry to change (De Aguiar Hugo et al., 2021).

Barriers to shifting towards CBM in the textile industry

On the question of what prevents companies from implementing CBM, a systematic literature review by Jia et al. (2020) reveals the biggest barriers at the organizational level. Insufficient clarity in corporate procedures, lack of strategic long-term planning, and negative attitudes can hinder businesses' ability to successfully tackle circularity issues. The absence of training and education about sustainability and circularity among staff members can significantly decrease the pace toward CBM (Jia et al., 2020). Moreover, managers can be unwilling to implement recycled materials due to fear of sacrificing the final quality of their product (Dissanayake & Weerasinghe, 2022; Jia et al., 2020). Consequently, policies adopted by businesses to exclusively produce new things have a significant impact on how returned goods are handled and how much of their hidden secondary value is recovered (Jia et al., 2020). It is challenging to reevaluate the design phase of product development based on circularity principles when the firms do not view reducing, recycling, or adopting organic materials as strategic organizational priorities (Todeschini et al., 2017).

Another notable barrier described by various authors (Geissdoerfer et al., 2023; De Aguiar Hugo et al., 2021; Jia et al., 2020; Lazarevic & Valve, 2017) is the insufficiency of enforceable government policies and laws for circular practices. A structural regulatory framework that would provide the companies with guidelines to adhere to at every step of their supply chain is largely missing (De Aguiar Hugo et al., 2021; Jia et al., 2020; Lazarevic & Valve, 2017). While multiple businesses and policymakers are in favor of CE, its adoption is still in its

early stages (D'Itria & Aus, 2023; Jia et al., 2020) and there appears to be a general unwillingness to encourage circular actions from suppliers, distributors, and sellers because of inadequate understanding of the possible benefits (Jia et al., 2020).

Many researchers (Diddi et al., 2019; Kant Hvass & Pedersen, 2019; Kirchherr et al., 2018; Todeschini et al., 2017) identified the lack of interest in CBM from consumers as another prominent barrier. Customers still need help comprehending the concept of sustainability (Todeschini et al., 2017) and justify their unsustainable consumption patterns by saying they are too far removed from the negative consequences of their consumer behavior (Diddi et al., 2019). Furthermore, consumers can be reluctant to consider rental and second-hand options because they struggle to grasp the rental model (Colucci & Vecchi, 2021) and have concerns about hygiene, clothing appearance, and apparel quality (Huynh, 2022; De Aguiar Hugo et al., 2021).

In many cases, the most significant barriers to shifting toward circularity are financial constraints (Jia et al., 2020) and fear of high costs (Salmi & Kaipia, 2022; Warasthe et al., 2020) because many companies consider circular innovations as a new niche market (Jia et al., 2020). It is challenging to alter business models in the textile sector due to the high level of competition, cost pressure, logistics costs, and lack of market opportunities (Brydges, 2021; Niinimäki et al., 2020; Leal Filho et al., 2019). Moreover, striving to become part of the slow fashion movement is often not considered economically viable because decreased consumption makes it harder for small-batch and slow-production companies to compete with fast fashion businesses that take advantage of the economies of scale (Geissdoerfer et al., 2023; Jung & Jin, 2016).

Lastly, De Aguiar Hugo et al. (2021) recognize the absence of proper recycling technology as another critical bottleneck to CBM implementation. Difficulties in separating material mixtures, not reaching the required level of quality, and the absence of technological

competence are a few of the many technical barriers that brands face (De Aguiar Hugo et al., 2021).

The literature review done for this study offers several viewpoints that address the subject of CBMI and its drivers and barriers. Nevertheless, it does not provide any concrete overview of the situation in the textile and clothing industry, especially outside the typically investigated European countries. More research is needed to fully shed light on the companies' perspective of CBMI in Eastern Europe. Therefore, to do that, the method of an inductive semi-structured interview is implemented.

METHODOLOGY

This chapter explains the chosen methodological approach for this study. The author then describes the study design, data collection, data preparation and analysis, and ethical considerations in further detail.

Study design

Semi-structured interviews were conducted. The main goal of the qualitative inductive approach is to let research findings surface from the recurring, predominating, or noteworthy themes present in unprocessed data without the influence and limitations of previously structured methodologies (Thomas, 2006). The choice for the companies to interview was made by first looking at the website of the Estonian Clothing and Textile Association (*Estonian Clothing and...*, n.d.) and then analyzing the websites of the textile companies through the sustainability and circularity lens. The research interest of this study lies in identifying the barriers and drivers of shifting towards a more circular business model for non-startup textile companies. To incorporate as many viewpoints as possible, the interviewees were chosen from textile industry companies of different spheres.

In total, seven interviews were conducted. Two primary methods were employed to find respondents for this study: (1) sampling through the Estonian Clothing and Textile Association (ECTA) website and (2) snowball sampling. The author of the study approached the potential interviewees by sending them email invitations. After the interview, some of the interviewees also recommended companies that might also be interested in participating in this study. The roles of the interviewees in the companies and the size of their enterprises can be seen from Table 1. For confidentiality and anonymity purposes, the concrete business activities of the companies could not be listed.

Table 1*Participant information*

Interviewee nr	Size¹of the enterprise²	Interviewee's role in the company	Interview length
11	Micro	Board member	26 min
12	Small	CEO	35 min
13	Small	CEO	51 min
14	Small	Head of Supply Chain	20 min
15	Micro	Manager	29 min
16	Micro	CEO	29 min
17	Medium	Manager	21 min

Data collection

The topic of circular business models in the textile industry is still limited and primarily focuses on individual cases (Todeschini et al., 2017). That means that despite basing the interview questions on the existing literature, the author wanted to have the flexibility to ask follow-up questions if something that was not found in the previous research would arise. Therefore, the semi-structured interview method was the most suitable for this research. To

¹ In this study, micro size refers to the companies with annual revenue of less than 2 million euros, small to revenue of less than 10 million euros and medium to revenue of less than 50 million euros.

² The info about the annual turnover of the enterprise was gathered from the participants or from the following database: Register. (2024, May 19). *Inforegister*® *Krediidihinnangud, kasusaajad, finantsprognoosid*. Inforegister. <https://www.inforegister.ee/en/>

answer the research questions of the study, an interview guide was created with eight open-ended questions (see Appendix 4). For each broader question, the potential follow-up questions based on the previous answer were asked. The sub-questions were either chosen from the follow-up question part of the interview guide or improvised to get sufficient input for answering the study's research questions. All the interviews ended with providing the space for participants to clarify, add something to their answers, or ask questions from the interviewer.

The semi-structured interviews were conducted through the Google Meet and Zoom platforms and recorded with the default iPhone audio-recording application. The length of the interviews varied from 20 to 51 minutes. The recordings were used to analyze the results and deleted after the completion of the study. One interview was conducted in English due to the interviewee's non-Estonian nationality. Six interviews were held in Estonian, transcribed with the Estonian Speech Recognition and Transcription Editing Service (ESRTES) (Olev & Alumäe, 2022), and then translated into English by using DeepL that has been found more accurate than Google Translate (Varela-Salinas & Burbat, 2023). Machine translation was chosen because of the time constraints of the study. The use of machine translation followed by post-editing by the language expert has been found to significantly increase the quality of the translation and the productivity of the translators (Varela-Salinas & Burbat, 2023; Cadwell et al., 2017). Thus, the author manually edited the remaining errors in the Estonian and English transcripts to ensure their coherence.

Data preparation and analysis

After transcription with the ESRTES software and translating transcripts into English, the raw data was analyzed from an inductive perspective. According to Thomas (2006), an inductive analysis results in the creation of categories into a model or framework that communicates important themes and processes and summarizes the unprocessed data. Following the steps of inductive coding proposed by Thomas (2006), the author analyzed the interviews through

multiple close readings and interpreted the different meanings present in the transcripts. When a significant theme was found, labels and different categories were created and added with their description to a codebook (see Appendix 3) made by the author. The coding themes were iteratively adjusted by alternating between the data and the codebook.

Ethical Considerations

The researcher ensured that before starting with the interviews, the study complied with the ethical guidelines of Campus Fryslân, University of Groningen by filling in the Ethics Checklist. All the participants received an email with an ethical consent form in Estonian or English (see Appendix 1 and 2) for signing before the interview. It provided the participants with an overview of the study and highlighted that participation in the research is completely voluntary, anonymous, and withdrawal from the study is possible at any time. Moreover, the consent form gave information about how the collected data would be stored following the regulations of the University of Groningen and how the confidentiality of the firms would be ensured. Even though the interviews were conducted in a semi-structured way, the researcher made sure to not ask any questions that could cause the interviewees any potential legal, mental, or financial harm. Lastly, to ensure the transparency of the research, all participants could choose whether they would like to receive a copy of the final study.

RESULTS

In total, seventeen companies were contacted to participate in the research and seven companies agreed to participate, making the response rate 41%. The seven semi-structured interviews helped to identify nine common perspectives, ten drivers and 14 barriers of shifting towards CBM among four categories of mindset, market, operations and legislation. The overview of the identified drivers and barriers can be seen below in Table 2.

Table 2

Drivers and Barriers of CBM implementation

Category	Drivers	Barriers
Mindset	<ul style="list-style-type: none"> • Sustainability as part of companies' identity • Interest from the company owners to lead sustainable companies 	<ul style="list-style-type: none"> • No consensus on the meaning of sustainability • Short-term thinking • Skepticism about CE
Market	<ul style="list-style-type: none"> • Comparative advantage • High awareness from customers 	<ul style="list-style-type: none"> • Unwillingness from customers to pay more • Competition with fast fashion brands • No understanding

		<p>about CE or demand for circular solutions from customers</p> <ul style="list-style-type: none"> ● Greenwashing hindering credibility of sustainable actions ● Recession ● Market is not ready for CE
Operations	<ul style="list-style-type: none"> ● Availability of EU funding ● Availability of educational programs ● Having a database for sourcing materials and partners ● Cooperation between the companies 	<ul style="list-style-type: none"> ● Worse quality and variety of recycled fabrics ● Technological and logistical difficulties for recycling ● Financial struggles for companies to implement circular practices ● Operating under time pressure ● Difficult to find information about CE

Legislation	<ul style="list-style-type: none"> • Policy regulations 	No barriers identified
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The results of the study will be discussed followingly: firstly, the overall themes and perspectives of the Estonian textile industry towards circularity will be presented. Secondly, the drivers that are helping to make the transition towards CBM will be stated. Lastly, the barriers of the CBM implementation will be introduced to identify what is hindering the circular transition.

Overview of the perspectives on circular economy

The first research question aimed to get an overview of the overall perspectives and attitudes of the textile industry about circular economy. Five out of seven interviewees admitted that sustainability and circular economy have gained momentum in the industry only in recent years. One of them felt the theme emerging 7-8 years ago and started implementing circular practices already then, while another company initiated their circularity journey only half a year ago. It was argued that the overall state of the textile and clothing sector in Estonia is satisfactory in regards to sustainability because the companies are rather small and thus, the creation to end result of a product is easier to monitor. There are not many big, bureaucratic and profit-oriented companies so the small enterprises cannot afford the wasteful behavior characteristics of the global textile and clothing businesses.

A common theme among those who were interviewed was the implementation of some actions that can be considered part of the common practices of CBM - cycling, dematerialising, extending and intensifying (Geissdoerfer et al., 2020). For example, two companies only produce based on orders in small quantities. Most of the participants admitted that their company tries to use all the fabrics as efficiently as possible, with some of them using up to 93-97% of all the fabrics. When a fabric has defects, it is used for making other details or dyed

black. One company pays special attention to extending practices of CBM by choosing high-quality fabrics and durable design. The only intensifying practice that was implemented by one business was offering clothes and other product rental services to its customers.

The overwhelming majority confirmed the strong presence of circularity and sustainability themes in the industry but some concerns were expressed about the industry's incapability of fully grasping what circularity means. Nevertheless, more than half of the participants had future visions of circular practices that they are striving for.

Some general concerns were expressed about the textile industry not having enough support from the state in relation to CBM. Even though there was a consensus about the emerging trend of CE, some of the interviewees argued that this CE discourse does not address the textile industry in particular. To quote one of the interviewees:

“The circular economy is very much described through the chemical industry for me. It is my feeling /... / that very little mention is made of other industries /... / but the mass media and the messages that come to my ears only say that there is a desire to implement, shall we say, changes in a more forceful way in the metal and chemical industries. No one talks about textiles” (13).

Another one expressed how:

“There is little communication, there is little explanation, there are so many things that they could do better that it just seems to me that the textile industry is not the biggest in Estonia and that is why it has been neglected, but the pressure is enormous, and I don't see any support” (14).

Having provided the overview of the perspectives of the Estonian textile industry towards CE, the next section presents the findings of what drives companies to start or continue their circularity journey and implement CBM.

Drivers

In total, ten drivers were identified across four categories of mindset, market, operations and legislation.

i) Mindset

In regards to the mindset category, a common view amongst the interviewees was that sustainability has become an essential *part of companies' organizational identity* and therefore, motivates them to pursue circular actions to match their values. As one interviewee put it: “*We want to be the good guy in the textile industry. This is kind of like our identity, to have high integrity to do the right thing*” (I2). This view was echoed by another participant who expressed that choosing durable and high quality materials has been important for them since the beginning of the company and way before sustainability or circularity trends emerged. Further analysis showed that the *interest of company owners* to lead and invest in sustainable companies can also act as a powerful enabler for implementation of CBM. The speed of transition towards CBM can be significantly increased when the most powerful actors of the companies are interested in becoming more circular and facilitating these shifts.

ii) Market

Two themes emerged from the analysis of market drivers. One interviewee argued that shifting towards CBM, even if it is more costly, can give companies a significant *comparative advantage* on the market. It was expressed how this can be especially the case if a company wants to find partners and customers in Scandinavia, where the interest for circularity is particularly high. A small number of those interviewed expressed that they have felt the *increase of awareness about circularity and higher demand* for more sustainable products from their customers which incentivised them to pay more attention to their production processes. Having

these types of consumers can make the shift towards CBM significantly easier due to an engaged customer network.

iii) Operations

Turning now to the operational drivers, four main facilitators were identified. Two participants stated that they have attended *educational programs* about circular design and CE that have supported them to identify the main focus points on their circularity journey. One interviewee expressed that *the availability of different EU funds* for circular transition has helped their company to initiate a circular project of textile waste collection with the purpose of recycling it. Another aspect that is currently not existent but would facilitate the implementation of CBM is having a *database for sourcing materials and partners* who would be willing to reuse textile waste or recycle it. Commenting on this idea, one of the interviewees said: *“It would be easier if it would be possible to identify those in Estonia who could support this theme. I would be willing to enter into an agreement and I’d love to send my textile waste to these companies” (I3)*. Another interviewee commented: *“The facilitating factor would be if it was easier to find that information from a sourcing database instead of using all the acquaintances that you have in the world and these networks to find these places to work with” (I4)*. Unfortunately, no such tool currently exists in Estonia. Nevertheless, the interest for using it would be high.

The fourth operational driver of *cooperation between companies* links well with the latter. It was expressed by multiple companies how it would make it significantly easier to transition towards CBM if there was more cooperation between the textile businesses. Currently, there are very few initiatives and functioning partnerships that would allow to spread the knowledge about circular practices and help each other along the way.

iv) Legislation

The last driver was found on the legislative side and referred to the *policy regulations* from the state or the EU. Two of the interviewees advocated for stricter regulations on fast fashion imports in order to protect local businesses and change the consumption patterns of customers towards higher quality-orientedness.

Barriers

The analysis of the interviews revealed 14 barriers of CBMI in the Estonian textile industry. The barriers were divided between three categories: mindset, market and operations. No legal barriers for CBMI were identified through this study.

i) Mindset

In the mindset category, concerns were expressed about *not having a consensus on the meaning of sustainability* in society. It is difficult to implement sustainable practices when the customers or partners might have another vision of what sustainability entails and expect something else from the companies. As one interviewee put it: *“It's actually very confusing that it's always a question of what's sustainable, is it what lasts longer, or is it what's been used already and then recycled or is it mono-material, and so on” (I1).*

Another hindering factor was found to be *short-term thinking*. Due to many uncertain factors, such as for example financial and geopolitical reasons, the businesses are hesitant to make long-term plans and therefore, find it unrealistic to create future plans about shifting towards CBM.

As the last barrier from the mindset category, it is worth noting that one interviewee was particularly *skeptical about CE* and called it a *“dangerous trend”*. The lack of enthusiasm was mainly explained by pointing out how CE has become a slogan for green consumerism. To illustrate, the participant commented: *“It's like a justification for producing low-quality things. So*

if I have recycled polyester clothes, that it immediately means such a great thing /.../ In fact, we should make the consumption of goods stop /.../ It seems to me that very much today we are doing these things to fulfill what seems like an important slogan” (I6). Furthermore, the same interviewee questioned the recycling of synthetic textiles:

“I see a lot of that /.../ recycled polyester fabric. It's horrible, it's actually probably very bad for the human body as well, isn't it, if we know that we're not supposed to drink water from a plastic bottle actually because the nanoparticles are still in the water /.../ if it's standing in the plastic, and we're drinking it into ourselves, if our body has several times the shredded plastic material in it, it is very, very harmful to our body” (I6).

ii) Market

The most barriers towards CBMI in the textile industry were identified in the market category. The obstacle that was brought up by all but one interviewees was the fact that customers and clients of textile companies are *not willing to pay more for circular products* and often just choose the cheapest options. Recycled materials are more expensive than cheapest fabrics such as polyester and therefore, not everyone can afford to pay more for circular products. To quote one of the participants: *“Sometimes you see that the price of the product there, that it's cheap anyway, so why does it have to be so cheap, but well, that's why, in order to stay in the market at the moment, we have to be cheap” (I7).*

The most unexpected hindering factor was observed about *greenwashing*. The textile industry is dominated by fast fashion actors who actively use greenwashing as a marketing technique without matching their claims with real actions. This makes it hard for customers to distinguish truthful statements from lies and challenges companies who genuinely pursue circular efforts to gain credibility because customers do not trust anyone anymore.

These concerns relate well to the next barrier of *competition with fast fashion brands*. The businesses find it hard to compete with fast fashion brands that are currently dominating

the market and creating a high demand for low-priced products. Talking about this issue an interviewee expressed: *“People just don't have the opportunity, they still want to shop, to feel good, to get something new, and they can't afford to buy hundred-euro things now, they want the cheaper ones” (I4).*

Therefore, this links with the next barrier of *no interest about CE or no demand for circular solutions from customers*. Interestingly, two companies shared how a few years ago they implemented some circular practices in their production and communication strategies, but decided to halt these practices due to the lack of interest and understanding from their customers. Five of the seven interviewees expressed how the current market situation does not allow to prioritize circularity and sustainability. The participants expressed that even though the market is not ready right now, it very likely will be in the future, but with so many uncertain factors none of the interviewees could predict when.

The last market barrier was related to the *economic recession*. The recession was mentioned as a substantial obstacle that prevented companies from CBMI. The uncertain geopolitical situation and recent pandemic have decreased people's purchasing power, especially of more expensive non-essential goods, and thus, made many smaller companies struggle to survive on the market. In conclusion, more time is needed for the market to be able to recover and evolve into the direction of CE.

iii) Operations

Turning now to the last category of barriers, five operational themes were identified. Firstly, the businesses are not so keen on implementing circular actions such as using recycled materials because *the quality and variety of these fabrics is oftentimes worse*. After the intensive recycling process where different fiber mixes are crushed, the materials are not as strong and durable anymore. The comment below illustrates this barrier:

“What we've noticed is that they often don't hold up as well as when they're new, so maybe they haven't got that percentage exactly right in the fibers. Maybe there's too much of that recycled percent, which means it degrades a little bit faster, or then it turns ugly in the wash a little bit faster, and then in the end, we've gained nothing from implementing these fabrics” (14).

Moreover, *the variety of recycled fabrics is not as big* because of the technical limitations of fiber recycling. This can become a hindering factor for some customers who have a specific wish for their fabrics and therefore decide to choose the less sustainable fabric if that is the one that matches their color or texture criteria. As one interviewee put it: *“If there is a choice between a fabric with fifty-four colors or a fabric with only five colors of in-stock products, it is clear which one you would choose” (11).*

Four interviewees pointed out their concerns about the *technological and logistical obstacles* of CBMI. The lack of logistical or technological solutions for textile waste collection and recycling significantly hinders the consideration of implementing CBM. According to the interviewees, there is no efficient technology that allows for recycling of materials made from fiber mixtures, such as for example polycotton that would need to be separated for polyester and cotton in order to be recycled effectively. There are no shredding plants in Estonia that would intend to do this and thus, one interviewee shared how they tried to send their textile waste to a factory in Finland. As they described it: *“They [the factory] don't take more than 3% elastane and we basically have more than 3%. /.../ but also chemical industries do not take more than a certain percentage of elastane. So that's a problem” (15).* Thus, it forces them to incinerate their excess textile waste instead of recycling and reusing it.

The frustration of having nowhere to go with the collected textile waste was present among multiple participants. One interviewee commented:

“I've been thinking about various pilot projects here, about how to collect back and things like that, but well, why do we collect them if we don't have anywhere to give them away, the

waste company doesn't have anything to do with them... We don't have anything to do with them yet" (I7).

Besides technological constraints of CBM, *the logistical difficulties* of the transport of goods in an aftermarket or renting service were mentioned. The establishment of logistical solutions of collecting back the products and creating an aftermarket with them or sending them somewhere for recycling can be unrealistic for small and medium-sized companies to carry out on their own.

This logistical barrier links well with the most frequently mentioned obstacle of *lack of finances*. Due to limitations and financial restraints, many companies are unable to adopt circular practices. They struggle with low marginals and believe that implementing CBM will be too costly to ensure their survival in a competitive market. The sourcing of more sustainable materials, collection and manual sorting of excess waste and its transport, paying for the recycling and communication of CBM to customers, establishing rental services, etc are all expensive practices and raise the price of the production and end-products. These actions are seen as extra costs and the companies are not so keen on implementing them in a market where the demand for cheaper products is high. Therefore, there was a general fear from most of the participants that implementing CBM would not pay off the high operational costs.

Another operational resource that is often lacking when companies want to shift towards CBM is time. One interviewee expressed how because of *lack of time* and time pressure from the customers, they sometimes cannot sort their waste as detailed as they would like or cannot spend a lot of time investigating more circular and sustainable solutions. CBMI can be a very time consuming activity, especially in the case where the companies are starting from a completely linear business model.

The last barrier of the operational obstacles revealed how it can be *difficult for companies to find information* about CBMI and CE in general. This can disincentivize the businesses to start their circularity journey because they simply do not know where to start from.

DISCUSSION

The main objective of this thesis was to explore the perspectives of the Estonian textile industry in regards to the circular economy and what are the facilitating and hindering factors of textile companies to transition towards circular business models. The previous sections of this thesis have provided an overview of the textile waste problem and of the previous research done in the field of CBMI. Moreover, the methodology of semi-structured interviews and results of this study were presented. Now, the considerations of these results will be discussed.

With respect to the first research question about the perspectives of Estonian textile companies towards CE, it was found how most of the companies have felt the trend of circularity and sustainability emerging only in the recent years. It was argued how the Estonian textile industry is rather small and therefore, cannot allow oneself the wasteful production patterns and messy supply chain dynamics of bigger textile companies. However, the overall perspective towards CE was not so optimistic, as there were some businesses who remained critical about the efficiency and potential of CBM. Moreover, it was brought up how there is no common understanding in the industry of what circularity even means and not enough representation of the textile industry in the CE discourse of the state.

The second research question wanted to find out what are the facilitating factors for CBM transition. Four categories of drivers were identified - mindset, market, operations and legislation. One of most remarkable drivers were found from the mindset category and referring to having enthusiastic employees and company leads who believe in the potential of CBM, making this finding consistent with the research of Jia et al., (2020) and Ostermann et al., (2021). Moreover, the results of this study also suggested the importance of aligning organizational values and long-term goals with circularity in order to more likely succeed in CBMI. Attaining these values could make the companies more proactive in finding educational programs and EU funds for CBMI and gain potential comparative advantage on the market.

The third research question sought to find an answer to what hinders the textile industry companies from implementing CBM. The findings of this study support the results from previous research of Jia et al. (2020) and Todeschini et al., (2017) who found that lack of strategic long-term planning and not setting circularity as strategic organizational priority can significantly reduce businesses' likelihood of CBMI. What is curious about these findings is that they are likely the consequences of other barriers of recession and unstable market situation identified in this study. The COVID-19 pandemic and the uncertain geopolitical situation have significantly affected the global supply chains in recent years and made businesses struggle with decrease of demand and long-term survival. That is why it would be too simplistic to assume that textile companies could easily set strategic organizational CBM goals in the current unstable economic situation.

Another prominent issue that emerged from the results was the lack of interest and understanding about circularity and sustainability from consumers. This finding was also previously reported by Diddi et al. (2019), Kant Hvass & Pedersen (2019), Kirchherr et al. (2018) and Todeschini et al. (2017). However, one surprising aspect that was not mentioned in the literature but resulted to be significantly associated with this barrier is the prominence of greenwashing. Therefore, even if companies would try to educate their customers, it remains a question how to ensure their credibility with the common lack of trust of customers in environmental claims. This skepticism might be one of the possible reasons for the little interest from customers and discourage them from engaging with companies' circular ambitions.

It is crucial to discuss recommendations on what could be done by companies and policymakers to deal with these barriers and successfully implement the identified drivers. Almost all of the companies from this study recognized that the trend of the circular economy is on the rise. Consequently, acknowledging the possible barriers and drivers of CBMI could be important for companies who are starting their circularity journey. To address the barrier of lack of consensus on what circularity really means and promote successful CBMI in the textile

industry, more cooperation between companies is encouraged. The businesses should try to take more initiative in the unions such as the Estonian Clothing and Textile Association and share their experiences, opinions and learnings with each other.

To raise awareness on CE, there should be a focus on educating the textile companies about CBMI. However, as also previously argued by Savini (2023), it is crucial to bear in mind that shifting towards CBM should not become a tool for promoting green consumerism and that circularity does not inherently mean sustainability. In alignment with what Savini (2023) argues, there should also be focus on informing consumers, educating them and encouraging collective responsibility to change and decrease their high consumption patterns.

Despite the barrier of low interest from consumers, it is advised that businesses should not postpone their circularity journey until the customer starts demanding it. Instead, companies should become more proactive than reactive. For example, they could increase the transparency of their business practices even more and environmentally nudge its consumers to gain credibility and shape their behavior. Nevertheless, the consumption of goods always happens after production, so the companies should also consider reducing their production quantities. It is crucial to tackle the barriers of CBMI from multiple perspectives and not just focus on one stakeholder.

When it comes to what the policymakers could do to promote CBMI, several studies (De Aguiar Hugo et al., 2021; Jia et al., 2020; Lazarevic & Valve, 2017) have shown that a structural regulatory framework that would support the companies on their circularity framework is largely missing. The results of this study confirmed this and moreover, showed how the textile companies do not feel addressed in the CE debates and initiatives of the state. That is why it would be recommended to establish a better framework of guidelines that the textile industry could adhere to when transitioning towards CBM and actively create space for them to have debates specifically about their sector.

Furthermore, the state could facilitate the development of recycling technologies and the creation of a database for sourcing materials and partners for CBMI. There is a market gap that could be successfully filled as the interest to use this sourcing tool was found to be high. Additionally, it is suggested that the state could create more tenders where it gives extra points or monetary incentives for companies that implement circularity practices or who show great strategic motivation to shift their linear business model towards CBM.

The last recommendation that the state could take into consideration is enforcing policy measures that would address the barrier of competition with fast fashion brands. Some European countries such as France have already expressed their desire to regulate the import of fast fashion to protect local businesses. The Estonian government could consider similar measures and advocate for them in the EU. In addition, stricter national regulations for environmental claims would be advised to prevent greenwashing.

CONCLUSION

The main goal of this thesis was to determine the perspectives of the Estonian textile industry on the circular economy and investigate the drivers and barriers of circular business model implementation in the Estonian textile sector. To achieve this goal, the method of semi-structured interviews was implemented. In total, seven companies were interviewed. This study has found that CE is a growing trend in the textile industry and that most of the interviewed companies have already implemented some circular practices or are planning to do so. Nevertheless, the overall perspective about the textile industry in the light of CE was not so positive as multiple companies admitted that there is little mention of the sector in CE debates and many textile companies struggle to even understand what circularity means.

Ten drivers and 14 barriers were identified for CBMI and ranged between four categories of mindset, market, operations and legislation. The most prominent drivers from each category were found to be aligning companies' organizational identity with circularity, having highly aware customers who care about sustainability, using a database for sourcing materials and partners and being influenced by national or European policy measures. The research has also shown what Estonian textile industry companies struggle with. The most notable barriers for CBMI from each category were short-term thinking, no interest and/or demand from the customers, lack of trust due to greenwashing and financial constraints.

These findings have remarkable implications for the understanding of the complexities of shifting towards CBM in the textile industry. Moreover, they shed light on the situation of the less-researched Eastern European market and provide a general overview of the perspectives on the circular economy of micro, small and medium-sized textile companies. The results will be of interest to businesses who are interested in better understanding the trend of CE and evaluating the potential barriers and facilitators of CBMI. Furthermore, this study can provide

valuable insights for policymakers who want to encourage a shift towards CE but do not quite comprehend the struggles of textile companies.

This study is limited by its sample of micro, small and medium-sized enterprises. The results from the seven interviewed companies do not allow the author to make conclusions about the whole Eastern European textile industry and determine whether the drivers and barriers of the micro, small or medium-sized Estonian textile companies are extendable to bigger non-Estonian businesses as well. Thus, additional quantitative research on the standpoints, drivers and barriers of CBMI and their dynamics of large-sized Eastern European enterprises is encouraged. Moreover, to gain a more thorough understanding of all parties related to CBMI, further study with more focus on other relevant stakeholders such as consumers and policymakers would be beneficial. Despite its limitations, the study certainly added to the understanding of the current stances of the Estonian textile industry towards CE and can be used as a guide of the potential challenges and drivers of CBMI in the sector.

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APPENDIX

Appendix 1

The Ethical Consent Form in English

The readiness of the Estonian textile industry for the transition to circular business models and the factors facilitating and hindering this transition

Dear ...

Thank you for your interest in participating in this study. This document explains what the study is about and how it will be carried out. Please take the time to read the following information carefully. If you have any questions, please do not hesitate to contact the person conducting the study.

WHAT IS THIS SURVEY ABOUT?

- This study focuses on the ambitions of the Estonian textiles industry for the transition to circular business models and aims to find out the drivers and barriers on this journey.
- The sample of the study mainly includes the companies of the Estonian Garment and Textile Association and your company was therefore also approached to identify the barriers and facilitators that would contribute to and facilitate the transition from linear to circular economy.
- The study is neither sponsored nor funded.

NATURE OF PARTICIPATION

- Participation in the research requires a video interview of approximately 30 minutes with the person conducting the study.

- Participation in the study is entirely voluntary and participants may withdraw from the interview at any time and not answer the questions without any consequences or justification.

HOW WILL THE INFORMATION YOU PROVIDE BE RECORDED, STORED AND PROTECTED?

- The researcher will ensure that the information provided by participants will only be used in the context of this thesis. The anonymity of the companies will be ensured when carrying out the data analysis.
- All data collected will be stored following the data protection rules of the University of Groningen and will only be accessible to the researcher and her supervisor.
- All collected data will be deleted after the showcase of the thesis in June this year.

WHAT HAPPENS TO THE RESULTS OF THE STUDY?

- The data collected during the interviews will only be analyzed as part of the thesis and will not be made public.

ETHICAL APPROVAL

- This study has received ethical approval following the Ethics Checklist of the Frysland Department of the University of Groningen.
- The researcher will comply with all the relevant ethical standards.

INFORMED CONSENT

If you have read this information sheet and agree to the terms and conditions of the study,

please sign the informed consent form below. This confirms your participation in this study but leaves you the option to withdraw from the study at any time if you wish.

WHO SHOULD YOU CONTACT FOR MORE INFORMATION?

If you have any further questions, please do not hesitate to contact the person conducting the study:

Viktorija Jefimova

(e-mail)

(phone nr)

INFORMED CONSENT FORM

Name of the study: The readiness of the Estonian textile industry for the transition to circular business models and the factors facilitating and hindering this transition

Participant name: ...

Evaluation

- I have read the information sheet.

- I understand that I can ask questions about the research at any time.

- I understand that I have the right to withdraw from the study at any time without giving reasons.

- I understand that I may refuse to answer any question at any time without any consequences.

- I understand I will not benefit directly from participating in this study.

Confidentiality and use of data

- I understand that my personal information will not be disclosed to anyone outside the research team and that neither my name nor the name of my company will be published.

- I understand that the interview will be audio-recorded and that the recorded information will be used only for this research.

- I understand that the data (consent forms, recordings, interview transcripts) will be kept at:

The University of Groningen Y-server for 5 years following the University's GDPR legislation.

Future involvement

- I would like to receive a copy of the scientific output of the project. Yes / No

Having read and understood all of the above, I agree to participate in the study: Yes / No

Signature

Date

To be completed by the person conducting the research:

- I confirm that I have fully informed the participant about the study and have answered all remaining questions to the best of my knowledge.

- I agree that this person will take part in the study.

Signature

Date

Appendix 2

The Ethical Consent Form in Estonian

Eesti tekstiili- ja rõivatööstuse valmidus ringmajanduslike ärimudelitele üleminekuks ning seda soodustavad ja takistavad tegurid

Lugupeetud ...

Täna teid huvi eest osaleda selles uuringus. Käesolevas dokumendis selgitatakse, mida uuring hõlmab ning kuidas see läbi viiakse. Palun võtke aeg, et lugeda järgnev teave hoolikalt läbi. Küsimuste korral võtke uuringu läbiviijaga julgelt ühendust.

MIDA ANTUD UURING KÄSITLEB?

- Antud uuring keskendub Eesti tekstiili- ja rõivatööstuse valmidusele ringmajanduslike ärimudelitele üleminekuks ning soovib välja uurida, mis on soodustavad ja takistavad tegurid sellel teekonnal.
- Uuring ei ole sponsoreeritud ega rahastatud.

OSALEMISE OLEMUS

- Uuringus osalemine eeldab umbes 30-minutilist videointervjuud uuringu läbiviijaga.
- Uuringus osalemine põhineb täielikult vabatahtlikkusel ning osalejad võivad igal hetkel uuringust loobuda ja jätta küsimustele vastamata ilma tagajärgedeta või põhjendusi esitamata.

KUIDAS SALVESTATAKSE, SÄILITATAKSE JA KAITSTAKSE TEIE ESITATUD TEAVET?

- Uuringu läbiviija kindlustab, et osalejate poolt avaldatud infot kasutatakse ainult

käesoleva bakalaureusetöö raames. Andmeanalüüsi tehes tagatakse ettevõtete anonüümsus.

- Kõik kogutud andmed säilitatakse vastavalt Groningeni ülikooli andmekaitse eeskirjadele ning andmetele omavad ligipääsu vaid uuringu läbiviija ning tema juhendaja.
- Kõik kogutud andmed kustutatakse peale bakalaureusetöö kaitsmist käesoleva aasta juunis.

MIS JUHTUB UURINGU TULEMUSTEGA?

- Intervjuude käigus kogutud andmed analüüsitakse vaid bakalaureusetöö raames ning ei lähe avalikustamisele.

EETILINE HEAKSKIIT

- Käesolev uuring on saanud eetilise heakskiidu Groningeni ülikooli Fryslani osakonna eetikakomiteelt.
- Uuringu läbiviija järgib asjakohaseid eetikanorme.

TEADLIK NÕUSOLEK

- Juhul kui olete end selle infolehega kurssi viinud ning nõustute uuringu tingimustega, siis palun allkirjastage allolev teadliku nõusoleku vorm. See kinnitab teie osalemise antud uuringus, kuid jätab teile võimaluse soovi korral siiski uuring iga hetk katkestada.

KELLE POOLE PEAKSITE LISATEABE SAAMISEKS PÖÖRDUMA?

- Lisaküsimuste korral võite julgelt pöörduda uuringu läbiviija poole:

Viktorija Jefimova

(e-mail)

(tel. nr)

TEADLIKU NÕUSOLEKU VORM

Uuringu pealkiri: Eesti tekstiili- ja rõivatööstuse valmidus ringmajanduslike ärimudelitele üleminekuks ning seda soodustavad ja takistavad tegurid

Osaleja nimi: ...

Hindamine

- Olen tutvunud infolehega.
- Mõistan, et võin igal ajal esitada küsimusi uuringu kohta.
- Mõistan, et mul on õigus igal ajal uuringus osalemisest loobuda ilma põhjendusi esitamata.
- Mõistan, et võin igal ajal keelduda vastamast mis tahes küsimusele ilma igasuguste tagajärgedeta.
- Mõistan, et ma ei saa otseselt kasu selles uuringus osalemisest.

Konfidentsiaalsus ja andmete kasutamine

- Mõistan, et minu isiklike andmeid ei avaldata kellelegi väljaspool uurimisrühma ja minu ega minu ettevõtte nime ei avaldata.

- Mõistan, et intervjuu salvestatakse audio-teel ning salvestatud teavet kasutatakse ainult käesoleva uurimistöo koostamiseks
- Mõistan, et andmeid (nõusolekuvormid, salvestused, intervjuu protokollid) säilitatakse aadressil:

Groningeni ülikooli Y-server 5 aasta jooksul vastavalt ülikooli GDPRi õigusaktidele.

Kaasamine tulevikus

- Soovin saada koopia projekti teaduslikust väljundist. Jah / Ei

Olles lugenud ja mõistnud kõike eeltoodut, olen nõus osalema uuringus: Jah /

Ei

Allkiri

Kuupäev

Täidetakse uuringu läbiviija poolt:

- Kinnitan, et olen uuringus osalejat põhjalikult teavitanud uuringust ja vastanud kõigile järelejäänud küsimustele oma parima teadmise kohaselt.
- Olen nõus, et antud isik osaleb uuringus.

Allkiri

Kuupäev

Appendix 3

The Code Book

Barriers for CBMI

Drivers for CBMI

Perspective and themes of the textile industry on circular economy

Code	Category	Purpose/meaning of the code
Sustainability and CE recently became a growing issue	Perspective	Illustrating how thinking about the circular economy and sustainability has become more present in the recent years
Worse quality and variety of recycled fabrics	Operations	<p>The quality of recycled garments is worse because the fibers are not as strong anymore after processing.</p> <p>The variety of recycled fabrics is not as big because of the technical limitations of fiber recycling and that can become a hindering factor for some customers who have a specific wish for their fabrics.</p>
Skepticism about CE	Mindset	Illustrating the flaws of circular economy and the potential dangers and loopholes of the circular transition.
Policy regulations	Legislation	The efforts of the state/European Union to put regulations to support CBM, e.g regulations on the import or production of fast fashion
Unwillingness from customers to pay more	Market	The customers and clients are not willing to pay more for the more sustainable options and choose products based on what's cheapest
No understanding about CE or demand for circular solutions from customers	Market	The companies do not feel any pressure from the customers because they are not interested in more circular or sustainable options
No consensus on the meaning of sustainability	Mindset	The customers and organizations do not have a consensus of what sustainability actually stands for
No support/negligence from the state	Perspective	The textile and clothing companies do not feel supported from the state to transition towards CBM and don't feel addressed in the debates

Short-term thinking	Mindset	Companies do not think long-term and are focused on short-term goals
Greenwashing hindering credibility of sustainable actions	Market	Many fast fashion companies use greenwashing as a marketing technique. This makes it complicated to differentiate truthful statements from lies. It also makes it harder for companies who actually do the right thing to gain credibility because customers do not trust anyone anymore.
Availability of EU funding	Operations	There are plenty of available EU grants and funds to transition towards circularity.
Confusion about circular economy among the textile industry	Perspective	Companies do not really understand what circularity means and what do they have to do
Interest from the company owners to lead sustainable companies	Mindset	The company owners themselves are very interested in pushing their companies towards circularity and sustainability
Sustainability as part of companies' identity	Mindset	Sustainability and circularity are essential for companies on already organizational identity level and this motivates them to make decisions according to their values
Change is going to come	Perspective	The belief that the industry will change very soon and it is moving towards the direction of CE
High awareness of customers	Market	Customers are becoming more and more aware of sustainability and circularity and are starting to demand it
Market is not ready for CE	Market	The current market situation makes it difficult to prioritize circularity and sustainability
Having future plans	Perspective	Companies have future plans for becoming more circular
Operating under time pressure	Operations	Time constraints make it difficult to carry out circular or sustainable practices
Overall state of the textile industry	Perspective	Overall descriptions of how the situation of the Estonian textile industry is
Cooperation between the companies	Operations	Companies are not cooperating with each other and not helping each other with circularity but if they would it would be very helpful

Financial struggles for companies to implement circular practises	Operations	Companies are not able to implement circular practices because of financial constraints and restrictions
Recession	Market	There is an economic recession that is threatening the existence of the companies.
Availability of educational programs	Operations	There are plenty of educational events and programs being organized to spread knowledge about circularity
Technological and logistical difficulties for recycling	Operations	The inability to recycle textiles due to technological or logistical constraints makes it difficult to even consider putting circular acts into practice.
Current circular and sustainable practices	Perspective	Overview of the current CBM practices that companies are already implementing
Difficult to find information about CE	Operations	It is not so easy to find the information about how to start the CE journey
Comparative advantage	Market	Becoming more circular can give you a comparative advantage on the market compared to actors who do not do it
The interest in sustainability has faded	Perspective	Sustainability and circularity used to be a big topic for the company but because of different barriers the interest has faded away
Having a database for sourcing materials and partners	Operations	Having a database for sourcing partners who would be willing to reuse textile waste or recycle it would make it easier
Competition with fast fashion brands	Market	Prominence of fast fashion companies have made it difficult to compete with them because of their such low price and such high demand from the customers
Hesitant to make plans for the future	Perspective	Companies do not want to make plans for the future because they do not know how the market will evolve and there is a lot of uncertainty with everything going on in the world

Appendix 4

The Translated Interview Guide

Circular economy in general

- What is your company's attitude to the circular economy? Do you think the circular economy is relevant in your sector?
- To what extent do you feel your company is influenced by the circular economy as a growing trend - how did you get there?
- Do you feel any pressure from the government/competitors/society/customers to engage more with the circular economy?

If yes: does this pressure come more from the customers or do you feel any pressure from the state as well? Would you need more support from the state?

- When did you start to see more of the impact of the circular economy on your own business?

CBMI

- What has been a challenge for you in moving to circular business models? What is still challenging?
- What hinders/would hinder your transition to circular business models? What are the risks? What would be your biggest concerns?
- What would facilitate this transition? What would make it significantly easier?
- What are your plans for the future in relation to the circular economy?

Potential follow-up questions

- Would you need/want more support from the state?
- What would change your attitudes?
- Could you please elaborate further on this aspect?
- What exactly do you mean by this?
- Do you perhaps have any questions for me?