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# HOW TO SAIL AGAINST THE WIND FROM A CIRCULAR PERSPECTIVE?

*THE BARRIERS AND DRIVERS OF THE REINCARNATION  
PROCESSES OF OUTDOOR TEXTILE WASTE AND THE CASE OF  
ZONKLAAR*

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## ABSTRACT

The textile industry's environmental impact is a growing concern, given its excessive water use, waste generation, and chemical usage. Outdoor and marine fabrics pose an even higher challenge for sustainable measures, where recycling processes do not exist or are still in the early stages. Low prices of virgin materials and economic-driven management further hinder sustainable efforts in the textile industry.

To counter this, Circular Business Models (CBMs) can offer a potential solution to improve recoverability and recyclability as business model changes can act as a guiding tool towards sustainability. CBMs aim to reduce waste by keeping products in use for as long as possible, either in the same loop or in another industry. However, the change requires a profound systemic shift, which can face multiple obstacles. Therefore, this research explores potential barriers and drivers to establishing a circular business approach in the outdoor fabric industry. Building on theoretical and practical knowledge, an abductive approach deepened by semi-structured interviews could reveal answers to the research question.

Adopting a circular business model can be challenging for companies due to perceived complexity, misaligned value proposition, and short-term focus. To facilitate the transition, businesses can capitalise on internal motivation and personal values and promote collaboration and co-creation, where revisiting the company's value proposition, creation, delivery and capture processes are indispensable towards building a permanent impact.

**Keywords:** Sustainable Business Models, Circular Economy, Outdoor Textile Industry, Barriers, Drivers, Value Proposition, Collaboration.

# TABLE OF CONTENTS

THE ACTUALITY OF THE TOPIC .....	1
THEORETICAL BACKGROUND.....	5
Why pursue Sustainable Business Models? .....	5
Circular Economy and Business Models.....	6
Balancing on the Edge of Enabling and Disabling Factors, the Chance of Failing/Succeeding .....	7
Ups and Downs from the Inside .....	7
<i>Organisational and Cultural Aspects</i> .....	8
<i>Financial Aspects</i> .....	8
<i>Technological Aspects</i> .....	9
Ups and Downs from the Outside .....	10
<i>Market Aspects</i> .....	10
<i>Regulatory Aspects</i> .....	11
<i>Supply Chain Aspects</i> .....	11
When Everything Adds Up .....	12
METHODOLOGY .....	14
Research Approach .....	14
Research Design.....	14
Data Collection.....	15
Data Analysis .....	16
Ensuring Quality and Ethical Consideration while Limiting the Biases .....	16
FINDINGS .....	17
Defined by Sustainability and Circularity .....	17
Organisational and Cultural Hindrances .....	19
Economic Feasibility.....	19
Latest Technology .....	21
About Market Dominance.....	22
The Stance of Regulative Powers.....	23
Breaking Down the Chains .....	24
DISCUSSION.....	26
Value proposition .....	27
Value creation and delivery.....	28
Value capture .....	30

CONCLUSION .....	30
Limitations and Avenues for Future Research .....	32
BIBLIOGRAPHY .....	34
APPENDICES .....	41
Appendix A: The Sustainable Business Model Archetypes .....	41
Appendix B: Interrelations Between Corporate Sustainability Strategies and Business Case Drivers .....	42
Appendix C: Company List.....	43
Appendix D: Coding Tree .....	44
Appendix E: Treemap Diagrams for Barriers and Drivers .....	45
Appendix F: Further Elaboration of Practical Implications for ZONklaar and for the Industry .....	46
Appendix G: Information Sheet and Consent Form .....	47
Appendix H: Interview Guide .....	49

## THE ACTUALITY OF THE TOPIC

The textile industry significantly contributes to environmental degradation and waste generation worldwide, and Europe is no exception. In the last decades, there has been an ongoing concern about the textile industry's environmental impact, especially concerning the amount of water used, waste generated, and the applied chemicals while producing various fibres. After food, housing, and transportation, textile use in Europe has the fourth-highest effect on the environment and climate change, with an average annual disposal rate of 11kg per person (European Commission, 2022).

One segment of the textile-fabric industry that is notably worrying is outdoor textiles and marine fabrics. The outdoor fabric segment includes boat covers, sail-clothes, awnings, and outdoor tents, typically made from synthetic materials such as acrylic, polyester or polyester woven. The maritime sector produces more than 10 million m<sup>2</sup> of sailcloth annually, ten times Greater London's area. (Haakman & Verkade, 2022). Only acrylic goods are responsible for an annual discarding rate of 7700 tonnes of waste disposed of by landfills or incineration in Europe (Tomme et al., 2021). The research of Muthu, Li, Hu and Mok (2012) focused on analysing the Recyclability Potential Index (RPI) of different types of textile fibres and found that recycling acrylic would conserve eight times the energy retrieved from incineration. Moreover, polyester outscored other textiles according to its RPI rate, leaving a question: *Why is recycling not happening?*

When considering acrylic or polyester fibres, they undergo chemical treatments to improve their ultimate characteristics. Many products face constant exposure to atmospheric agents such as UV rays, water damage, and wear and tear over their lifespan. Polyester should be used to make

large awnings because it has a rebound behaviour, where the material "memorises" the original state and keeps its shape stable. On the other hand, acrylic is the safer option if the awning will be utilised often due to its light fastness and colour intensiveness (Weinor GmbH & Co. KG, n.d.). Nevertheless, outdoor fabrics cannot be easily recycled due to the finishing chemicals, which pose a challenge, resulting in no existing recycling processes. Opting for mechanical recycling could be possible, but removing the finishes at the beginning of the recycling process is vital (Tomme et al., 2021).

In response to the abovementioned issues, there has been a growing emphasis on circularity in the textile industry, including the outdoor upholstery segment. To overcome the obstacles in outdoor textile recycling, the EU launched the REACT (Recycle of Waste Acrylic Textiles) under the Horizon 2020 initiative and successfully developed an effective method to extract finishing chemicals from waste acrylic textiles at the very beginning of the recycling process (Trovato, 2022), which sets free the potential upscaling and future circular business approach implementations.

As Circular Business Models (CBMs) aim to diminish or even eradicate the definition of waste generation by keeping products and materials in use for as long as possible through different strategies, which can further contribute to developing new sectors, new employment, and more sustainable economies (Long, 2021). To maximise its effectiveness and vital message, CE must be viewed as a profound systemic shift in the direction of being restorative and regenerative rather than a minor modification of the existing status quo (Kirchherr, Reike, & Hekkert, 2017). Implementing a circular business approach requires firms to rethink their supply chain and business models (Lüdeke-Freund, Gold, & Bocken, 2019). The idea that business models act as a bridge to create value with innovative technologies and concepts can be expanded to sustainable

entrepreneurship, suggesting that business models can potentially promote ecological, social, and economic value creation (Lüdeke-Freund, 2020). Consequently, addressing the issue at the business model level of a company is inevitable.

Decisions made by businesses to move toward more circular approaches are likely to yield both direct and prolonged benefits, improving their long-term competitiveness and resilience (Rizos, Behrens, Kafyeke, Hirschnitz-Garbers, & Ioannou, 2015). However, the benefits alone may not be enough to gain widespread acceptance of the concept. One of the crucial factors for driving change is optimising the value proposition (Bocken, Short, Rana, & Evans, 2014), including the rational and non-rational behaviour of the possible consumers (Planing, 2015). The CBM literature has laid massive efforts in identifying the various obstacles a business can face during implementation. According to the company's standpoint, it must confront internal and external barriers (Vermunt, Negro, Verweij, Kuppens, & Hekkert, 2019). Barriers can arise from a firm's financial, market, technical, cultural and institutional/organisational domain (de Jesus & Mendonça, 2018). These obstacles affect both big and small businesses but to different degrees. For instance, large organisations can fund the development of circular technologies through their R&D programs, but small and medium-sized enterprises (SMEs) frequently rely on already available technologies (Rizos et al., 2016).

The textile industry is still hindered by mainly the low price of virgin materials and the economic-driven management orientation of organisations (Ellen McArthur Foundation, 2021). In light of the current trends and issues in the outdoor fabric industry, there is a pressing need to explore the feasibility of CBMs as a potential solution against low-scale recoverability and recyclability. This entails thoroughly analysing the various challenges and benefits of implementing such models. While prior research has already addressed certain obstacles and

incentives, this study aims to provide further insight by examining the outdoor textile industry segment concerning CBM implementation. By identifying and exploring the unavoidable barriers and drivers in this specific industry, potential solutions can be found, whereby providing recommendations for practitioners and for ZONklaar, the case company that specialises in cleaning and maintaining sails, boat tents, and awnings and which has the potential to access various waste streams in the outdoor fabric sector, is possible. This study strives to contribute to a more sustainable and circular outdoor textile industry and widen the knowledge of CBMs in this specific field with simultaneously answering the research question: **What are the drivers and barriers to establishing a circular business approach to address the issue of outdoor fabric material waste?**

To be fully equipped to answer the research question, this thesis follows an abductive approach, in which the initial goal is that theory can not be entirely apprehended without any empirical observation and vice versa (Dubois & Gadde, 2002). Building upon this goal, the following section will introduce the topic of sustainable business models and circular economy by first looking at the literature. Furthermore, it will comprehensively showcase the barriers and drivers of implementing circular solutions. An extensive overview of the Methodological approach will be presented regarding data collection and analysis. Last but not least, the Results section will illustrate the data findings, followed by a comparative discussion section between the empirical and conceptual takeaways. In conclusion, I will critically reflect on the whole thesis's contribution, provide limitations and touch on the potential future research.



## THEORETICAL BACKGROUND

### Why pursue Sustainable Business Models?

To address the urgent issues related to sustainable development, uncovering the root causes of unsustainable behaviour is essential. Bringing fundamental change to the core business model, rather than simply adding measures to mitigate negative impacts, is the only solution to achieve significant societal and environmental benefits (Bocken et al., 2014). In this process, business models can serve as a “mediating device” to enable entrepreneurs to commercialise their innovations and increase the probability of achieving business success (Lüdeke-Freund, 2020) while gaining a competitive advantage in the market by relying on different strategies (Schaltegger, Lüdeke-Freund, & Hansen, 2012). Sustainable entrepreneurs could interfere here and take a crucial role in driving transformation by developing and implementing innovative and sustainable business models and prioritising environmental and social considerations alongside economic viability (Kuckertz, Berger, & Gaudig, 2019).

Depending on a firm's aims in integrating a social, organisational and/or technological model to change, (Bocken et al., 2014) introduced seven different sustainable business model archetypes with their effect on the business's value proposition, creation and capture ([APPENDIX A](#)). Derived from the business model, the applied strategy declares the way and the depth an organisation wants to transform. It can be divided according to a *defensive (limited integration)*, *accommodative (intermediate integration)* or *proactive (full integration) strategy* (Schaltegger et al., 2012) ([APPENDIX B](#)).

As business models have the attribute to become the driver of innovation, which also enables defining how an organisation will create, deliver and capture value (Lüdeke-Freund et al., 2019), one question remains: *What kind of sustainable business model should a company implement?*

## **Circular Economy and Business Models**

The phrase "circular economy" (CE) is more well-known among academics, policymakers, and practitioners. However, the lack of a widely accepted definition of the circular economy has made it difficult for both practitioners and scholars to grasp its scope and implications fully, given the diverse use of the concept in various sectors, contexts and levels of analysis (Sehnem, Vazquez-Brust, Pereira, & Campos, 2019), where interestingly the emphasis on economic success is omnipresent in practitioner definitions (Kirchherr et al., 2017). Moreover, (Murray, Skene, & Haynes, 2017) in their research even question how CE will capture social contributions because most CE models focus mainly on the environmental and economic pillars. Based on this issue, Homrich, Galvão, Abadia, & Carvalho (2018) address CE as an “umbrella” term. Followed by raising awareness to get transparency between the definitions (Kirchherr et al., 2017), hundreds of CE descriptions and/or non-linear models/frameworks were brought together for analysis. To understand the overlaps, (Sehnem et al., 2019) conducted a comparison analysis between different types of non-linear production approaches, such as CE, reverse logistics, closed loops, life-cycle-assessment, cradle-to-cradle, and concluded that similar objectives could be explicitly identified in terms of functional, ecological and economic performance. Despite the differences, the models could also contribute to scaling up the concept of CE (Sehnem et al., 2019).

Furthermore, companies that want to transition to a CE must re-evaluate their supply networks to create various reverse cycles (Lüdeke-Freund, Carroux, Joyce, Massa, & Breuer, 2018). This thesis does not aim to find an overarching definition, consequently, to maximise its effectiveness and critical message, CE must be viewed as a profound systemic shift in the direction of being restorative and regenerative rather than a minor modification of the existing status quo (Kirchherr et al., 2017). In addition, this economic concept will replace the conventional

linear/‘end-of-life’ perspective with recycling, recovering, reducing and possibly reusing materials in various production and consumption functions. Assignable to the use of the CE concept in multiple contexts and levels, it can be stated that it operates at the micro- (product, firm, customer), meso- (eco-industry parks), and macro level (town, nation and across borders) with the overarching goal of sustainable improvement with simultaneous economic, environmental and social value development (Kirchherr et al., 2017).

### **Balancing on the Edge of Enabling and Disabling Factors, the Chance of Failing/Succeeding**

Undoubtedly, circular business models offer immense benefits for businesses, consumers, and the environment. However, in practice, there are various obstacles that companies may encounter while implementing circular business models. These may include challenges in assessing the value of future benefits relative to current costs, knowledge gaps, and market pull-and-push factors such as the availability of technologies and consumer demand for sustainable products (Rizos et al., 2015). The following chapter will offer a comprehensive overview of these barriers and potential coping strategies, summed up by a conceptual framework (**Table 1**).

### **Ups and Downs from the Inside**

According to Vermunt, Negro, Verweij, Kuppens and Hekkert (2019), internal barriers are complications that arise within a company when it aims to implement, change or adjust its present business model. On the other hand, changes in the internal environment of a focal firm can also facilitate and foster the transition (Wójcik-Karpacz, Karpacz, Brzeziński, Pietruszka-Ortyl, & Ziębicki, 2023). Current literature has identified and can distinguish organisational, financial,

technical and knowledge aspects as internal obstacles and enablers with multiple sub-topics (Hina, Chauhan, Kaur, Kraus, & Dhir, 2022).

### ***Organisational and Cultural Aspects***

The environmental culture of a company is rooted in its philosophy, mission and vision, which influences the attitudes of the managers and other employees, resulting in habits and routines (Liu & Bai, 2014). Due to hierarchical systems and a hesitant corporate culture, most sustainable initiatives tend to be confined to the corporate social responsibility (CSR) and/or environmental departments and do not receive equal or higher attention than other departments, such as sales and finance (Kirchherr et al., 2018). As CBMs require a systemic change (Kirchherr et al., 2017), it will ‘disturb’ current practices and challenge the whole organisation's resiliency and adaptability (Rizos et al., 2016). Consequently, it can result in resistance to change that holds business models in their traditional structure. Simultaneously, it is becoming an administrative burden for companies to comply with reporting on sustainable performance (Rizos et al., 2016). The promotion of CE in businesses is further hindered by the lack of skills needed to shift one's perspective to long-term thinking (Bechtel, Bojko, & Völkel, 2013). However, an internal motivation driven by devotion and adequate leadership, deeply rooted in the employees' mindset, might ease the transition towards implementing a CBM (Rizos et al., 2016). Furthermore, the benefits of having a better public image could lower the barriers faced during the transition (Purwandani & Michaud, 2021).

### ***Financial Aspects***

Creating an economically viable pathway to develop circular economy solutions will attract more businesses. To achieve this, companies will need to invest in the transition upfront, as with

conventional investment intentions, and might expect a short-term revenue reduction (Dervojeda, Verzijl, Rouwmaat, Probst, & Frideres, 2014). Unfortunately, the chance of falling into a financial pothole due to a lack of capital and the uncertainty of the return on investment (Masi, Kumar, Garza-Reyes, & Godsell, 2018) will reaffirm firms to act according to business-as-usual and stay risk-averse (Rizos et al., 2016). Given the ambiguity surrounding the financial return of the CBMs, miscellaneous international standards and the dangers connected with the acquisition of adequate technology, employee training and market trends, some banks and/or investors appear to keep a safe distance from offering loans for circular development (Dervojeda et al., 2014) leaving SMEs without funding. Nevertheless, the possibility of reducing the initial costs of the transition through industrial networking and change in the value proposition will offer new markets to conquer (Ormazabal, Prieto-Sandoval, Puga-Leal, & Jaca, 2018).

### ***Technological Aspects***

Since the growth of a CE highly depends on technical solutions, related complications are seen as a significant bottleneck to change. In addition to factors relating to availability, other technical barriers, including technological gaps and a lack of sufficiently qualified personnel, can further restrain a firm's capability for the transition (de Jesus & Mendonça, 2018). A lack of technical expertise may lead to adopting available linear technology and business models (Dervojeda et al., 2014; Rizos et al., 2016). Additionally, the low pricing signal of raw materials (Franco, 2017) and the insufficient investment in technologies focusing on circular product designs (eco-design) and operations will likely hinder the adoption of circular economy approaches (Van Buren, Demmers, Van der Heijden, & Witlox, 2016). Technology commercialisation incorporates a variety of additional factors connected to market communication, marketing messaging, or even market education (Wójcik-Karpacz et al., 2023). To successfully overcome technological

restraints, continuous research and development of new technical knowledge should be placed in connection with other affected segments, considering that technological development is a slower process (Kirchherr et al., 2017).

## **Ups and Downs from the Outside**

Issues that affect a firm's day-to-day operations directly or indirectly rooted outside the company are external barriers (Vermunt et al., 2019). Scholars have identified several obstacles, which arise in most cases from the power of external stakeholders of a company, such as the acceptance of the customers (Planing, 2015), national and international regulations or the bargaining power of suppliers while taking into account the competitors of the market (Hina et al., 2022).

### ***Market Aspects***

The CE works with the anticipation that customers will be active participants in recycling products, consequently changing their habits and culture of using and disposing of goods (Wieser & Tröger, 2018). With consumer environmental awareness, firms should position their products and/or services by knowing what makes people buy 'green'. Emphasising the utilitarian value of their eco-friendly items and giving more information about the values by telling the story behind them (Polyportis, Mugge, & Magnier, 2022) is crucial for recycled and upcycled products. Depending on the degree of sustainable consciousness, different strategies should be pursued by businesses to target customers (Park & Lin, 2020) because, eventually, the purchase intention and the willingness to pay will be based on their perceptions and the influence of the surrounding environment (Polyportis et al., 2022). Moreover, the importance of transparency towards the market is a crucial element that can either differentiate and legitimate or undermine the business

(O'Neil & Ucbasaran, 2016). Another critical part of the market is rooted in the role and influence of competitors. The increased competition brought on by existing or new competitors entering the market might encourage the continuous desire for innovation, the discovery of niche markets, and the offering of sustainable solutions (Ellen McArthur Foundation, 2021).

### ***Regulatory Aspects***

Incremental policy-making and initiatives such as the promotion of a circular economy require a comprehensive technical, political and organisational analysis with the collaboration of various actors from think tanks through academia and the involvement of practitioners to identify feasible and realistic approaches (Wu, Ramesh, Howlett, & Fritzen, 2018). However, the lack of governmental support for encouraging businesses to take action and transform their business according to the regenerative and distributive principles is one of the most important limitations for developing CE, which is further deepened by unfavourable legal systems and mismatched incentives that strengthen the existing status quo paradigm (de Jesus & Mendonça, 2018).

### ***Supply Chain Aspects***

Lastly, managing the transition in the supply chain will be a continuous wicked problem (Hina et al., 2022), as adopting a CBM will likely make the supply chain even more complex (in terms of logistical, monetary, and regulatory elements), affecting the value chain of a product or service. So that successful CBMs may be implemented, governance-related concerns (ownership, distribution of costs and benefits throughout the value chain) must be resolved (Rizos et al., 2016). The crux of a sustainable supply chain is inherited from the fact that every actor might understand sustainability differently so that problems will be treated with diverging interpretations, knowing

that all members depend on others to make a meaningful impact, which requires a shared approach with trade-offs (Meckenstock, Barbosa-Póvoa, & Carvalho, 2016).

### **When Everything Adds Up**

To lower the obstacles to CE, academia, industry players, and government should cooperate and share resources and expertise (Tura et al., 2019). For instance, the development of technological platforms enables actors to link their resources across markets, generating value through complementarities and exchanging knowledge (Tura, Kutvonen, & Ritala, 2018). Consequently, placing co-creating supply chain networks at the core of the business model will also enable product circularity locally and globally (Ellen McArthur Foundation, 2021)



Theoretical Framework		Description of barriers	Description of Drivers	References
<b>External - Internal</b>	<b>Organisational Cultural Aspects</b>	<ul style="list-style-type: none"> <li>- Administrative burden</li> <li>- Short-term oriented corporate management</li> <li>- Complex management processes</li> <li>- Misalignment of the value proposition</li> <li>- Fear of losing market share and customer base</li> </ul>	<ul style="list-style-type: none"> <li>- Internal motivation</li> <li>- Better public image</li> <li>- Managerial capabilities - leadership</li> </ul>	Purwandani and Michaud (2021); Kirchherr et al. (2018); Rizos et al. (2016); Hina et al. (2022); Bechtel et al. (2013); Liu & Bai (2014); Tura et al. (2019); Wójcik-Karpacz et al. (2023); Vermunt et al. (2019)
	<b>Financial Aspects</b>	<ul style="list-style-type: none"> <li>- Lack of capital</li> <li>- High investment cost</li> <li>- Long payback period, unclear financial business case</li> <li>- Shareholder dominance in corporate agenda</li> <li>- Limited funding for circular business models</li> </ul>	<ul style="list-style-type: none"> <li>- Governmental tax reduction</li> <li>- Funding solutions – grant application</li> </ul>	Purwandani and Michaud (2021); Kirchherr et al. (2018); Wójcik-Karpacz et al. (2023); Hina et al. (2022); Dervojeda et al. (2014); Masi et al. (2018); Ormazabal et al. (2018); Vermunt et al. (2019); Rizos et al. (2016); Tura et al. (2019); de Jesus and Mendoca (2018)
	<b>Technological Aspects</b>	<ul style="list-style-type: none"> <li>- Lack of information</li> <li>- Lack of technical expertise and practices</li> <li>- Eco-design challenges and ability to deliver durable products</li> <li>- Limited attention focuses on end-of-life product management</li> </ul>	<ul style="list-style-type: none"> <li>- Continuous product and process development</li> <li>- Experimenting with technology and developing knowledge</li> </ul>	Kirchherr et al. (2018); Vermunt et al. (2019); Rizos et al. (2016); Hina et al. (2022); Van Buren et al. (2016); Ellen McArthur Foundation (2021, 2016); Franco (2017); Dervojeda et al. (2014); Wójcik-Karpacz et al. (2023); de Jesus and Mendoca (2018); Tura et al. (2019); Masi et al. (2018)
	<b>Supply Chain Aspects</b>	<ul style="list-style-type: none"> <li>- Lack of collaboration</li> <li>- High dependence on external partners</li> <li>- Low bargaining power</li> <li>- Conflict of Interest with companies</li> </ul>	<ul style="list-style-type: none"> <li>- Standardisation</li> <li>- Stimulating current or new suppliers for co-creation / collaboration</li> <li>- Building closer relationships with other actors in the supply chain</li> </ul>	Vermunt et al. (2019); Ellen McArthur Foundation (2021); Rizos et al. (2016); Hina et al. (2022); Planing (2015); Meckenstock et al. (2016); Ellen McArthur Foundation (2021); Tura et al. (2018); Tura et al. (2019); Masi et al. (2018); Dervojeda et al. (2014)
	<b>Market Aspects</b>	<ul style="list-style-type: none"> <li>- Customer irrationality, low willing-to-pay</li> <li>- Lack of customer awareness - non-acceptance</li> </ul>	<ul style="list-style-type: none"> <li>- Customer rationality</li> <li>- Awareness of society</li> <li>- Free market and the sense of competition and being a market leader</li> </ul>	Rizos et al. (2016); Hina et al. (2022); Ellen McArthur Foundation (2021); Park & Lin (2020); Wieser & Tröger (2018); Planing (2015); Polyportis et al. (2022); O'Neil & Ucbasaran (2016); Masi et al. (2018); Kirchherr et al. (2018); Vermunt et al. (2019)
	<b>Regulatory Aspects</b>	<ul style="list-style-type: none"> <li>- Lack of consistent legislation</li> <li>- Circularity is not integrated into innovation policies</li> <li>- Lack of governmental initiatives</li> <li>- Lack of standards and guidelines for recycling, collection processes</li> </ul>	<ul style="list-style-type: none"> <li>- Continuous research and development</li> <li>- Ambitious visions</li> <li>- Recovery of the local environment</li> </ul>	Kirchherr et al. (2018); Vermunt et al. (2019); Rizos et al. (2016); Hina et al. (2022); Wu et al. (2018); Ormazabal et al. (2018); de Jesus and Mendoca (2018); Masi et al. (2018); Dervojeda et al. (2014)

**Table 1.:** Theoretical framework based on literature sources

## METHODOLOGY

### Research Approach

Steered by a descriptive intent, this paper conducted an abductive approach with a qualitative nature to enrich the current academic and practical knowledge about the barriers and drivers of CBMs with the scope of outdoor fabric materials. As the previous chapter focused on extracting and presenting the essential expertise to provide a detailed description of what has been found in the academic field, the following paragraphs will demonstrate how the fundamental empirical knowledge-gathering approach was designed, structured, enforced and analysed. Consequently, aiming to provide the most comprehensive picture possible, define and clarify the present issues (Saunders, Lewis, & Thornhill, 2012), and answer the research questions.

### Research Design

When it comes to the design, the research utilised the benefits of the cross-sectional composition because it enabled to obtain a current snapshot of a particular phenomenon by analysing various cases (Bryman, Bell, & Harley, 2019), which is the most suitable approach to capture the current knowledge available in the practical field (Saunders, Lewis, & Thornhill, 2012) and to adhere with the thesis's time constraints. In terms of design features, the semi-structured interview technique was the most appropriate choice, as it allowed the interview to be pursued with a prepared question guideline to gather essential insights. By this approach's virtue, an in-depth discussion about the topic was enabled with the flexibility of asking further questions (Bryman et al., 2019).

## Data Collection

A mixed-purposeful sampling method allowed for placing the research question at the heart of the sampling by combining different methods (Omona, 2013). Combining theory-based, criterion and convenience sampling ensured adherence of the selection to the previously specified criteria (Palinkas et al., 2015) and enabled reaching out to the researchers' network (Mugenda & Mugenda, 2003). By focusing on both ends of the supply chain and understanding the root causes of pre- and post-consumer waste generation, the interviews were conducted with manufacturers, retailers and additional organisations who are involved in the value chain in either producing, recycling, collecting, designing and (re)selling the affected fibre materials or encouraging networking between firms, consequently allowing to get a comprehensive overview about the present situation. The case company (ZONklaar) played a crucial role in selecting companies given to their network. On the other hand, the topic of this research paper maintained strong ties with an ongoing project of Circulair Friesland, which focuses on circularity in outdoor plastic-containing textile materials (Vereniging Circulair Friesland, 2023). Given the overlaps in circularity and outdoor textiles, mutual support enhanced the reliability and validity of this study by ensuring access to companies from their network that fulfilled the previous criteria.

The firms that complied with the selection criteria were approached via email, which provided a clear account of the study's purpose and the role of involvement (Saunders et al., 2012). A successful match resulted in seven participants, with whom online or in-person interviews were organised at their convenience, lasting approximately 30-60 minutes. Beforehand, to ensure the responses' credibility, the participants were informed of the key themes derived from the literature, how the data would be treated during the project, and asked to sign the consent form. A detailed overview of the participants can be found in the appendices ([APPENDIX C](#)).

## **Data Analysis**

Simultaneously with amassing the data, the analysis also took off. Given that the research draws on an abductive approach, the rationale of the coding tree started with combining existing theories, which had to be complemented by coding the transcriptions of the interviews (Bryman et al., 2019). Considering the importance of efficiently established codes and transparency simultaneously, using Atlas.ti, a qualitative data analysis software, was inevitable. The repetition of reading and iteratively reviewing the transcripts and the literature helped establish the coding tree (Gioia, Corley, & Hamilton, 2013) ([APPENDIX D](#)). Overall, 38 first-order codes were identified and summarised under 12 second-order codes divided by barriers and drivers, followed by the internal and external aspects as the aggregate dimension.

## **Ensuring Quality and Ethical Consideration while Limiting the Biases**

This research had to comply with the University of Groningen's Code of Ethics by fulfilling the university's ethical checklist. Additionally, all transcribed interviews had been anonymised according to the consent form, providing complete confidentiality for the participants. The transcripts and the signed consent forms are available in the [Shared Folder](#). To ensure the research's reliability, validity, credibility and general quality, it was inevitable to be aware of the potential biases (Bryman et al., 2019). To lower the knowledge bias, before interviews were conducted, becoming knowledgeable about the culture of the person and the company background was crucial. Selection bias was present, given the advantages of asking for potential interviews from the case company and Circulair Friesland. On one occasion, the interview was conducted in German, a second foreign language of the researcher, consequently exposed to language biases that needed to be overcome (Saunders et al., 2012). As a final note, the goal was to build upon the

strengths of the applied methodology while lowering the biases in the search to answer the research question.

## **FINDINGS**

This section introduces the results of the data collection in a way that will offer an in-depth understanding of the present situation and practices in the practical field of the outdoor textile industry. Derived from literature, the structure will cover the restrictions of companies, which can arise from the inside, driven by economic gains or the dominance of the market can be too persuasive for some firms to act, eventually feeling chained up by other actors and legally binding regulations, leaving firms to operate according to the linear business-as-usual approach. However, the possibility of drawing strength from the core values of companies, funding schemes, conscious consumers, cooperatives and experimentation with technology, which regulations could further fortify, could be the game-changer to a successful implementation of circular solutions. The findings are indispensable to seeking an answer to the research question, which aims to determine: **What are the drivers and barriers to establishing a circular business approach to address the issue of outdoor fabric material waste?**

### **Defined by Sustainability and Circularity**

The interview guide encouraged all interviewees to openly discuss the term of their firms' sustainable agenda, thereby discovering applied concepts and sustainable strategies. One of the critical aspects that came up was the (re)involvement of materials in the production processes, following the cradle-to-cradle approach, thereby allowing full recovery of fabrics by turning them back into the loop either by producing new products and entering different markets or keeping them in the same loop and providing similar quality ensured goods.

*"I think there's a lot more possible than in the upcycling market, and especially the big textile brands, if they start using it, then you will see more options." (SailInc.)*

*"Because everything has to be found out, we have to get so every process on waste, which we call raw material, is something you have to make a new business case for (...) we are now involved in a process to look at also some raw materials that you get from companies where we can make household furniture." (FurnishInc.)*

The core motivation of several companies focuses on balancing the triple bottom line approach, which appeared to be an initial facilitator pursuing sustainable practices and differentiating themselves from conventional business.

*"I started with FurnishInc. in 2018 with the goal of having social profit and ecological profit, besides financial profit. That means that we would rather say that we are a social enterprise." (FurnishInc.)*

Moreover, another company also emphasised the reasons behind the internal motivation of an entrepreneur, which should derive from personal values.

*"You have to implement it in your DNA, but not only in the organisation but your thinking and your mindset everything has to breathe like durability in all the steps you make it should define you." (SunshadeInc.)*

Based on the research sampling, all participants understood the importance of circularity and sustainability, also integrated into their companies core values. It was mentioned that this vision could not be generalised to the industry or other stakeholders. Nevertheless, they remain optimistic and driven towards future objectives.

## Organisational and Cultural Hindrances

Despite the awareness and sustainability requirements, companies will prefer not to change their business operations because, for some firms, *"(...) it's difficult to change when it makes more effort, more costs"* (SunshadeInc.). However, these corporations often forget, *"If you're not shifting, then you shifting backwards, and loose."* (FurnishInc.). As external circumstances might push companies towards change, as the biggest issues were related to complex management processes and the misalignment of the value propositions. On the other hand, these barriers can result in placing short-term benefits ahead of long-term goals, thereby applying current and predictable operations.

*"they are integrated into linear worlds, or are they willing to make a new way, which starts from scrap and no obligations and no dividend? And the thing is, a lot of companies don't want to because they are used to getting a lot of margins."*  
(FurnishInc.)

Acrylic is widely used in the outdoor textile industry as a cheap raw material, but it is less environmentally friendly than its more expensive polyester alternative. As the majority of the production involves acrylic materials, most manufacturers will also:

*"(...) have all the knowledge of acrylic. So why should they change to polyester, they didn't see the need to change (...) The branch itself is very conservative. (...) They don't want to change, just keeping best practices."* (SunshadeInc.)

## Economic Feasibility

As with conventional developments, so is financing sustainable practices a crucial facilitator. However, competing with mass producers who put cost over sustainability could be challenging

due to cheap pricing for raw materials, which is already one of the most significant issues in the clothing industry.

*"[...] we see that current textiles are too cheap. I mean, there's a lot of externalities that are not included in the price, which makes the price of a circular recycled fabric look more expensive than a virgin one, while if you include negative impacts, then it will be the other way around"* (RethinkInc.)

The outdoor textile industry follows the same pattern: *"as long as the raw material is cheaper than many firms will use it"* (SunshadeInc.). When it comes to sustainability, companies tend to forget that *"if you make a circular economy model, there's also something from the social side or from the ecological side that you lose some money, but you get other higher profits in return."* (FurnishInc.). Consequently, *"(...) the most complicated thing at the moment getting your projects funded because people won't buy them unless you have it."* (RethinkInc.), production requires high investment costs for experimenting with different processes, leaving uncertainty for the return-on-investment calculations.

In order to overcome the financial issues, harnessing data and measurability was found as an enabler during the interviews, not only to showcase the potential economic returns but also to sell-reflect on the company's stance toward sustainability.

*"We measure our ecological goals and we measure our social goals every year. We get it with a financial goal. That is an evaluation of the business. And that gives you a lot of possibilities."* (FurnishInc.)



## Latest Technology

Problems with technology are already emerging in the apparel industry, where the company RethinkInc. operates. In this sector, the technological possibility of recycling goods already exists, but

*"brands still try to use the argumentation that recycled fabrics are not good enough. And I think that's kind of a bad excuse because technology is not a problem. It's all about the financial model and the complexity of low-priced textiles."* (RethinkInc.).

In the maritime industry for sail-clothes, *"we don't have a solution for recycling yet"* (SailInc.). Therefore, continuous research and development of new practices should be encouraged. Companies like ResearchInc., MakeInc. and DesignInc. experiment with technology and build knowledge to enhance sustainable methods to meet these problems, where *"In the first step, it feels necessary to focus on the technical feasibility."* (MakeInc.). Furthermore, they stress the value of consciousness and self-reflection, inspiring the market to prioritise sustainability.

*"We have polyester, which is also more recyclable than acrylic, which chemical processing is much more complex and requires much more CO2 or energy or other things. That's why polyester is the ideal material for textiles from our point of view."* (MakeInc.)

The degree of difficulty of technological improvement goes hand in hand with finding the proper financial business case. Searching for alternative solutions using different methods and applications through research appeared to be an inevitable but costly process in the early stages.

*"(...) anything else you will start to implement is going to be more expensive in the beginning, all technologies, which they start, they're always in the most expensive point. And they start to get less-less-less as time evolves." (ResearchInc.)*

Existing materials on the market and the initial production processes require an adjustment in technology regarding circular possibilities. Technological solutions to tackle the existing waste proved to be crucial. However, to achieve long-term impact and prevent waste generation, companies should focus on changing current methods applied by manufacturing as such.

*"the most important thing in the design phase is to be sure that you work with circular textiles. I mean, most designers are thinking of their design, and then they are looking for fabric to use, and we have to change this process around, you start with separate textiles, and then the design should use these fabrics. I think that's the most important thing for us." (RethinkInc.)*

## **About Market Dominance**

From a market point of view, the participants emphasised the competition with other players and the voice of customers as an influencing factor. Companies like MakeInc. cannot compete on price alone, whereas mass producers in China may offer cheaper alternatives. According to the interviewees, changing the market perspective seemed an ongoing challenge.

*"You have to sensitise the market, that is important from everyone's point of view, because the world has to know what is going on and not only from the NGOs, but from a neutral point of view that is important; you also have to inspire the market." (MakeInc.)*

Placing priority on sustainability and individual values can draw clients and serve as an enabler but it awareness and conscious purchasing behaviour. As sustainability in production reaches more attention, companies are also adopting it in their value proposition, but:

*"We think there is still a lot of greenwashing. The problem in the fashion and apparel textile markets is that there is still a dominant economic focus. And because of the pressure on low pricing in fast fashion, it's really hard for brands to create change. They're still focused on low prices and cheap textiles."* (RethinkInc.)

Greenwashing activities can confuse end customers by needing more transparency in pricing or even the low willingness to pay a higher price, given that current recycled products in the apparel and outdoor textile market tend to be more expensive. However, when the processes are not in the same loop but applied in another segment of the textile industry, different opportunities are also present, which may require a different approach.

*"when you look at the market for upcycled products, there are a lot more companies already more than ten years active."* (SailInc.)

## **The Stance of Regulative Powers**

Among all interviews, the role of regulations carried a massive volume as a restricting and an enabler of circularity. Sustainable initiatives and guidelines are already present in several parts of national and international laws, requiring businesses to incorporate them into their operations, where *"all initiatives make the transition bigger"* (RethinkInc.). Nevertheless, the lack of comprehensiveness and the longevity of bureaucratic process implementations will allow economically driven firms to look for loopholes, thereby extending their harm to society and the environment.

*"(...) there are importers who flood us with masses of textiles that have not necessarily been ecologically tested and make life difficult, which is very important to address."*

(MakeInc.)

As policies emerge, the success rate for circular transitions will be encouraged. From a local, national or EU-wide perspective, participants stayed positive regarding the upcoming regulations as they will restrict non-complying companies.

*"(...) the reporting regulations that are coming will create a faster transition. Because if they (Companies) need to report on the actual change they create, then it's more part of their own backyard acting not transparent. They need to be held responsible for the fabrics they use for their collections. That's what's really important."*

(RethinkInc.)

Companies throughout various industries are aware of the fact that regulations will require them to act upon, but should they wait until it is demanded by the laws to report according to sustainable principles? FurnishInc. emphasised that firms *"are not in action mode, they are in waiting mode"*, which could not prevent but slow the transition. Building on this issue, this misconception could leave space for new or current businesses that benefit from incorporating circular guidelines into their core operations. Moreover, if laws support the change, interviewees underlined that the possibility for funding applications and the incentivisation of technological innovation would also be facilitated.

## **Breaking Down the Chains**

When the interview questions focused on addressing hurdles coming from a company's value chain, participants recognised the importance of stakeholder engagement. From a firm perspective,

especially for SMEs, the issue of low bargaining power and dependency from large corporations appeared as a barrier towards circular supply chains.

*“SMEs should work more together, and then they're stronger against the bigger companies.”* (DesignInc.)

Companies like MakeInc. prioritise supplier loyalty to create closer ties with supply chain partners and enhance product quality. By doing this, sustainable practices are certain to be effective over the long term rather than merely a passing trend. The awareness of a company goes hand in hand with their goal alignment. As more firms comprehend the positive impact of circularity, they will become more inclined to embrace certain operations (FurnishInc.). It is advisable not to allow a lack of information to hinder the exploration of an idea, even from a technological point of view (A). Encouraging future and current stakeholders to create circular solutions by collaborating and co-creating could also foster tighter connections and result in the transgression of inhibiting activities.

*“If you are not a specialist in an area, but in principle, you know someone who is a specialist at every level, you can always have a network like that, you can balance the deficits that you have yourself.”* (MakeInc.)

Collaboration between organisations can be initiated at the local level and expanded to a national or international scale. A supportive ecosystem is necessary to facilitate the circular transition of companies. RethinkInc. and DesignInc. is actively pursuing circular projects with partners.

*“Yeah, we take them along during the creation of the project, and they become our project partners or stakeholders. And they also signed a letter of intent. So they're*

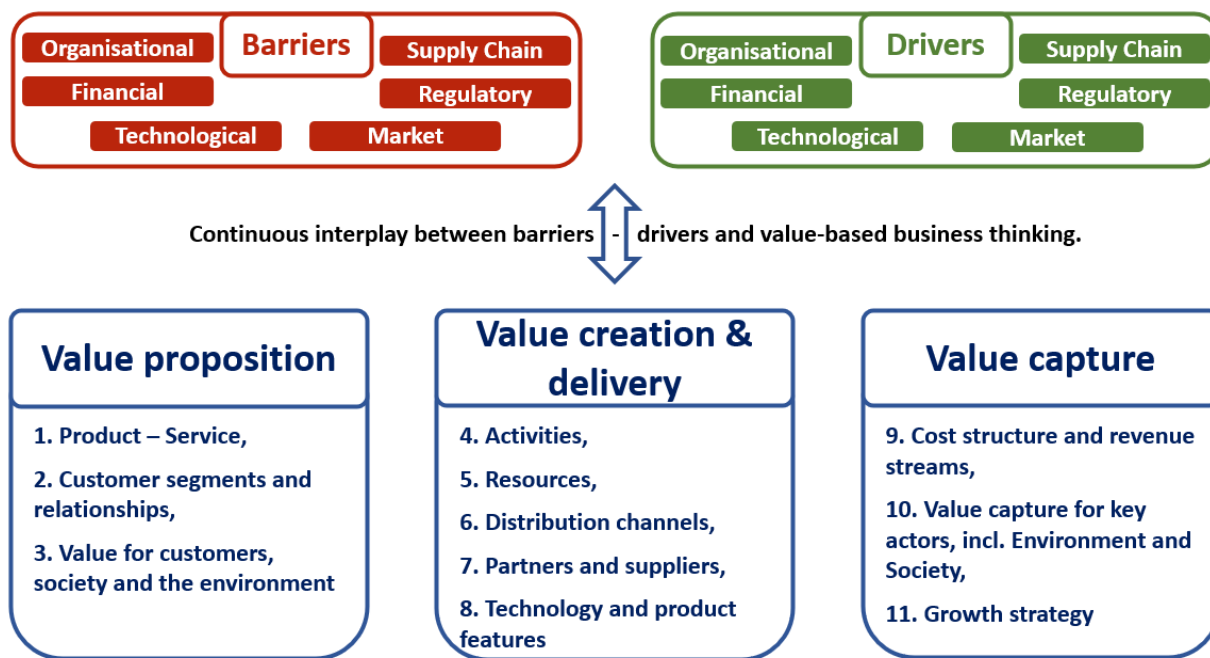
*really on board before we start. And we show them their role within the value chain, and also who the others are and why we need them to be a complete system because we want to change the system. So we have to create a minimal or a small system to be able to have a clear impact.” (DesignInc.)*

## **DISCUSSION**

The research prioritised discovering challenges and drivers associated with circular business implementations in the outdoor textile industry, where the insights gained from the empirical and theoretical domains helped conclude a comprehensive snapshot of the present situation. Firms may distinguish their strategy and get a competitive edge by being aware of the current trends in the switch to a CE. Comparably for businesses attempting to align their operations with the CE principles, examining present limitations might encourage the development of distinct approaches. This is crucial in a macroeconomic setting when environmental protection laws are becoming more and more rigorous, which can inspire organisations to grasp the advantages in the transition to a CE. (Masi et al., 2018). Any change within a company's operation will affect its business model and vice versa. In addition, business models serve as a conceptual tool that describes a firm's architecture, how it defines its approach and offerings towards its market, and how it differentiates itself by emphasising its value proposition and network (Osterwalder, Pigneur, & Tucci, 2005; Rasmussen, 2007).

The interview guide did not feature critical questions regarding the company's value proposition, creation, delivery and capture. However, during the interviews, implicit connections appeared as the firms elaborated on their core operation, network, and approach towards the market. Consequently, taking advantage of adapting the framework from (Bocken, Rana, & Short, 2015) created a possibility to highlight a firm's processes by simultaneously addressing the barriers

and drivers encountered when establishing a circular business approach (**Figure 1.**), where the aim is also to reveal how the value-based thinking of a firm is emphasised.



**Figure 1.:** Empirical business model framework. Adapted from (Bocken et al., 2014; Osterwalder et al., 2005; Richardson, 2008).

## Value proposition

The value proposition embodies the unique value a company will provide to its customers compared to its competitors (Richardson, 2008), where delivering measurable ecological and/or social benefits combined with commercial gains is vital and results in a sustainable value proposition (SVP) (Boons & Lüdeke-Freund, 2013). Products and services that are sustainably developed seek to establish a fair and balanced environment for all parties involved in an increasing network of producers, consumers, and other relevant stakeholders. On the other hand, Laukkanen and Tura (2022) found in their research that companies can gain insight into their offerings' sustainability effects by combining customer-perceived value and SVP. This can inform

the design of a more flexible and responsive SVP to meet changing market and customer demands, thereby contributing to a higher social benefit. Beyond what a firm will offer and to whom, it is also essential to ask for the reason for its existence (Richardson, 2008). With its findings, this research's scope revealed the importance of internal motivation as one of the main aspects where revisiting a company's core values must be inevitable before pursuing sustainable processes. Still, as long as market players perceive sustainability as a burden, regulations can only initiate change. Making sustainability a company's core capability can lead to a strong value proposition and a competitive advantage, further strengthened by the rising awareness of society and changing purchasing behaviour. However, when pursuing a circular business approach, firms not only depend on their successful implementation of an SVP but also rely on having similar responses throughout their value chain because a transparent offering will influence the perceived value and the company's legitimacy by the customers (O'Neil & Ucbasaran, 2016). Misplacing the interconnectedness of the suppliers and customers can negatively affect a firm's image and even harm the environment when a product's End-of-Life (EoL) management is not continuously addressed.

### **Value creation and delivery**

Activities and resources will be shared among customers, suppliers, partners and the wider value-creation network of which the company is a part. The different actors' skills, resources, and activity allocation should all be in line with the value proposition, so they should be able to create and deliver the offered value, which is strengthened by strategic factors to support the distribution of technical, financial or logistic activities to guarantee an effective value delivery (Richardson, 2008). The management's capacity of a firm to acquire, integrate, and employ significant resources in ways that give a value proposition to consumers determines the success of a business model to



sustainability; hence management quality is crucial (Beltramello, Haie-Fayle, & Pilat, 2013) also to lower the complexity of the transition towards circular business approach, which eventually hinders companies participation. Followingly, positioning continuous training and workshops for the management or widely for all employees in regard to organisational development could be helpful in integrating sustainability as a core value of the company.

As each firm represents a unique status, whether a business engages in manufacturing, wholesaling, or identifies as a social enterprise, the value chain analysis is indispensable to uncover any specific barriers while simultaneously understanding the supportive aspects that enable a company to succeed, thereby implementing circular business approaches. All interview participants highlighted the significance of collaboration between actors as a crucial factor in delivering value to customers. This is particularly important given that essential business processes rely heavily on informal arrangements or formal alliances to unlock the full potential of the created value (Beattie & Smith, 2013).

Current production processes in the outdoor textile industry are not incorporated into product recoverability at EoL management. Consequently, challenges regarding technology and product features can have limitations to developing circular products that can be offered to customers, where an extended producer responsibility could have a crucial impact on keeping transparent offering. Product design must be addressed because it is critical to achieving CE objectives (Franco, 2017). As the latest technological development, manufacturing companies found the possibility to upcycle PET bottles and turn them into awnings, which carries the same properties as based on the original raw materials (Kubitza, 2023; MakeInc.). However, it still leaves some blind spots when it comes to product recoverability and recyclability. Enterprises should revisit their value chain, where the possibility of forming solid alliances and supportive ecosystems was

crucial and highlighted by interviewees, who are already driven by social and environmental values.

## **Value capture**

Eventually, companies will develop adequate cost structures and revenue streams, which cover how the offered product's/service's value will be captured. The value capture and value proposition must be considered while designing the firm's value creation and delivery system (Richardson, 2008), as the specific resources, activities, partnerships and distribution channels will explicitly or implicitly influence other operations. The financial aspects were one of the most sensitive aspects as a barrier and driver perceived by the interviewed participants. Introducing sustainable products or services will question the current operating model of a company and will require changes in the business model. The presence of financial uncertainty can cloud judgement and mislead management when the change could bring a positive impact on society and the environment. Focus on measuring the impact of the offered value on society and the environment could be an effective tool to showcase the importance of circular business approaches, whereby applying for grants can also be eased.

All initiatives and technological developments start on a small scale, which is, on the one hand, one perceived barrier for firms. However, on the other hand, if other organisations embrace it, the potential for scaling up is a crucial enabler to industrialise the change and thereby lower the investment costs and uncertainty.

## **CONCLUSION**

The primary objective of this study was to identify the factors that facilitate or hamper the adoption of a CBM in the outdoor textile industry. To accomplish this, both a theoretical analysis

of the CE concepts from various literature sources and qualitative semi-structured interviews were employed. Moreover, the research aimed to examine the integration of circular economy principles and thereby assist ZONklaar, the case company, and other practitioners and academics with a valuable framework to identify the obstacles that need to be overcome by focusing on the drivers and to encourage a value-based business thinking approach of a company (**Figure 1**).

It is essential to acknowledge that there are challenges, both internal and external, that could hinder a company's progress towards a circular model. However, these obstacles can be weakened with determination and an internal commitment to sustainability. The barriers and drivers, frequently mentioned by interview participants and academic literature, can be classified into organisational, technological, regulatory, economic and market factors. Barriers slow down the transformation process and make it challenging for companies to embrace the concept entirely (Bechtel et al., 2013). As most quoted by interviewees, businesses must overcome perceived complexity, misaligned value proposition, and short-term orientation to adopt a circular business.

Nevertheless, other aspects can facilitate the implementation process, such as derived from internal motivation and personal values or by fostering collaboration and co-creation and encouraging local initiatives. Capitalising on these facilitators can make transitioning to a circular business approach more accessible, faster and potentially scaled up. An overview of the most quoted barriers and drivers according to the coding of the transcripts can be seen in the appendices ([APPENDIX E](#)).

The research mainly supports previously identified barriers and drivers of academics. However, given that in the industry, various SMEs, large companies, and manufacturers are all active together with NGOs and municipalities, the degree to which barriers and enablers will impact organisations is context-dependent and relies on a company's unique operations and

position. Considering the differences between SMEs and large companies throughout the value chain of outdoor textiles just by looking at their size or scope, the consequences of the misuse of bargaining power and influence on the market can undermine more significant initiatives towards a more circular production. Furthermore, the empirical framework that has been developed highlights the significant interdependence within an organisation and its value chain. Establishing a circular business approach involves considering the barriers and drivers while emphasising the importance of the firm's value proposition, creation, delivery, and capture. A more comprehensive explanation for practitioners can be found in the Appendix, where the aim is to provide potential guidelines to follow based on the research observations ([APPENDIX F](#)).

### **Limitations and Avenues for Future Research**

Utilising the benefits of the cross-sectional analysis with the strengths of semi-structured interviews, this study gathered information from seven companies involved in or knowledgeable about the outdoor textile industry, whether through direct operation or indirect affiliation. The transdisciplinary setting of the research enabled mutually beneficial engagement between the researcher and the interview participants, the case company, where the research's result will also be communicated, allowing the co-production of knowledge and potential sustainable transition. However, the given time constraint derived from the structure and scheduling of the thesis lowered the possibility of getting a more comprehensive perspective on the industry segment and raised some limitation factors. Consequently, to obtain more detailed information on the obstacles and motivators these organisations face, conducting research with a larger sample size using a quantitative approach or a longitudinal study with a similar sample size would be beneficial and deepen the valuable insights.

As stated by interview participants, collaboration was one of the main enablers towards a more sustainable and circular environment. However, it is restricted by a lack of trust and the fear of the consequences of knowledge sharing with larger corporations, which leads to hindrances in scaling local initiatives. To lower this issue, investigating local, national and international regulations and incentives could serve practical and theoretical benefits in encouraging the participation of businesses to build up regional ecosystems that could harvest the power of alliances. The researcher had a business-oriented educational background, limiting the ability to analyse outdoor textiles' technical characteristics and sustainable applications thoroughly. Consequently, future research could explore the technical feasibility of implementing specific sustainable strategies in outdoor textile production.

## BIBLIOGRAPHY

- Beattie, V., & Smith, S. J. 2013. Value creation and business models: Refocusing the intellectual capital debate. *The British Accounting Review*, 45(4): 243–254.
- Bechtel, N., Bojko, R., & Völkel, R. 2013. *Be in the Loop: Circular Economy & Strategic Sustainable Development*.
- Beltramello, A., Haie-Fayle, L., & Pilat, D. 2013. *Why New Business Models Matter for Green Growth*, vol. 2013/01. OECD Green Growth Papers no. 2013/01.  
<https://doi.org/10.1787/5k97gk40v3ln-en>.
- Bocken, N. M. P., Rana, P., & Short, S. W. 2015. Value mapping for sustainable business thinking. *Journal of Industrial and Production Engineering*, 32(1): 67–81.
- Bocken, N., Short, S., Rana, P., & Evans, S. 2014. A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, 65: 42–56.
- Boons, F., & Lüdeke-Freund, F. 2013. Business models for sustainable innovation: State-of-the-art and steps towards a research agenda. *Journal of Cleaner Production*, 45: 9–19.
- Bryman, A., Bell, E., & Harley, B. 2019. *Business research methods* (Fifth edition). Oxford, United Kingdom ; New York, NY: Oxford University Press.
- de Jesus, A., & Mendonça, S. 2018. Lost in Transition? Drivers and Barriers in the Eco-innovation Road to the Circular Economy. *Ecological Economics*, 145: 75–89.
- Derojeda, K., Verzijl, D., Rouwmaat, E., Probst, L., & Frideres, L. 2014. Clean Technologies, Circular Supply Chains, Business Innovation Observatory. *European Commission*.
- Dubois, A., & Gadde, L.-E. 2002. Systematic combining: An abductive approach to case research. *Journal of Business Research*, 55(7): 553–560.
- Ellen McArthur Foundation. 2021. *Circular business models: Redefining growth for a thriving fashion industry*.
- European Commission. 2022. EU Strategy for Sustainable and Circular Textiles. *European Commission*. [https://ec.europa.eu/commission/presscorner/detail/en/QANDA\\_22\\_2015](https://ec.europa.eu/commission/presscorner/detail/en/QANDA_22_2015).

- Franco, M. A. 2017. Circular economy at the micro level: A dynamic view of incumbents' struggles and challenges in the textile industry. *Journal of Cleaner Production*, 168: 833–845.
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. 2013. Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology. *Organizational Research Methods*, 16(1): 15–31.
- Haakman, S., & Verkade, J. W. 2022. *Making the sailing world more sustainable by the largest sail cleanup in the world*. <https://resail.org/>.
- Hina, M., Chauhan, C., Kaur, P., Kraus, S., & Dhir, A. 2022. Drivers and barriers of circular economy business models: Where we are now, and where we are heading. *Journal of Cleaner Production*, 333: 130049.
- Homrich, A. S., Galvão, G., Abadia, L. G., & Carvalho, M. M. 2018. The circular economy umbrella: Trends and gaps on integrating pathways. *Journal of Cleaner Production*, 175: 525–543.
- Kirchherr, J., Piscicelli, L., Bour, R., Kostense-Smit, E., Muller, J., et al. 2018. Barriers to the Circular Economy: Evidence From the European Union (EU). *Ecological Economics*, 150: 264–272.
- Kirchherr, J., Reike, D., & Hekkert, M. 2017. Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling*, 127: 221–232.
- Kubitza, M. 2023. *Awning fabrics from PET bottles: Good for people and the environment—Weinor awnings, patio roofs, Glasoase®*. <https://www.weinor.com/the-art-of-fabric/awning-fabrics-from-pet-bottles-good-for-people-and-the-environment>.
- Kuckertz, A., Berger, E. S. C., & Gaudig, A. 2019. Responding to the greatest challenges? Value creation in ecological startups. *Journal of Cleaner Production*, 230: 1138–1147.
- Laukkanen, M., & Tura, N. 2022. Sustainable value propositions and customer perceived value: Clothing library case. *Journal of Cleaner Production*, 378: 134321.

- Liu, Y., & Bai, Y. 2014. An exploration of firms' awareness and behavior of developing circular economy: An empirical research in China. *Resources, Conservation and Recycling*, 87: 145–152.
- Long, T. B. 2021. Sustainable Business Strategies. In W. Leal Filho, A. M. Azul, L. Brandli, A. Lange Salvia, & T. Wall (Eds.), *Decent Work and Economic Growth*: 975–985. Cham: Springer International Publishing.
- Lüdeke-Freund, F. 2020. Sustainable entrepreneurship, innovation, and business models: Integrative framework and propositions for future research. *Business Strategy and the Environment*, 29(2): 665–681.
- Lüdeke-Freund, F., Carroux, S., Joyce, A., Massa, L., & Breuer, H. 2018. The Sustainable Business Model Pattern Taxonomy – 45 Patterns to Support Sustainability-Oriented Business Model Innovation. *Sustainable Production and Consumption*, 15: 145–162.
- Lüdeke-Freund, F., Gold, S., & Bocken, N. M. P. 2019. A Review and Typology of Circular Economy Business Model Patterns. *Journal of Industrial Ecology*, 23(1): 36–61.
- Masi, D., Kumar, V., Garza-Reyes, J. A., & Godsell, J. 2018. Towards a more circular economy: Exploring the awareness, practices, and barriers from a focal firm perspective. *Production Planning & Control*, 29(6): 539–550.
- Meckenstock, J., Barbosa-Póvoa, A. P., & Carvalho, A. 2016. The Wicked Character of Sustainable Supply Chain Management: Evidence from Sustainability Reports: The Wicked Character of Sustainable Supply Chain Management. *Business Strategy and the Environment*, 25(7): 449–477.
- Mugenda, O. M., & Mugenda, A. G. 2003. *Research methods quantitative & qualitative approaches* (Revised). Nairobi: ACTS Press.
- Murray, A., Skene, K., & Haynes, K. 2017. The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context. *Journal of Business Ethics*, 140(3): 369–380.



- Muthu, S. S., Li, Y., Hu, J.-Y., & Mok, P.-Y. 2012. Recyclability Potential Index (RPI): The concept and quantification of RPI for textile fibres. *Ecological Indicators*, 18: 58–62.
- Omona, J. 2013. Sampling in Qualitative Research: Improving the Quality of Research Outcomes in Higher Education. *Makerere Journal of Higher Education*, 4(2): 169–185.
- O’Neil, I., & Ucbasaran, D. 2016. Balancing “what matters to me” with “what matters to them”: Exploring the legitimation process of environmental entrepreneurs. *Journal of Business Venturing*, 31(2): 133–152.
- Ormazabal, M., Prieto-Sandoval, V., Puga-Leal, R., & Jaca, C. 2018. Circular Economy in Spanish SMEs: Challenges and opportunities. *Journal of Cleaner Production*, 185: 157–167.
- Osterwalder, A., Pigneur, Y., & Tucci, C. L. 2005. Clarifying Business Models: Origins, Present, and Future of the Concept. *Communications of the Association for Information Systems*, 16. <https://doi.org/10.17705/1CAIS.01601>.
- Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., et al. 2015. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health*, 42(5): 533–544.
- Park, H. J., & Lin, L. M. 2020. Exploring attitude–behavior gap in sustainable consumption: Comparison of recycled and upcycled fashion products. *Journal of Business Research*, 117: 623–628.
- Parry, S. 2012. Going green: The evolution of micro-business environmental practices. *Business Ethics: A European Review*, 21(2): 220–237.
- Planing, P. 2015. Business Model Innovation in a Circular Economy Reasons for Non-Acceptance of Circular Business Models. *Open Journal of Business Model Innovation*.

- Polyportis, A., Mugge, R., & Magnier, L. 2022. Consumer acceptance of products made from recycled materials: A scoping review. *Resources, Conservation and Recycling*, 186: 106533.
- Purwandani, J. A., & Michaud, G. 2021. What are the drivers and barriers for green business practice adoption for SMEs? *Environment Systems and Decisions*, 41(4): 577–593.
- Rasmussen, B. 2007. *Business Models and the Theory of the Firm*. Working Paper. Victoria University of Technology, Melbourne, Australia. <https://vuir.vu.edu.au/15947/>.
- Richardson, J. 2008. The business model: An integrative framework for strategy execution. *Strategic Change*, 17(5–6): 133–144.
- Rizos, V., Behrens, A., Kafyeke, T., Hirschnitz-Garbers, M., & Ioannou, A. 2015. *The Circular Economy: Barriers and Opportunities for SMEs*.
- Rizos, V., Behrens, A., van der Gaast, W., Hofman, E., Ioannou, A., et al. 2016. Implementation of Circular Economy Business Models by Small and Medium-Sized Enterprises (SMEs): Barriers and Enablers. *Sustainability*, 8(11): 1212.
- Saunders, M. N. K., Lewis, P., & Thornhill, A. 2012. *Research methods for business students* (6th ed). Harlow, England ; New York: Pearson.
- Schaltegger, S., Lüdeke-Freund, F., & Hansen, E. 2012. Business Cases for Sustainability: The Role of Business Model Innovation for Corporate Sustainability. *International Journal of Innovation and Sustainable Development*, 6: 95–119.
- Sehnem, S., Vazquez-Brust, D., Pereira, S. C. F., & Campos, L. M. S. 2019. Circular economy: Benefits, impacts and overlapping. *Supply Chain Management: An International Journal*, 24(6): 784–804.
- Tomme, B., Jozefien Geltmeyer, De Clerck, K., De Meester, S., Trovato, V., et al. 2021. *Removing Harmful Finishes to Recycle Waste Acrylic Textiles (AUTEX 2021 Version)*. <https://doi.org/10.5281/ZENODO.7615505>.

- Trovato, V. 2022, September 22. **Strategies For Removing Process Development Chemical Finishes From Post-Consumer Outdoor Fabrics**. Presented at the New products or manufacturing process development. [https://www.react-project.net/wp-content/uploads/sites/41/2022/09/Strategies-for-removing-chemical-finishes-from-post-consumer-outdoor-fabrics\\_Trovato-V\\_final.pdf](https://www.react-project.net/wp-content/uploads/sites/41/2022/09/Strategies-for-removing-chemical-finishes-from-post-consumer-outdoor-fabrics_Trovato-V_final.pdf).
- Tura, N., Hanski, J., Ahola, T., Ståhle, M., Piiparinen, S., et al. 2019. Unlocking circular business: A framework of barriers and drivers. *Journal of Cleaner Production*, 212: 90–98.
- Tura, N., Kutvonen, A., & Ritala, P. 2018. Platform design framework: Conceptualisation and application. *Technology Analysis & Strategic Management*, 30(8): 881–894.
- Van Buren, N., Demmers, M., Van der Heijden, R., & Witlox, F. 2016. Towards a Circular Economy: The Role of Dutch Logistics Industries and Governments. *Sustainability*, 8(7): 647.
- Vereniging Circulair Friesland. 2023. **Plastics**. <https://circulairfriesland.frl/plastics/>.
- Vermunt, D. A., Negro, S. O., Verweij, P. A., Kuppens, D. V., & Hekkert, M. P. 2019. Exploring barriers to implementing different circular business models. *Journal of Cleaner Production*, 222: 891–902.
- Weinor GmbH & Co. KG. n.d. **Awning fabric tips—Weinor awnings, patio roofs, Glasoase®**. <https://www.weinor.com/fabric-co/fabric-qualities/awning-fabric-tips>, June 2, 2023.
- Wieser, H., & Tröger, N. 2018. Exploring the inner loops of the circular economy: Replacement, repair, and reuse of mobile phones in Austria. *Journal of Cleaner Production*, 172: 3042–3055.
- Wójcik-Karpacz, A., Karpacz, J., Brzeziński, P., Pietruszka-Ortyl, A., & Ziębicki, B. 2023. Barriers and Drivers for Changes in Circular Business Models in a Textile Recycling Sector: Results of Qualitative Empirical Research. *Energies*, 16(1): 490.

Wu, X., Ramesh, M., Howlett, M., & Fritzen, S. 2018. ***The public policy primer: Managing the policy process*** (Second Edition). New York: Routledge, Taylor & Francis Group.

## APPENDICES

### Appendix A: The Sustainable Business Model Archetypes

Adapted from Bocken et al. (2014: 48)

Technological			Social			Organisational	
Maximise material and energy efficiency	Create value from waste	Substitute with renewables and natural processes	Deliver functionality rather than ownership	Adopt a stewardship role	Encourage sufficiency	Repurpose for society /environment	Develop scale up solutions
Low carbon manufacturing /solutions	Circular economy	Move from non renewable to renewable energy sources	Product oriented PSS - maintenance, extended warrantee	Biodiversity protection	Consumer Education; communication and awareness	Not for profit	Collaborative approaches
Lean manufacturing	Cradle-2-Cradle	Solar and wind power based energy innovations	Use oriented PSS - Rental, release	Consumer care	Demand management	Hybrid business, Social enterprise	Incubators and Entrepreneur support models
Additive manufacturing	Industrial symbiosis	Zero emissions initiative	Result oriented PSS – Pay per use	Fair trade	Slow fashion	Alternative ownership: cooperative, mutual collectives	Licensing, Franchising
Dematerialisation	Reuse, Recycle, Remanufacture	Blue economy	Private Finance Initiative	Choice editing by retailers	Product longevity	Social and biodiversity regeneration initiatives	Open innovations
Increased functionality	Take back schemes	Biomimicry	Design, Build, Finance, Operate	Radical transparency about environmental, social impacts	Premium branding / limited availability	Base of pyramid solutions	Crowd sourcing / funding
	Use excess capacity	The Natural Step	Chemical Management Services	Resource stewardship	Frugal business	Localisation	Patient / slow capital collaboration
	Sharing assets	Slow manufacturing			Responsible product distribution / promotion	Home based, flexible working	
	Extended producer responsibility	Green chemistry					

## Appendix B: Interrelations Between Corporate Sustainability Strategies and Business Case Drivers

Adapted from Schaltegger et al. (2012)

Corporate sustainability strategy			
Core drivers of business cases for sustainability	Defensive	Accommodative	Proactive
Costs and cost reduction	Mainly cost and efficiency-oriented compliance activities (often ‘low hanging fruit’ only)	Cost and efficiency-oriented activities actively pursued and linked to sustainability issues when possible	Cost and efficiency-oriented activities actively created to achieve sustainability goals; cost concept includes external social costs
Risk and risk reduction	Sustainability issues seen as sources of risk; activities aim at risk reduction (in contrast to precaution)	Sustainability and risk management seen as complementary and opportunity-creating concepts	Sources of high risks are largely removed
Sales and profit margin	Products or product communication are adapted to reduce risks of sales decrease; cause-related marketing to ‘attach’ a green image to unchanged products	Sustainability-oriented customer segments are partly acknowledged and served with specific products (besides existing conventional product lines)	Market-oriented strategies to gain competitive advantage by making sustainability-oriented products and services become the core of the company’s portfolio
Reputation and brand value	Reputational activities, rather reactive and mainly oriented towards risk reduction	Sustainability activities have limited potential to contribute to reputation and brand due to mainly internal focus	Sustainability is actively communicated and is a major driver of reputation and brand value; the company engages in boundary-spanning and stakeholder integration
Attractiveness as employe	Increased salaries to retain and attract personnel	Sustainability engagement (and related communication) partially increases attractiveness to some groups of employees and talents	Continuous education, innovative positions, social attention (e.g., towards families) increase attractiveness to highly skilled workforce and new talents due to high sustainability reputation
Innovative capabilities	Innovations to obscure non-performance with regard to sustainability (e.g., ‘greenwashed’ products)	Process, product, and organisational innovations limited by boundaries of existing business logic	Sustainability-oriented process, product, and organisational innovations transform business logic; sustainability problems and stakeholders are considered a key source of innovation

## Appendix C: Company List

Nr .	Company list	Made-up name	Position of the interviewer(s)	Company's core operation	Location	Registration Form	Date of interview	Setup	Duration (h):mm:ss
1	Company A	SailInc.	CEO - CoFounder	Wholesale Recyclable Materials	Netherlands	BV	17th of April	Online	27:56
2	Company B	RethinkInc.	CoFounder - Social Entrepreneur	Designing for reuse and recycling textiles	Netherlands	BV - Foundation	17th of April	Online	27:38
3	Company C	FurnishInc.	Founder - Social Entrepreneur	Office furniture rethought	Netherlands	BV	17th of April	Online	31:39
4	Company D	ResearchInc.	Process Developer	Research Services	Netherlands	BV	24th of April	Online	32:05
5	Company E	SunshadeInc.	Founder and CEO	Textile manufacturing and Wholesale	Netherlands	BV	18th of April	In Person	1:02:16
6	Company F	MakeInc.	Sales Manager and Operation Manager	Outdoor Textile Manufacturer	Germany	GMbH	18th of April	In Person	1:00:19
7	Company G	DesignInc.	Founder - Director	Designing for reuse and recycling textiles	Netherlands	Foundation	15th of May	In Person	36:16

Registration form is based according to firm's websites and the [Kamer van Koophandel](#) (KvK)

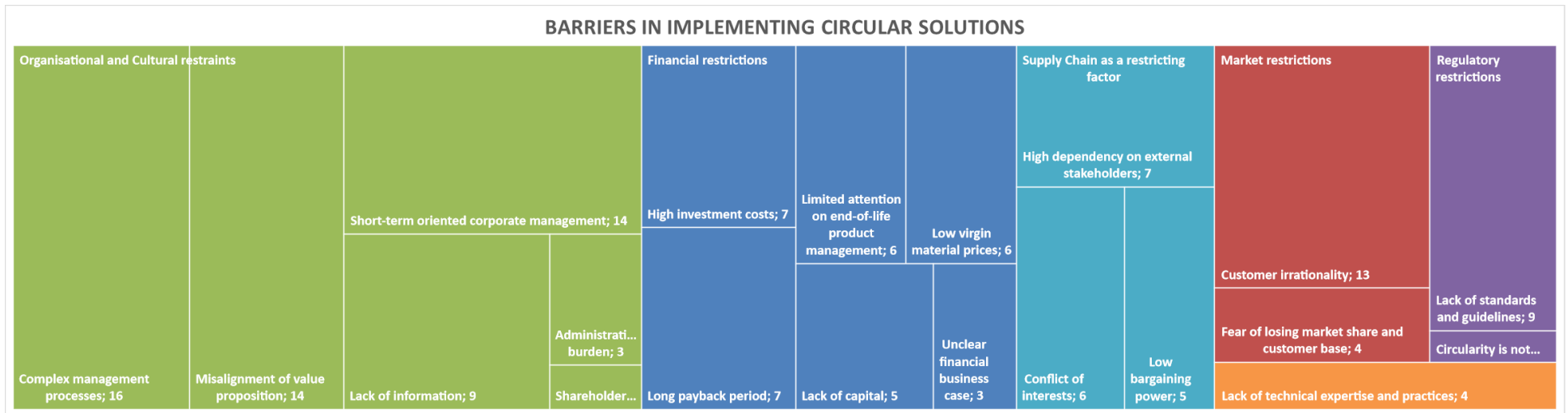
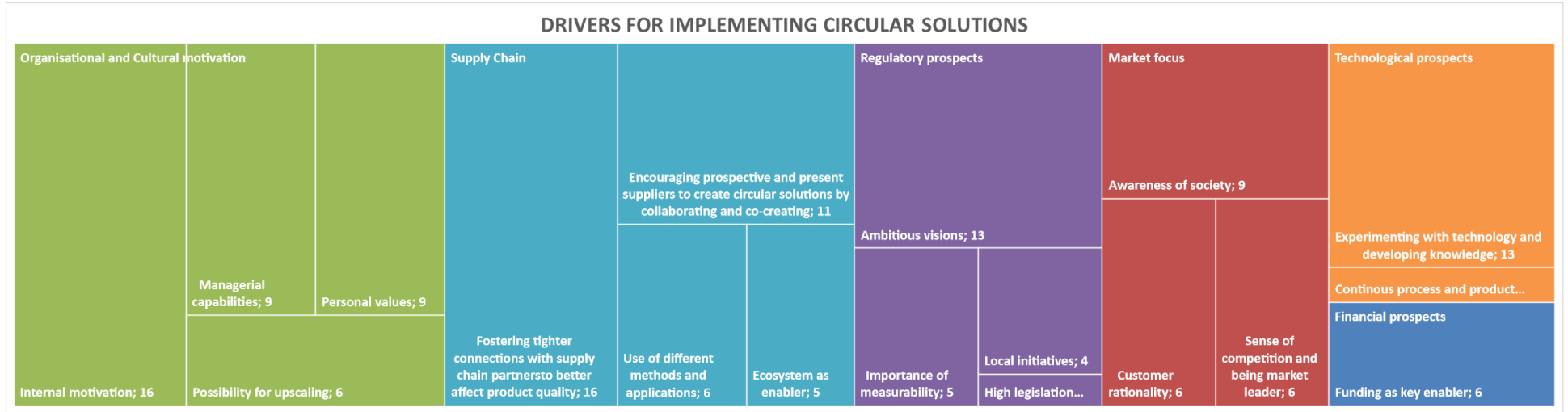
## Appendix D: Coding Tree

Barriers			Drivers		
First order code	Second order code	Aggregate dimension	Second order code	First order code	
<ul style="list-style-type: none"> <li>- Administrative burden</li> <li>- Complex management processes</li> <li>- Lack of information</li> <li>- Misalignment of the value proposition</li> <li>- Shareholder dominance in corporate agenda</li> <li>- Short-term oriented corporate management</li> </ul>	Organisational and Cultural restrictions	<b>Internal</b>	Organisational and Cultural drivers	<ul style="list-style-type: none"> <li>- Internal motivation</li> <li>- Managerial capabilities</li> <li>- Personal values</li> <li>- Possibility for upscaling</li> </ul>	
<ul style="list-style-type: none"> <li>- High investment costs</li> <li>- Limited attention to end-of-life product management</li> <li>- Long payback period</li> <li>- Low virgin material price</li> <li>- Unclear financial business case</li> </ul>	Financial restrictions		Financial enablers	<ul style="list-style-type: none"> <li>- Available funding</li> <li>- Importance of measurability</li> </ul>	
<ul style="list-style-type: none"> <li>- Lack of technical expertise and practices</li> </ul>	Technological restrictions		Technological enablers	<ul style="list-style-type: none"> <li>- Continuous process and product development</li> <li>- Experimenting with technology and developing knowledge</li> </ul>	
<ul style="list-style-type: none"> <li>- Customer irrationality</li> <li>- Fear of losing market share and customer base</li> </ul>	Market restrictions		Market focus	<ul style="list-style-type: none"> <li>- Customer rationality</li> <li>- Sense of competition and being market leader</li> <li>- Awareness of society</li> </ul>	
<ul style="list-style-type: none"> <li>- Conflict of interests</li> <li>- High dependency on external stakeholders</li> <li>- Low bargaining power</li> </ul>	Supply Chain restrictions	<b>External</b>	Supply Chain enablers	<ul style="list-style-type: none"> <li>- Encouraging prospective and present suppliers to create circular solutions by collaborating and co-creating</li> <li>- Fostering tighter connections with supply chain partners to better affect product quality</li> <li>- Use of different methods and applications</li> </ul>	
<ul style="list-style-type: none"> <li>- Circularity is not integrated into innovation policies</li> <li>- Lack of standards and guidelines</li> </ul>	Regulatory restrictions		Regulatory enablers	<ul style="list-style-type: none"> <li>- Ambitious visions</li> <li>- Local initiatives</li> <li>- High legislation and standardisation</li> </ul>	



## Appendix E: Treemap Diagrams for Barriers and Drivers

The colours belong to one second-order code, where the size of the square defines the occurrence of a specific first-order code mentioned by the interview participants. The numbers behind each first-order code, quantify the frequency of the coding process.



## **Appendix F: Further Elaboration of Practical Implications for ZONklaar and for the Industry**

**Recycling of acrylic awnings:** According to different interviews and our previous knowledge, when it comes to acrylic products and recycling, it could be managed only by mechanical recycling, which would be profitable on an industrial scale with large amounts of waste. For this option, collection, and separation of the materials are still necessary, which requires labour-intensive work.

**Recycling polyester awnings:** I had the opportunity to check out a manufacturing facility where the awnings were made of polyester fabrics. The properties and characteristics of these products are highly similar to acrylic ones. It is more expensive than acrylic but can be made out of recycled PET bottles.

**Market trend:** When it comes to the industry, polyester-based awnings turned out to be less harmful to the environment, and there are possibilities to dye them without using any water, thereby further lowering the negative impact, or even producing them from PET bottles while providing the same quality. One problem was mentioned: High investment costs and lack of standardisation or market regulation by the EU/governments.

**Conclusion:** On the market, acrylic products are dominating mainly because of their cheap raw material. To tackle the issue of existing waste on a big scale, mechanical recycling should be followed; on a smaller scale, different upcycled or reuse possibilities should be encouraged. It can serve as an input material for specific products. The reuse in insulation board came up during an interview. Looking for different applications still in outdoor upholstery could be the way to pursue, but it requires partnerships, product design accordingly, and logistical planning.

## Appendix G: Information Sheet and Consent Form

### INFORMATION SHEET

#### WHAT ARE THE BARRIERS AND DRIVERS TO ESTABLISHING A CIRCULAR BUSINESS APPROACH TO ADDRESS THE ISSUE OF OUTDOOR FABRIC MATERIAL WASTE?

Thank you for your interest in participating in this research. This letter explains what the research entails and how the research will be conducted. Please take time to read the following information carefully. If any information is not clear, please feel free to ask questions using the contact details of the researcher provided at the end of this letter.

#### What This Study Is About?

- The purpose of this research study is to understand what are the main barriers that arise while implementing circular business model approaches to tackle the issue of outdoor fabric material waste. More specifically, this study aims to come up with recommendations for ZONklaar, the case company, on how to mitigate the barriers building on the key enablers to implement a feasible solution.
- The study will collect information from at least six actors who are involved in the role of the circular economy and (outdoor) textile materials.

#### What Does Participation Involve?

- The interview will be conducted online/offline with the researcher.
- The interview will take between 30-60 minutes to complete.

#### Do You Have to Participate?

- Your participation in this study is entirely voluntary.
- You can choose to withdraw from the study at any moment.

#### How Will Information You Provide Be Recorded, Stored And Protected?

- The interviews would be recorded and later transcribed.
- If needed, the transcription can be sent to you for review, and you have the right to edit, correct and approve the transcription.
- Only the researcher of the study and the assessor would have access to the transcript and report.

#### What Will Happen to The Results of The Study?

- The result of the study will be kept internally by the University of Groningen for internal review and grading. The content of the study will be used for educational purposes exclusively.

#### Ethical Approval

- This study has obtained ethical approval from the Campus Friesland Ethics Committee.
- The researcher will uphold himself to relevant ethical standards.

#### Informed Consent Form

- You will be provided with a consent form to agree to participate in the study.

#### In Case of Further Information

Márk Németh | University of Groningen; MSc Sustainable Entrepreneurship - Researcher  
Email: [m.b.nemeth@student.rug.nl](mailto:m.b.nemeth@student.rug.nl)

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Gjalt de Jong | University of Groningen – Research Co-Assessor  
Email: [g.de.jong@rug.nl](mailto:g.de.jong@rug.nl)

## **INFORMED CONSENT FORM**

WHAT ARE THE BARRIERS AND DRIVERS TO ESTABLISHING A CIRCULAR  
BUSINESS APPROACH TO ADDRESS THE ISSUE OF OUTDOOR FABRIC MATERIAL  
WASTE?

**Name participant:**

### **Assessment**

- I have read the information sheet and was able to ask any additional questions to the researcher.
- I understand I may ask questions about the study at any time.
- I understand I have the right to withdraw from the study at any time without giving a reason.
- I understand that at any time, I can refuse to answer any question without any consequences.

### **Confidentiality and Data Use**

- I understand that none of my individual information will be disclosed to anyone outside the study team.
  - I understand that I can offer for the researcher to use my name and/or company name during the research process.
- I understand that the information provided will be used only for this research and publications directly related to this research project.
- I understand that data (consent forms, interview transcripts) will be retained on the drive of the University of Groningen in correspondence with the university's GDPR legislation.

### **Future involvement**

- I wish to receive a copy of the scientific output of the project.
- I consent to be re-contacted to participate in future studies.

**Having read and understood all the above, I agree to participate in the research study: yes/no**

**Date**

**Signature**

To be filled in by the researcher

- I declare that I have thoroughly informed the research participant about the research study and answered any remaining questions to the best of my knowledge.
- I agree that this person participates in the research study.

**Date**

**Signature**

## Appendix H: Interview Guide

### Warm-up

Given the fact that there is a tremendous amount of waste generated in the outdoor textile segment, this thesis aims to focus on looking at alternative approaches to the linear take-make-use-dispose system by identifying sustainable business models, whereby laying emphasis on the circular economy approach due to its encouragement towards a restorative and regenerative transition, and because of the potential barriers during the implementation process may occur, the following research question is centred at the heart of the thesis: **What are the drivers and barriers (of ZONklaar) in establishing a circular business approach to address the issue of outdoor fabric material waste?**

Once again, there are no right or wrong questions during the interview. With your practical input, I would like to know more about this topic. I hope you received a copy of the signed information sheet and consent form stating that your data and the interview will be treated confidentially. So if you do not have any questions, I would like to start the audio recording and ask the first question.

### Introduction:

1. Could you explain your role within the organisation?
2. Could you outline the company's approach toward sustainability/circular economy?
3. How is the company's approach towards sustainability and circularity?
  - a. How is the identification process of any opportunity for circularity?
4. What are the biggest drivers that encouraged your company to apply sustainable practices?
5. How would you discuss the textile industry trends related to businesses incorporating circularity into their business models?

### Problem framing:

6. What are/were the main barriers to/in implementing circular economy principles or general sustainable practices in the operations of the company?
  - a. What caused these challenges?
    - i. - *Resource-dependency; Collection/Selection processes* –
  - b. How could they be solved/improved?
  - c. Which one did you perceive as the biggest challenge?

### **Organisational - Cultural**

- d. Which organisational changes did you undertake to enable the company's sustainable orientation?
- e. How did you involve your team and other stakeholders?

### **Technological aspects**

- f. What kind of technical issues were needed to overcome in the transition?
  - i. Could you identify any innovative technological solution that could help?

### **Supply Chain**

- g. Can you relate to any specific challenge your company confronts in sourcing and selecting sustainable materials?
- h. What steps is your company taking to address the environmental impacts of textile waste and end-of-life management?
- i. What do you perceive as the biggest issue in the supply chain?

### **Customers**

- j. How do you interact with your customers around sustainability?
- k. How do you perceive customer behaviour regarding sustainability? (B2B or B2C)
- l. How would you rate the importance of customer environmental consciousness and purchasing behaviour?

**Competitors:**

- m. How is the market restricting you from becoming more circular in your business strategy?

**Regulatory**

- n. Is there any regulatory/policy incentives affect your company's possibility of using the concepts of the circular economy?
- o. How do you perceive the current regulatory policies?

**Financial aspects**

- p. How can your financial choices support the long-term strategic objectives of the business?
- q. How can short-term gains be balanced with long-term sustainability investments according to your standpoint?

**Networking:**

- 8. How have you explored or still interested in discovering partnerships to improve circularity in your processes?
- 9. How can business alliances promote the shift to sustainable practices and circular economy?
  - r. - *Trust, long-term contracts* -

**Conclusion:**

- 10. What kind of suggestions would you give other businesses as best practice, tools, or resources to follow?
- 11. How can you broadly incorporate circular business models into the company?

**Future orientation:**

- 12. How do you see circularity suiting your company's long-term strategic goals?
- 13. What upcoming changes or improvements could your company create to address any current shortcomings or difficulties?

**The End:**

Would you like to add something more that I may miss? [...] Thank you for your time and cooperation. If you have any questions, let me know. Thanks again for your valuable comments on this research.