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Implementing circular business models in the textile and clothing industry

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ABSTRACT

Textile companies face high pressure to move towards circular economy. This study investigates capabilities that enable clothing brands to overcome their past in linear economy, and eventually, to shift to CBMs. Previous research has pinpointed that company-level implementation of circular economy is still poorly understood and leaves companies without guidelines about how to make the change happen. To address this gap, two research questions are placed: how past trajectories affect the position of clothing brands in the move towards circular business models, and what capabilities are needed in the transformation process to overcome transformation-related challenges. A multiple case study was conducted in seven fashion brand companies in one country. Product-orientation and dependency on the current product portfolio affect the way the companies can transform the business models. Companies need to develop capabilities to sense opportunities, to break away from a linear business culture and restructure the firm resources accordingly. The value of the study is in identifying factors that affect the business model transformation process of incumbent textile companies, and capabilities needed to overcome the inertia by these factors.

1. Introduction

The textile and clothing (T&C) industry is among the five most polluting and resource-intensive industries in the world (e.g. Boström and Micheletti, 2016; EEA, 2019). While organisations have made serious attempts to achieve sustainability (Reîler et al., 2021; Palm et al., 2021), the industry is far from being a circular economy (CE) – a concept centred on the preservation of natural resources, maximisation of resource outputs, and elimination of negative system externalities, such as emissions and the accumulation of waste (Ille âncArthur Foundation, 2017). The adoption of CE principles offers T&C manufacturers significant business opportunities in areas ranging from sustainability and brand image to profitability and shareholder value (Saha et al., 2021). With regulation tightening and consumers becoming more environment-conscious, clothing brands are now seeking better alternatives to their prevailing take-make-dispose ways of doing business.

To make CE better implementable in companies, the concept of circular business models (CBMs) is presented and defined as “business models that create, capture and deliver value to improve resource efficiency by extending the lifespan of products and parts, thereby realising environmental, social, and economic benefits” (Frishhammar and Parida, 2019). Even though this definition highlights the extension of product lifespan as a key element of a CBM, another important way to drive resource efficiency is servitisation. In literature, a CBM based on this ideology is often referred to as a product-service system – a model that aims to replace products with solutions that have maximum utilisation, and in some cases, as low a physical content as possible (Urbiniti et al., 2017). Therefore, a CBM can be based on products, services, or a combination of the two.

Shifting the focus of business to CE has faced obstacles such as managerial reluctance and limited customer and governmental support, as well as barriers to obtaining the appropriate technologies (Saha et al., 2021); additionally, the demand and market for new circular products may be underdeveloped (Lüdeke-Freund et al., 2019; Lewandowski, 2016). Furthermore, companies’ past trajectories have an impact on how integrating CE principles into current business models succeeds (Korhonen et al., 2018; Lehtimäki et al., 2020), making it far from straightforward (Frishhammar and Parida, 2019; Sitra, 2015). Not surprisingly, most fashion firms are still focused on the sale of novel, non-circular products (Kant Hvass and Pedersen, 2019).

The growing literature offers some interesting insights into making the change towards CBM happen, for example in terms of capabilities
that enable a successful change (Khan et al., 2020), or suggesting a roadmap towards circularity for incumbent firms (Frishammar and Parida, 2019). Despite the urgency and importance of making the transformation towards CBM happen in the T&C industry (see e.g. Coscieme et al., 2022; Ellen McArthur Foundation, 2022), the factors that make the adoption of CBMs successful in practice in T&C companies are still largely unknown. This study aims to tackle this research gap by investigating capabilities that enable clothing brands to overcome their past in a linear economy and eventually to successfully shift to CBMs. Two research questions are formulated, as follows: How do past trajectories affect the position of clothing brands in the move towards CBMs? What capabilities are needed in the transformation process to overcome transformation-related challenges?

The study applies an empirical case study approach to get an in-depth understanding of the mechanisms that enable the shift to CBM. The case companies were selected from Finnish clothing brands to represent both incumbent organisations with long roots in a linear economy and younger, born-circular startups that were founded on CE principles from day one. The study applies a path dependency approach to explain organisational inertia in the transition towards circularity. As applied to organisations, the approach claims that the future direction of a company is constrained by its past decisions and actions (Djelic and Quack, 2007; Teece et al., 1997). To explore what kinds of capabilities are pivotal in overcoming the inertia that restricts the change from linear business models to circular ones, the study utilises dynamic capability theory, centred upon the alignment of resources and capabilities to adapt to changing business environments (Schreyögg and Kliesch-Eberl, 2007; Teece, 2007), through sensing, seizing, and reconfiguring capabilities (Khan et al., 2020; Teece, 2007). In this article, capabilities refer to dynamic capabilities that “enable business enterprises to create, deploy, and protect the intangible assets that support superior long-run business performance”, as defined by Teece (2007).

The study contributes to current knowledge by identifying the restrictions incumbent companies have when transforming to CBMs, connected to their history in terms of product orientation, product portfolio, and position in the global value chain. Second, to overcome this inertia, companies which have strong capabilities in sensing and seizing opportunities in CE are better positioned to transform their business into a circular one. This may require dematerialisation, turning a product-oriented business model into a service-dominant one, posing a need for entirely new capabilities.

The article next summarises the theoretical background, which comprises the transition to CBMs, path dependencies, and dynamic capabilities. That is followed by a detailed description of the research methodology. The results section establishes the impact of path dependencies and dynamic capabilities on the transformation journey to CBMs by drawing together the evidence from the case companies. The article ends with discussion of the results, followed by key conclusions.

2. Theoretical background

2.1. Transition to CBMs

Companies in the T&C industry have focused on the optimisation of a linear clothing economy – a system that has rewarded speed, trendiness, and cheapness at the expense of quality and sustainability (Pedersen et al., 2019). This has caused higher-than-ever clothing production (Ellen MacArthur Foundation, 2017), but also high pressure to reduce the use of natural resources such as water and land, not to mention its impacts on the accumulation of waste, greenhouse gas emissions, and the pollution of clean water (EEA, 2019).

CE allows for the preservation of natural resources, maximisation of resource outputs, and elimination of negative system externalities (Ellen MacArthur Foundation, 2017), and therefore, it can be seen as one of the most promising replacements for a linear economy: to maintain materials at their maximum value during use while simultaneously eliminating all waste by closing the loop (Zink and Geyer, 2017). To bring the concept to a level digestible by an individual company, many academicians have begun studying the phenomenon from a business model perspective (Geissdoerfer et al., 2020) – and this has given birth to the CBM concept: how companies can propose, create, and capture value while adhering to the CE principles (Lüdeke-Freund et al., 2019). Tools and frameworks have been developed to facilitate the design of CBMs, such as the ReSOLVE framework with its six actions, or the 9Rs framework with an order of priority of actions (Potting et al., 2017). While these tools may serve as a good source of inspiration and initial understanding, they do not provide concrete guidelines on how to actually succeed in the design and implementation of a CBM.

The constantly-evolving nature of the transformation process implies that the journey to a CBM is far from easy. On the evidence of a case study in 12 companies, the transformation process is found to be closer to iterative than sequential and evolving rather than planned (Frishammar and Parida, 2019). Evans et al. (2019) present optional business model designs which incorporate economic, social and environmental benefits but do not touch how to make the shift to these. Lewandowski (2016) synthesises the problem as a triple fit challenge as an enabler of transition to CBM. According to the study, the first fit is between the value proposition and customer segments, the second between the cost structure and revenue streams, meaning that the business model should be profitable. The third fit is between the changes a company implements towards CBM and the adaptation factors which can hinder this process.

In their empirical case study Kant Hvass and Pedersen (2019) identify several challenges connected to adopting a CBM, such as diverging perspectives of value and unclear success criteria, poor alignment with the existing strategy, limited internal skills and competences, and limited consumer interest. In another study (Kazancoglu et al., 2020), the barriers of circular supply chains were studied and were classified under nine categories, connected to, for example, management and decision making, design challenges, materials, rules and regulations, lack of knowledge and awareness, and lack of integration and collaboration. In a survey in 114 firms, Saha et al. (2021) identified both internal barriers connected to information systems, technical and financial resources, and management commitment and external ones in terms of lack of economic, customer, and government support and access to technologies. One challenge is connected to the investments made in existing manufacturing facilities and supply chain setups (Guldemann and Huulgaard, 2020).

Product design and circular business models are closely connected (Bocken et al., 2016). This, however, adds certain challenges, as the existing products may not have been designed for circularity, but are complex, frequently redesigned, of low quality, or relevant only to certain customers (Guldemann and Huulgaard, 2020). The new, designed for circularity products may not fit in with the existing product portfolio, as they may be expensive compared to other products, or may not enjoy economies of scale in production or other operations (Kazancoglu et al., 2020). One essential solution, product service systems that aim at satisfying customer needs by incorporating tangible products and intangible services, is kept as one of the key concepts that enhance innovations towards CBMs (Evans et al., 2017). The concept originates from life cycling thinking and enhances new modes of ownership (Guldemann and Huulgaard, 2020).

Studies that focus on the actual adoption of CBMs are rare. Sustainable business models, in general, are found to benefit from continuous adjustments and learning (Evans et al., 2017; Teece, 2010). A conceptual paper (Frishammar and Parida, 2019) presents a roadmap of the business model transformation process of incumbent firms, including mapping the current state of the principles and requirements of the circular economy, developing the CBM, forming the ecosystem, and ensuring business model elements form a coherent whole, but does not address the actual capabilities required to implement the change. In
the context of textiles, two studies were identified, one case study describing how a fashion brand develops and tests circular economy solutions within its existing business models (Kant Hvass and Pedersen, 2019), and another focusing on organizational complexities and their impacts on CBM design (Pedersen et al., 2019), which identified difficulties connected to current business environment with focus on short-term economic value. A recent contribution in the context of fashion is the conceptual paper presenting a framework of CBMs by Coscieme et al. (2022), which, however, does not offer solutions for transforming towards circularity. The current literature emphasises the importance of ecosystems and collaborative and coordinated ways of operating. Evans et al. (2017) propose that CBMs require a value network with a new purpose, design, and governance. In the textile industry context, a coordinated way of operating is needed as individual midstream players — providers of dyeing, spinning, or garment component parts — are less able to influence the demand for circular products or materials than those players operating in the upstream (fibre manufacturers) or downstream (brands or retailers) areas (Franco, 2017). Boström and Michelelli (2016) emphasise that all the actors that are involved, both on the demand and supply side, need support for them to take more responsibility for sustainability in the T&C industry.

### 2.2. Path dependencies of linear business models

In contrast to start-ups, which can start a new business from a clean slate, an incumbent company has followed an evolutionary path, and the future direction of the incumbent becomes constrained by this legacy (Djelic and Quack, 2007; Teece et al., 1997). In the social sciences, this phenomenon is referred to as path dependency (Djelic and Quack, 2007), meaning that history matters; an event is dependent on earlier events. Path dependency occurs when the array of alternative decisions or actions becomes more constrained as returns from an initial choice increase (Djelic and Quack, 2007). This increasing return effect acts as a self-reinforcing chain reaction in which positive feedback loops strengthen the chosen strategic path, potentially making the company locked-in in its initial orientation (Schreyogg and Kliesch-Eberl, 2007).

At a company level, path dependencies may exist because of increasing returns from occasions such as high up-front costs, learning and coordination effects, or the expectations of other organisations supporting the initial choice (Djelic and Quack, 2007). Path dependencies may occur in capability building as well, with capabilities often becoming “fixed to the constellations in which they proved to be successful” (Schreyogg and Kliesch-Eberl, 2007). Overall, path dependency constrains the future directions of all companies (Teece, 2014), thereby potentially explaining why most incumbent clothing brands with a linear history are still at the beginning of the journey towards CE.

Even though empirical research is lacking contributions explaining how path dependencies affect the adoption of CBMs (Korhonen et al., 2018; Lehtimäki et al., 2020), several studies have signalled about their existence in the context of CBM transformation. According to Kazancoglu et al. (2020), most companies in the T&C industry are locked into linear business models because of internal reluctance to make foundational changes in operational routines, company culture, the target market, and economic performance. In some cases, there may also be external path dependencies that act as barriers to change. Lehtimäki et al. (2020) present a waste management company case, which, regardless of the innovativeness of its novel CE solution, failed in its commercialisation because of customers’ resistance. Companies may continue on their past trajectories because of learning and scale effects connected, rather than venture into new and uncertain futures, even in cases where new CBMs such as subscription-based rental models might offer economically, environmentally, and socially superior performance (Korhonen et al., 2018). In the worst-case scenario, these lock-ins may lead to detrimental miscarriages in the implementation of CBMs. To mitigate this risk, companies need to be able to change their direction effectively and adapt to new environments, ultimately renewing themselves (Wu et al., 2013; Zahra et al., 2006).

### 2.3. Capabilities for transforming business models to circular ones

When a business environment is changing, as is the case in the textile industry, companies that wish to survive need to align themselves with the requirements of the altered business environment. In order to succeed in this process, companies need to have strong dynamic capabilities, referring to the ability of an organisation to adapt, integrate, and reconfigure bundled sets of resources and capabilities to align with the requirements of its environment (Schreyogg and Kliesch-Eberl, 2007). As such, they are often rooted in company-specific signature processes that are difficult to codify and, consequently, challenging to imitate (Teece, 2014). In the light of Teece’s (2018) study, the strength of a company’s dynamic capabilities defines the pace and extent of adjusting the company’s resources to meet the changes in its business environment.

To facilitate better understanding of the concept, Teece (2014) divided dynamic capabilities into three clusters of actions: 1) sensing: discovery and evaluation of technological opportunities in parallel with customer needs; 2) seizing: orchestration of resources to meet the opportunities and needs while capturing value from doing so; and 3) transforming: constant renewal of the organisation and culture. The success lies in the often-simultaneous development and utilisation of all three clusters (Teece, 2007). For example, firms with appropriate sensing and seizing capabilities are better able to capture opportunities in fast-changing markets and handle rapidly-developing technologies, and adaptive transforming via reorganisation allows organisations to deal with both opportunities and threats (Day and Schoemaker, 2016). However, a single success does not count as a capability, and yet it can serve as the origin of a new capability (Schreyogg and Kliesch-Eberl, 2007).

Even though past research on dynamic capabilities has mainly focused on gaining a competitive advantage (Zahra et al., 2006), several researchers have identified their importance in achieving sustainability targets as well (Strauss et al., 2017; Wu et al., 2013). As examples of recent advances in dynamic capabilities, Siems et al. (2021) identified in their literature study a shift in the food and automotive industries towards using more proactive and collaborative capabilities when moving to sustainable supply chain management, and Mohaghegh et al. (2021) link lean practices to sustainable business performance. However, only few studies have explored dynamic capabilities in the context of CBM transformation (Khan et al., 2020), even though detachment from a linear economy necessitates companies building new capabilities to reconfigure business models, strategies, and organisational structures (Lewandowski, 2016). A recent case study by Khan et al. (2020) indicated that dynamic capabilities play a vital role in CE implementation. According to them, the case companies utilised all three elements, sensing, seizing, and transforming, in the operationalisation of their CE strategies. The role of dynamic capabilities is highlighted especially in the restructuring of existing business models (Pieroni et al., 2019). An exception is a study about the microfoundations of dynamic capabilities in incumbent firms, which enable business model innovation to a circular economy (Santa-Maria et al., 2022). Nonetheless, how companies can employ dynamic capabilities to break away from path dependencies in a linear economy and to ultimately shift to CBMs is still a question that remains to be addressed.

### 3. Methodology

#### 3.1. Research design

A multiple case study approach is adopted to explore capabilities that enable clothing brands to overcome their past in a linear economy and to
shift to CBMs. The research is inductive, with features from two grounded theory methods: the Gioia methodology (Gioia et al., 2012) and theory building from cases (Eisenhardt, 1989). The case study approach was chosen because of its utility in terms of the testability, novelty, and empirical validity of results (Eisenhardt, 1989), whereas the Gioia methodology was applied as a supplementary tool to create an initial understanding of the subject. To generate findings that are valid for different types of clothing brands, we decided to analyse multiple cases, with the unit of analysis being an individual clothing brand. Basing the analysis on empirical evidence from several instances is likely to make the findings better grounded, more accurate, and more generalisable than those of single case studies (Eisenhardt and Graebner, 2007).

3.2. Case selection

The case companies were selected from Finnish companies which operate in the textile industry and are either planning to implement CE principles or have already done so. Finland is a suitable area for this study, as it has set high sustainability targets, and aims at a circular economy that provides a foundation for all economic activities by 2035 (Ministry of the Environment, Finland, 2022). The companies were to be fashion brand owners; therefore, for example, fibre manufacturers or waste companies operating in the sphere of post-consumer textile recycling were excluded. We selected brand owners, as they are responsible for the end-product offering and product design, selecting the raw materials used, and serving the end customers; thus their business models shape the industry more than do those of actors in upstream or downstream positions in the supply chain. The aim was to identify polar cases on the basis of the degree of circularity and age of the company. To identify suitable companies, publicly available data on company websites and sustainability reports were used, in tandem with external sustainability assessment reports. This process ended up by identifying seven companies, all of which were selected for the study.

The relative positioning of the case companies with regard to the two main case selection criteria, the degree of circularity and age of the company, was assessed next (Fig. 1). The linear incumbents (LI) are case companies that had been in the clothing business for a long time but still operated largely linear business models. One company had already undergone a transformation from a linear business model to a circular one and was classified as a circular incumbent (CI). The companies that were founded on CE principles are called born circulars (BC). According to Eisenhardt (1989), studying polar or extreme cases, such as these three categories, facilitates the identification of unique patterns that are critical for novel findings.

3.3. Data collection

Our primary data came from semi-structured interviews conducted in January and February 2021 (Table 1). The data collection and analysis were carefully designed to increase the validity and reliability of the results and to ensure accurate and insightful information from each case company. In each company one interviewee was identified. The average working experience in the industry was 14 years; the only respondent with less than five years of industry-specific experience had several years’ experience as a sustainability consultant. The reliability was ensured by selecting respondents who held central positions in the company ranging from top management to business development and corporate sustainability; thus they were expected to be able to answer the questions on their area of expertise reliably. Each interview was audio-recorded and transcribed with the respondent’s permission. Verbatim transcription was a prerequisite for accurate analysis with the Atlas TI software. The interviews obeyed the same logic, shown in the interview protocol (Appendix A).

3.4. Data analysis

The analysis process included two sequential phases. In the first phase an initial understanding was created of the transformation process that incumbent clothing brands undergo when they shift their business model from linear to circular. This within-case analysis compiled detailed case study write-ups to identify unique case-specific patterns (Appendix B). The second phase studied how path dependencies influence the premises of CBM transformation, and importantly, what kinds of dynamic capabilities are needed to overcome the resulting inertia. Here we compared each of the seven case companies against the others to identify similarities and differences. These comparisons were further complemented by contrasting the three case groups – circular incumbents, linear incumbents, and born circulars – against each other. A systematic coding process was obeyed to extract the data and to convert insightful quotations from the interview transcripts into a logical data structure for more profound analysis (Gioia et al., 2012) (Appendix C). The use of the theoretical lenses of path dependencies and dynamic capabilities enabled the identification of several factors that, depending on the company, either facilitated or inhibited transition to CBMs.

4. Results

4.1. Path dependencies in case companies

4.1.1. Control positions in the supply chain

Most of the case companies occupy only a niche position in the supply chain, with manufacturing processes most often being outsourced to external subcontractors and suppliers. Not surprisingly, this has led to some case companies considering manufacturing-related CE initiatives as something that is the responsibility of other supply chain actors. A case in point is the fashion and legwear brand for women (case LI1) which decided to outsource its production unit just a couple of years ago. As their CEO implied, this decision narrowed down their strategic viable alternatives in terms of CE:

“When we had the production in-house the aim was to recycle and reuse cutting waste and surplus knitwear generated in production. It is no longer part of our operations. Consequently, all the repair services and the like, are they our core, or are they the core of sewing shops?”

Case companies that had outsourced manufacturing were more focused on enabling CE by means of design and were able to influence manufacturing only indirectly. In contrast, companies that had direct control over manufacturing had a more comprehensive approach to CBMs. One of the waste-to-design clothing brands (case BC2) operates co-owned factories together with its manufacturing partner in India, which has made it capable of transforming the manufacturing process. The workwear-as-a-service provider (case CI1) operates a network of laundries, including detecting and repairing defective workwear during conventional laundry processes. These repairs have strong synergies...
with the company’s core business (renting), which necessitates it retaining the ownership of its products. This direct ownership and the resulting control over the whole product lifecycle have incentivised the company to optimise the utilisation of its products, and prolong their lifespan, thereby catering to the achievement of CE.

4.1.2. Product-orientation

Another path dependency that clearly inhibited the transition to CE is the long-lasting product orientation which has restricted companies from pursuing opportunities in servitisation—a central element of CE. Out of the three linear incumbents, only one company (case LI3) is currently piloting a service offering. The companies have focused on the sale of novel products virtually throughout their existence, and consequently, their corporate culture, capabilities, and processes have been fixated on product-focused business models. This has resulted in unwillingness and inability to tap new circular service opportunities such as repairs and renting.

In addition to dependencies in product sales, most of the case companies have followed a product-oriented design approach which has clearly constrained the utilisation of waste and surplus materials. This is because the determination of product type and product design at the beginning of the design process often sets strict material requirements, thereby limiting the range of qualifying material alternatives. Case companies utilising this approach struggled to find appropriate materials from the limited yet growing selection of recycled material alternatives. In contrast, two born circulars (cases BC1 and BC2) were able to avoid these issues by determining the designs and product types on the basis of the available waste materials. One of these waste-to-design clothing brands (case BC2) designs clothes only in those colours for which there is a reliable supply of cutting waste available. The other waste-to-design clothing brand (case BC1) procures a broad range of end-of-life textiles, such as workwear and safety belts, which it then turns into design products that are carefully chosen on the basis of the features of those procured waste materials.

4.1.3. Prevailing product portfolio

The third identified path dependency emerges from the prevailing product portfolio, which limits the range of strategically viable CBMs. A case in point is the fashion and legwear brand for women (case LI1), which has specialised in affordable fashion, and did not see potential in its customers renting its products at a price that is profitable for the company. According to their CEO:

“I feel that our clothes are currently a hint too cheap for a rental service. […] It [renting] would probably work better in expensive one-time purchases […]”

This implies that in order to tap opportunities in rental services, the focal company should target different product segments from its current ones, and potentially build a distinct brand with a higher price conception. Similar dependencies on existing product portfolios were also identified in other cases. The fashion brand for women (case LI2) is known for its durable, long-lasting, and timeless designs that tend to retain their value well in second-hand markets. The company saw the greatest potential in resale-based CBMs that would enable it to take back its products and sell them at a high price.

4.2. Sensing capability needs

4.2.1. Identification of the right customer incentives and benefits

Even though all the case companies had detected consumer behaviour gradually becoming more sustainable, most brands still considered the adoption of circular clothing and sustainable consumption habits to be far from mainstream. The most frequently-mentioned barriers to behavioural change were the ease of consumption that follows a buy-own-dispose logic, the cheap prices of fast fashion, and skewed perceptions of the price and quality of circular alternatives, as well as a preference for look and brand at the expense of sustainability.

Most of the brands had detected these behavioural barriers, but few companies had identified effective ways to overcome them. Those companies that had been successful here had either discovered direct customer benefits or incentivisation mechanisms to attract customers to test and use circular offerings. One of the waste-to-design clothing brands (case BC2) had initiated a study to measure the lifespan of its circular clothes relative to those made of virgin materials. The results of the study would enable them to provide comparable figures on the benefits of circular clothing, thereby facilitating customers’ understanding of what kind of product is sustainable and what is not. The workwear-as-a-service provider (case CI1) is focused on solving workwear-related customer pains by enabling its customers to track workwear utilisation, understand the origins of pricing, and create plans for seasonal workwear purchases.

In terms of incentivisation mechanisms, the currently utilised approaches were either discounts or warranties. Discounts were used in parallel with take-back services to encourage customers to bring their old clothes back when buying new ones. However, utilisation of this incentivisation approach was not common among the case companies. Only one case company (case BC1) currently offered warranties and believed that this provided its customers with a message that its products are indeed durable. Controversially, though, two of the linear incumbents (cases LI1 and LI2) were very pessimistic about the potential of warranties because of the difficulties involved in differentiating improper use from natural wear. Some companies also struggled with the identification of incentivisation mechanisms for use-oriented service models, such as renting. A case in point is the fashion brand for women

<table>
<thead>
<tr>
<th>Case group</th>
<th>Company abbreviation</th>
<th>Description</th>
<th>Originally founded on CE</th>
<th>Revenue [ME]</th>
<th>Company age [years]</th>
<th>Interviewee’s role &amp; experience in the T&amp;C industry [years]</th>
<th>Interview length [min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circular</td>
<td>CI1</td>
<td>Workwear-as-a-service provider</td>
<td>No</td>
<td>100+</td>
<td>100+</td>
<td>Senior management, Development (26)</td>
<td>45</td>
</tr>
<tr>
<td>Incumbent</td>
<td>CI2</td>
<td>Fashion &amp; legwear for women</td>
<td>No</td>
<td>10+</td>
<td>100+</td>
<td>CEO (7)</td>
<td>75</td>
</tr>
<tr>
<td>(CI)</td>
<td>LI1</td>
<td>Fashion brand for women</td>
<td>No</td>
<td>100+</td>
<td>50+</td>
<td>Middle management, Development (1)</td>
<td>67</td>
</tr>
<tr>
<td>Linear</td>
<td>LI2</td>
<td>Outerwear brand for kids</td>
<td>No</td>
<td>50+</td>
<td>50+</td>
<td>Middle management, Development (5)</td>
<td>63</td>
</tr>
<tr>
<td>Incumbent</td>
<td>LI3</td>
<td>Waste-to-design clothing brand</td>
<td>Yes</td>
<td>1+</td>
<td>10+</td>
<td>Founder &amp; CEO (43)</td>
<td>42</td>
</tr>
<tr>
<td>(LI)</td>
<td>BC1</td>
<td>Waste-to-design clothing brand</td>
<td>Yes</td>
<td>1+</td>
<td>5+</td>
<td>Middle management, Development (7)</td>
<td>53</td>
</tr>
<tr>
<td>Linear</td>
<td>BC2</td>
<td>Workwear provider &amp; to-be textile recycler</td>
<td>No</td>
<td>1+</td>
<td>10+</td>
<td>CEO (8)</td>
<td>55</td>
</tr>
<tr>
<td>Born</td>
<td>BC3</td>
<td></td>
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<tr>
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<td>BC</td>
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A. Salmi and R. Kaipia
(case LI2), with their middle manager stating that:

“In use-oriented service models, incentivising proper use is challenging. […] So, how do we include wear and tear into prices and how can we get those incentives right? Effective incentives should encourage customers to keep clothes in a good condition.”

4.2.2. Prediction of regulatory and technological development

CE in the T&C industry is still in its infancy, making the prediction of regulatory and technological development a challenging yet important task. Companies that succeed at this early on are able to focus their resources on fewer development paths, and may enjoy significant first-mover advantages. The workwear-as-a-service provider (case CI1) had already identified an opportunity in the digitalisation of its material flows years ago and invested in RFID chips for its workwear. This helped the company to not only optimise its material flows, but also develop a differentiated service offering.

On the other hand, companies that are not able to make trustworthy predictions are likely to hesitate with their investment decisions, potentially leaving them behind the competition. Even though the interviews did not reveal direct evidence of the circular case companies being more capable at prediction, each of the three linear incumbents expressed uncertainty about future technologies and regulations. According to the middle manager at the outerwear brand for kids (case LI3):

“We cannot know if there will be tax reliefs or subsidies for a particular type of business. […] So, from a business perspective, it is too early to put our eggs in any particular basket.”

It seems rather evident that this regulatory uncertainty is one of the main reasons why some incumbents have been slow in their transition towards CBMs. Additionally, many of the case companies highlighted the importance of keeping track of technological developments, especially in terms of novel materials and recycling. None of the case companies was sure about which technologies and materials would become dominant in the future. As the middle manager at the outerwear brand for kids (case LI3) explained:

“The industry is constantly developing better recycled fibres from a wider variety of sources. We are unlikely to have this same selection of recycled fibres for the next couple of years.”

4.3. Seizing capability needs

4.3.1. Optimal managing of design trade-offs

Most clothing brands have outsourced the manufacturing of clothes, leaving clothing design as a core process and capability. Most importantly, clothing design enables them to seize opportunities in CE because of its far-reaching effects on a product’s resource footprint, utilisation rate, lifespan, and recyclability. However, many brands were struggling with their optimisation of the overall impact of clothing design. Decisions aimed at optimal design tend to involve several contradictions that are difficult to measure.

On the basis of the interviews, three common contradictions were identified. First, the utilisation of recycled materials often has a negative effect on a product’s quality and durability, especially when fibres have been recycled multiple times. Second, while fibre blends often increase the durability and usability of clothes, they are likely to lead to recyclability issues. A prime example is the use of elastane, which may considerably improve the fit and lifespan of a garment but cannot be easily separated in recycling processes. Third, there is a conflict between standardisation and customisation of products. On one hand, personalised products may offer an improved user experience that results in higher utilisation rates. On the other hand, customisation may discourage distinct users from wearing the product, thereby reducing its potential utilisation rate and/or lifespan. Because of these contradictions, many brands had difficulties in determining the ways in which different features should be valued and compared. As the middle manager at the fashion brand for women (case LI2) illustrated:

“You have to balance between certain features. A product sometimes requires material combinations that make it longer-lasting but prevent it from being recyclable. So which one are you optimising for?”

4.3.2. Ability to reshape the current fragmented, fast fashion-oriented supply chain

In order to develop truly circular offerings, clothing brands need to be able to ensure that each part of their global supply chain aligns with the principles of CE. This entails major changes in the current way of providing value, which, according to the case companies, is still largely fast fashion-oriented. This is illustrated by the middle manager at one of the waste-to-design clothing brands (case BC2):

“When there have been years of aiming for a ‘faster, cheaper, and more’ production mode, reversing the mindset to better quality does not happen quickly.”

This indicates that investment is needed to reshape both the processes and training of the actors involved. However, clothing brands do not usually have direct control over the upstream processes in the supply chain, which limits their ability to manipulate these processes. Different processes are often scattered across a variety of actors and locations. Together these factors make the transformation of the supply chain a complex task that calls for advanced capabilities in areas such as stakeholder, change, and supplier management. The middle manager at the fashion brand for women (case LI2) explained:

“There are many parties that affect the materialisation of CE; it is not just our effort. Can we influence our partners to recycle the packaging materials?”

Most of the case companies considered their power to influence other actors as being limited. To compensate for this gap, the case companies utilised different approaches ranging from ‘leading by example’ to the formation of long-term partnerships and establishment of aligned incentive structures. Perhaps the most innovative approach was taken by the workwear-as-a-service provider (Case CI1), which decided to establish its own mini-factories to enable on-demand manufacturing of small replenishment batches. According to its senior manager, no external clothing factory could have done this profitably. However, the company itself was able to lower its inventory levels, mitigate obsolete risks, and respond faster to customer needs, thereby making its investment into mini-factories profitable.

4.4. Transforming capabilities

4.4.1. Breaking away from a linear buy-and-that’s-it-culture

The mainstream clothing business has focused on the manufacturing and selling of products. As a result, most incumbents have been deeply fixated on a product-oriented company culture that has narrowed down their ability to sense and seize opportunities beyond the point of sale. This is a major obstacle to the implementation of CE, which necessitates companies developing solutions throughout the entire lifespan of products. As the middle manager at the outerwear brand for kids (case LI3) underlined:

“Making our traditional products from recycled fibre would not require anything new in terms of know-how. But when we start designing new services and new business models, there will be challenges. Especially since we have been a truly product-oriented organisation for our entire existence.”

This implies that the change must start with companies throwing off the bonds of prevailing practices and ways of thinking. To tackle this inertia, the fashion brand for women (case LI2) has an official change
programme with organisation-wide goals for internal alignment. Succeeding in this necessitates commitment to change from each employee. The workwear-as-a-service provider (case CI1) has successfully pivoted from textile dyeing to laundry services and eventually to workwear rental during the more than a hundred years of its history. Born circulars founded on a circular company culture may avoid such radical transformations. However, even they must be receptive to cultural shifts being born by new business models and increasing service orientation.

### 4.4.3. Multidisciplinary cooperation

CE is fundamentally a systemic concept which underlines the importance of more comprehensive forms of inter-company cooperation, such as business ecosystems. Mere recycling, for example, requires the establishment of an entire take-back system to feed materials for recycling facilities. It is evident that a single company only seldom has the necessary resources to invest into all this by itself. Consequently, it was common that case companies developing CBMs often sought to fill the gaps in their own capabilities and resources with those of external partners. According to the senior manager at the workwear-as-a-service provider (case CI1):

> “By working together you can achieve things faster and find new kinds of expertise. Few companies have sufficient in-house resources, organisational capabilities, or personnel competence to make everything in-house.”

However, the formation of a novel business ecosystem and forming alliances in one is no easy task at all. On the evidence of the interviews, especially the formation phase proved to be challenging, with high capability requirements in terms of negotiating skills and alignment of incentives across ecosystem actors, making certain case companies unwilling to participate in ecosystem formation. The fashion and legwear brand for women (case LI1) decided not to participate in the formation of a Finnish recycling ecosystem for end-of-life textiles. According to its CEO:

> “We expect with interest that this whole recycling process will be put in order. We are in a customer role right now, expecting that someone will fix the ecosystem before we can take advantage of it.”

This almost exploitative type of strategy may backfire in the future if the focal company is late in reaching the needed capability levels. Two case companies (cases BC3 and CI1) that had taken an active role in the formation of that particular ecosystem recognised a need for new capabilities in supply planning and pre-sorting of end-of-life textiles. External companies may not identify these factors early on, thereby potentially rendering them incapable of joining the ecosystem once it is complete.

### 4.4.4. Formation of novel business ecosystems and allying in them

As this quotation implies, the education of designers does not on its own enable the achievement of CE. Especially when it comes to the development of new service-based business models, a perfect product design does not guarantee success any more. Similar issues apply to smaller brands, which tend to be very designer-driven. According to the interviewees, the education of Finnish designers has traditionally taken place too separately from that of engineers and economists, thereby hindering the natural formation of multidisciplinary founder teams.

5. Discussion

The study investigates the capabilities that enable clothing brands to overcome their past in a linear economy and shift to CBMs. This requires firms to change the logic they are creating, delivering and capturing value, including changes in markets, business logic, and organisational culture (Lewandowski, 2019). The literature has proposed solutions, for example in the form of a roadmap to transform the business model to a circular one (Frishammar and Parida, 2019), but left the respective capability needs untouched.

This study found, as an answer to the first research question, that dependency on the prevailing product portfolio, a product-oriented business model, and the position in the supply chain affect the efficiency with which incumbent companies can become circular, setting boundaries to changes in product segments, target customers, price points, and brand image. Dependency on the prevailing product portfolio may serve the purpose of economic performance but not necessarily ecological and sustainable performance. This is in line with the increasing return effect of Schreyögg and Kliesch-Eberl (2007); however, the company’s orientation to a certain strategic path locks it into its initial way of providing value.

To answer the second research question about the capabilities needed to make the change to CBM happen, sensing, seizing, and transformation capabilities were studied. Even though many of the case companies are product-oriented in their business culture, our results for the circular incumbent case company show how a renting-based CBM can be successfully implemented in B2B relationships. The case provides evidence of how intensified product use cycles are built around past trajectories. This complements a recent research result (Kant Hvass and Pedersen, 2019) that states that business model innovation requires organisational change and transformation of the value proposition for customers, and throughout the product life-cycle (Schreyögg and Kliesch-Eberl, 2007). Case companies specialising in fashion, instead, were unlikely to find renting models lucrative because of their divergent requirements in terms of product durability and price points, as well as demand and market characteristics. Product orientation – instead of orientation towards services – seems to be deep in the business culture in the linear incumbent case companies.

The development of seizing capabilities was observed in born circular case companies. In particular, a strong focus towards product design and keeping it in the company’s own hands leaves the company with the freedom to select sustainable materials and designs. The case companies were, however, struggling with the optimisation of the overall impact of clothing design and had to deal with trade-offs between product features that stimulate customer demand and the circularity of the product. Here, designs that support the product lifecycle or intensified product use should be prioritised. This complements the finding by Saha et al. (2017) that material and source selection should also be based on environmental value, not only on economical factors. The problems connected to the use of circular material (see Franco, 2017) were tackled by the case company BC2, which designed the products according to the available circular materials, and avoided the trap of strict material requirements set by predetermined product specifications.

A less-discussed finding in the CE literature about business models is related to the ownership and control over the supply chain and production resources, as well as the actual product. Typically, the CE literature in general and in the textile context in particular emphasises ecosystems and networks, and the importance of aligning with external actors as a prerequisite for CBM (Bostrom and Micheletti, 2016; Evans et al., 2017). In contrast to this trend, the only case company classified as a circular incumbent has built its successful CBM around strong
ownership-based control over the whole supply chain and product lifecycle, which allows it an item-level RFID-based management of the goods flow, replenishment production with a minimum batch size of one, and product design that allows product maintenance with spare parts assembly. This finding complements the seizing capability to meet opportunities (Teece, 2014), which can be achieved by acquiring a large set of internal resources, as an option to keeping a position in the network that allows external resources to be orchestrated. What this indicates is that niche positions in the supply chain allow only a niche adoption of CE unless companies can utilise collaborative approaches to indirectly influence external supply chain processes (Bostrom and Micheletti, 2016; Saha et al., 2021). The findings of this study agree well with the basic assumption of the path dependence theory (Teece, 2014); path dependencies not only explain the historical evolution of companies, but also set boundaries to what is possible in the future. One consequence is that outsourcing decisions should be made carefully while considering the level and reach of indirect control.

6. Conclusion, limitations, and further research

6.1. Conclusions

This study focused on past trajectories that affect the way clothing brands can transform their business models to circular ones and the capabilities needed in the transformation process. We contribute to the research gap on factors that affect the adoption of CBMs in practice. This is particularly important in the T&C industry, with its high environmental cost and resource usage.

According to the results, when moving towards CE, incumbent clothing companies are restricted in terms of three factors: product-orientation, the existing product portfolio, and the position in the supply chain, which forms significant inertia to transforming the business model. The case companies were differently positioned to move towards circularity. The born circulars, companies that are established on circularity and do not have the burden of past decisions connected to a linear business model, face specific capability needs for supplier and ecosystem management to ensure circularity principles in the whole supply chain. In addition, to widen their customer base, the companies need to apply customer incentives that attract new types of customers and develop the market. The linear incumbents in this study were tightly stuck to their current product portfolio, but in a different manner. While one company aimed at durable long-lasting products with high reuse requirements for comfort and elasticity leaving little room for selecting recyclable materials. In general, breaking away from a linear business model was found to require a remarkable change in business culture.

6.2. Managerial implications

For companies, this study suggests that to unshackle themselves from the path dependencies that inhibit transition to CBMs, companies need to possess strong dynamic capabilities. First, companies need opportunity sensing capability, in terms of parallel prediction of regulatory and technological development. However, what is enabled by technologies and regulation must eventually be accepted by customers as well, which requires sensing capability related to the identification of the right customer incentives and benefits, encouraging choices of durable products. Second, companies should develop seizing capabilities and be strongly oriented towards product design, allowing the selection of sustainable materials and designs. This relates to the identified transforming capability to break away from a linear business culture and restructure the firm’s resources accordingly. Last, we identified the need for a capability to control and manage the supply chain, achieved either by ownership or by allying in ecosystems. The strength of these capabilities defines the pace and extent of aligning with the changes in a rapidly changing business environment such as the current T&C industry.

6.3. Limitations and further research

This study is among the first to explore the transformation of business models to circular ones, with path dependencies and dynamic capabilities as theoretical lenses. The generalisability of the findings is, however, limited, as the data was collected from seven companies in the T&C industry in one country. Even though the interviews were conducted with the person responsible for sustainable business model development, more informants, especially in large companies, could have provided more insights. These factors suggest a need for further verification of the results from more companies in different contexts or industries, for example in the form of longitudinal studies investigating the transformation processes of incumbent companies. Finally, the born circular companies deserve further research on how they are tackling the challenges related to circular materials and their availability, and how they secure funding without a complementary “cash cow” business to take advantage of.

CRedit authorship contribution statement

Aleksi Salmi: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing. Riikka Kaipia: Funding acquisition, Project administration, Supervision, Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

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Appendix A. Supplementary data

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