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Barriers and Drivers for Changes in Circular Business Models in a Textile Recycling Sector: Results of Qualitative Empirical Research

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Abstract: The growing environmental problems associated with the dumping of large amounts of textile waste and the demand for circular products are prompting textile waste recycling enterprises to develop circular business models (CBMs). This implies a radical change in the way some enterprises operate to obtain growth. Considering the importance of the drivers of and barriers for the adoption and implementation of CBMs in the textile recycling sector, it is claimed that the comprehension of these factors to CBMs is limited and deserves more attention in empirical research. Therefore, our research investigates the antecedents of circular business models in the textile recycling sector by highlighting influencing factors. The aim of the article is to explore the main enhancing and inhibiting factors in the development of circular business models on the example of a large enterprise operating for 30 years in the textile recycling sector. In this study, a case study design of mixed methods, including semi-structured interviews with a business practitioner and the data presented on the websites of the surveyed enterprise, is used. The results suggest that main enhancing factors are relevant regulations at the European level, appropriate technologies and digitisation, and increasing social and environmental awareness of consumers and managerial capabilities. However, inhibiting factors are supply chain complexity and supply chain collaboration in connection with a large scale of business in crisis situations, a large scope and range of geographic diversification of outlets in the perspective of the consequences of the information gap, and readiness to take the so-called “being the first in the market” risk. In practice, this means that general drivers of the CBMs may facilitate the reuse of second-hand clothing and recycling of textiles for other new products as the primary CE action. On the other hand, enterprises have to overcome a number of technological barriers, and in the case of the textile recycling sector, it is necessary to understand which barriers they face to take appropriate actions. Research findings indicate factors that may be the subject of intervention or support of managers or policymakers. This study has practical implications and suggests future study paths.

Keywords: circular business model; circular economy; environmental awareness; supply chain; development; waste



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1. Introduction

The textiles and apparel manufacturing industry in the upstream fashion supply chain generates substantial materials waste which requires urgent efforts to manage effectively, reduce environmental impact, and foster sustainable practices [1,2]. Textile waste consists of industrial /pre-consumer waste and post-consumer waste. Industrial waste is generated by a production process and post-consumer waste, i.e., textiles thrown away (i.e., used clothes)—after the end of their service life [3,4]. For the specificity of the sector studied

(i.e., textile recycling sector), an important area that should be taken into account is textile waste management, as today's clothes are designed for shorter use [5] and then utilised. It was estimated in various studies that only 20% of textile waste is recycled or reused, and the remaining 80% is landfilled or incinerated, which causes large losses of raw materials, energy, and has a negative impact on the environment [6–8].

Such a low level of recycling of post-consumer textile waste results from the conclusion that recycling and (more broadly) CBMs are strongly related to the existence of efficient and economically justified technologies. Recycling of multi-material products [2] is much more complicated (and generates significantly higher investment and operating costs of such technology) than the recycling of products made from a single material. This results from both the level of complication and the possibility of ensuring sufficiently large volumes of waste material which meets material specification. For example, the recycling of packaging bags made mostly of homogeneous polyolefins such as PE (PE HD, etc.) meets both conditions of a relatively cheap technology (mono-material with a significant amount of a given waste material). For the post-consumer textile sector being under consideration, the morphology of second-hand clothing is an important issue. Different types of clothes are recycled. Extremely different morphology of materials is used in their production (from a huge variety of synthetic and natural fibre, using various types of braids and fibre mixes, to a wide range of chemical additives and dyes). Clothing manufacturers, by introducing new clothes every new season (or for fast-fashion, even several times during one season), make sure that they differ visually from the ones already existing on the market, contribute unknowingly to further complicate the situation with regard to generated waste recycling.

That is why, recycling of post-consumer textile waste requires much more advanced (and most desirable in the CE model) technologies with a higher level of technological risk approach than the classic one based on separation and recovery of raw materials in order to create new things. This implies changes in existing business models toward higher levels of circularity.

Nevertheless, the barriers which enterprises face before implementing CBM [9] may delay the transition to a sustainable future [10], it is necessary to identify what prevents or delays the implementation of circular activities in organisations operating in the textile recycling sector. It is equally important to identify factors which may influence the successful development of CBMs. Especially since CBM has yet been widely implemented not only in the textile recycling sector, but also in the fashion sector [11].

That is why, the following research questions (RQ) were posed:

RQ1: What are the main drivers for the development of circular business models in the textile recycling sector?

RQ2: What are the main barriers to the development of circular business models in the textile recycling sector?

These two research questions guided our empirical research. At the same time, it was found important to understand these factors from the perspective of business practitioner being an important stakeholder in the transformation towards CE [12].

The aim of the article is to explore the main enhancing and inhibiting factors in the development of circular business models on the example of a large enterprise operating for 30 years in the textile recycling sector. This indicates that the article refers to specific challenges faced by enterprises belonging to the textile recycling sector by answering the above-mentioned research question.

The paper is structured as follows. The following section provides an overview of CBMs conceptualisation which also allows different types of CBMs to be identified. In addition, it sheds light on the issue of the legitimacy of continuing research about factors enhancing and inhibiting changes in circular business models in the textile recycling sector. Next, the case study with sections on research methodology, data collection from the VTR's websites and the primary data from semi-structured interviews with an enterprise representative are presented. In Section 4, the results of the analysis of primary and secondary data are described, while Section 5 focuses on the discussion of drivers and

barriers to CBMs. Section 6 contains conclusions and implications for practice based on our research findings. The article ends with an indication of research limitations and suggestions for future research.

2. Literature Review

2.1. What Is the Circular Business Models?

Circular business models are essential elements of a circular economy framework to enable economically viable recapturing of value [13]. Circular business models (CBMs) describe the ways in which an organisation creates, delivers and captures values, while keeping resources at the highest level and for as long as possible [14,15]. In addition, this indicates that enterprises should think about what to do to keep their values (resources) as long as possible. This problem applies not only to textile waste management, but to production management from the very beginning: the first stage of production, predicting what would happen with our product at the end of its life. According to Wrålsen et al. [13], CBMs intend to maintain the maximum value of resources by eliminating or reducing its leakage through closing, slowing, or narrowing their flows. Moreover, Bocken et al. [16] explains that CBMs includes and aligns an enterprise value proposition with the creation, delivery, and capturing of value. Hultberg and Pal [11], in turn, conceptualise CBMs in another way. He argues that circular business model (CBMs) are terms used to describe business models based on circular economy practices. The literature studies also confirm the usefulness of this conceptualisation of the CBM construct. In the study by Lüdeke-Freund et al. [17], six different types of CBMs have been identified which support resource flows (referred to as “major CBM patterns”); these are: repair and maintenance; reuse and redistribution; refurbishment and remanufacturing; recycling; cascading and repurposing; and organic feedstock. A review of current circular practices in the vehicle industry in the EU reveals that several manufacturers implement CE strategies, focusing on CBMs for LIBs (lithium-ion batteries), and these are: intensify use; repair; refurbish; remanufacture; repurpose; and recycling [18]. However, in the studies by Lieder and Rashid [19], Akter et al. [1], Rahman et al. [2] and Mostaghela and Chirumallab [5], three different types of CBMs were identified, distinguished as: 3Rs: Reduce, Reuse and Recycle.

The results of the studies presented above provide a picture of the current circular practices and indicate the possibility of different operationalisations of CBMs in business practice, but also some similarities between them. There is no doubt that each industry has its own specificity, requiring adjustment of activities to products or services offered by an enterprise, and this generates various circular business models. Because of the fact that there is no waste in a purely circular economy, everything is looped back in different resource flows [20]. Within these loops, a large variety of CBMs emerge (i.e., distinguished above as “3R” and “6R”); while some cover the entire resource flow, others only focus on a specific activity and need to connect to other CBMs to create a complete loop [20].

Therefore, circular economy business models (circular business models) are a real alternative to the current linear systems of production and consumption [21]. “R-activities” are typical activities for circular business models, but do not appear in traditional linear models. CBMs help to reconcile resource efficiency with the creation of commercial value, using both environmental and economic values embedded in products [21]. The business advantage in the circular model is that enterprises use the idea of a circular economy to create values. In addition to resource efficiency, enterprises may also create economically significant products rather than waste. They may create resources for other market players or design a closed resource flow for their own business. This business model is in line with the principle of manufacturer’s extended responsibility. The manufacturer’s responsibility for a product is extended to the end of its life cycle [21]. Thus, these types of business models may significantly reduce the negative impact on the environment [22] if actively designed for this purpose [23,24]. However, the shift from a linear to a circular business model is an ambitious undertaking which requires a re-evaluation of how a given organisation creates, acquires and delivers values. Enterprise’s values (goals), strategy and business

opportunities already motivate enterprises to explore CE-based value proposition and develop circular business models (CBMs) [16]. Thanks to circular business models, enterprises gain a competitive advantage, increase customer loyalty to the brand, meet waste requirements more easily, and improve production towards zero waste [25]. Therefore, these BMs are facilitators and provide a framework for enterprises to create and capture values [26,27].

2.2. Circular Business Models in a Textile Recycling Sector: Influencing Factors

Textile recycling industry is one of those industries which may benefit economically from efforts for CE. Enterprises belonging to this sector, by thinking more specifically about promoting sustainable development, may want to get involved in CBMs. These organisations would strive to minimise the negative impact on the environment, striving to extend the life cycle of “industry/pre-consumer waste” and/or “post-consumer waste” from the phase of obtaining this waste to its disposal. In addition, especially since the global amount of textile waste will increase by 60% each year from 2022 to 2030, generating an additional 57 million tons of waste per year and reaching a total of 148 million tons per year (see more: [1,8,28,29]). Moreover, textile waste causes a potentially huge loss of value and business opportunities in a textile and clothing production chain [1].

That is why, Payne [30] and Jamshaid et al. [4] argue, among others, that solid waste should be recycled or reused to strengthen the concept of a circular economy. There is no doubt that wearing clothes for longer periods of time and efficiently using textile waste may significantly reduce the need for end products and fibres [4].

The aforementioned potentially huge increase in textile waste and the demand for circular products in the near future would make the circular economy (CE) more and more visible in business organisations [22,31]. Thus, in the textile recycling industry is an important category to discuss CE and CBMs. However, despite the general interest of a private sector in CE, implementation of CBMs is in fact still low in this sector [6–8].

In the context of the possibility of managing second-hand clothing, circular reuse business models (CBMs) have emerged in recent years, also in Poland (e.g., [32]), aimed at slowing down or closing resource cycles [33]. This shows that the transition to CE today requires radically new ways to design and implement business models, including the textile recycling industry. Most enterprises are concerned with transforming existing innovative linear economy processes, characterised by significant experimentation towards an ambitious circular value creation goal [33]. Nevertheless, there are some controversies over what may and what may not be considered as recycling. This includes (non-) treating energy recovery or production of fuels from textile waste as recycling. There are different interpretations and procedures on this issue, which raises a lot of controversy and discrepancies even in the recycling statistics. It is worth adding that European [34] and national [35] regulations directly exclude energy recovery and production of fuels from textile waste from the definition of recycling. It is worth emphasising that in Poland it is VTR that is very much involved in striving to improve the existing CBMs towards more sustainable CBMs (e.g., [36]) and this does not mean that there are no other enterprises which have already undertaken some steps in this direction; but we do not know much about them at the moment.

The literature research indicates that proper business models (BM) are essential for enterprises to make the reuse of second-hand clothing and textile waste recycling economically feasible and require constant improvement and adaptation [37]. Thus, in order to improve BMs, the drivers for CBMs need to be strengthened to reach higher levels of circularity (i.e., [38–40]). Apart from that, in order to continue the process of change towards a more circular economy, the current barriers to the development of CBMs need to be addressed (i.e., [10,20,41–43]). Despite these valuable contributions to the scientific literature on drivers and barriers to implementing different circular business models, there are also many limitations to the research findings. Drivers and barriers differ depending on the sector and type of business model [10,43–45]. Therefore, there is shortage of knowledge

about factors enhancing and inhibiting changes in circular business models in the textile recycling sector. Moreover, Ferasso et al. [22] emphasises that there is currently no unified understanding of the current state of knowledge about circular business models, as many studies have been published in a short time, their structures and discourses are not well established and interconnected. It is not clear which lines of research into circular business models are well developed and potentially saturated, and which deserve more attention in future studies.

3. Research Methodology

3.1. Research Design

Case study is an effective type of studies for gaining an in-depth understanding of the factors influencing changes of business models in the enterprise mentioned below [18]. Moreover, it represents a unique, credible, and valuable justification for the formulation of guidance for managers. It was decided to include one case because single case studies i.e., [46–48] are well established in the area of BMs [44]. The case was selected on the basis of a deliberate sampling [18].

The enterprise was chosen because it has more than one circular business model which it is actively trying to rethink. It is a business organisation which implements CE strategies, focusing mainly on the resale, re-purpose and recycling of second-hand clothing into textile composites. At the same time, VTR is one of the world's largest producers of second-hand clothing. In the enterprise's on-line store, one may order wholesale, directly from the manufacturer, i.e., VTR, sorted and top-quality second-hand clothing from the Western Europe. For 30 years, VTR has been developing its competences in this area, among other things. Currently, every day, it segregates textile waste in the amount of hundreds of tons, using the most modern in Poland and fully computerised lines for sorting clothes, enabling the processing of 500 tons of raw material per day while maintaining the highest quality standards, namely ISO 9001 and 14001. Every day, the VTR's employees sort and pack finished products from 700 different assortment groups. Moreover, the geographic diversification of sales markets is very large. Products (second-hand clothing) go to over 70 countries around the world and to a chain of several dozen VIVE Profit stores all over Poland, owned by VIVE Textile Recycling (e.g., [36]). Moreover, closed processes of recycling textile into innovative textile composites have long reached the commercial stage. The raw material which does not comply with the VTR's quality requirements is, in turn, processed into industrial cleaning products. VTR also produces industrial cleaning products used by enterprises from many industries (e.g., [32]). All of this makes VTR an interesting case to study.

The study used a mixed-method case study design [33,49], including semi-structured interviews with an enterprise representative and data presented on the VIVE Textile Recycling's (VTR) websites. Thus, complementary methods were used. The basic method was a semi-structured interview, and the subordinate method was an analysis of the data posted on the above-mentioned websites. Both methods were implemented several times to triangulate the data (e.g., due to outdated reports, official documents, end-user reviews, or respondent availability—in the case of semi-structured interviews). The triangulation of the methods in this study was parallel (complementary). Qualitative data were collected simultaneously and analysed to answer research questions.

Firstly, a literature review was conducted, interview guides were developed, and semi-structured interviews (see: Appendix A, Table A1) were carried out with a professional implementing CBMs at a textile recycling enterprise.

The purpose of the analysis of the empirical material was to search for answers to identify the main enhancing and inhibiting factors for business experiments towards a more circular economy, as well as actions which are aligned with circular economy.

The process of data analysis obtained in the interviews was carried out in three stages: (1) coding, (2) searching for similarities and differences, (3) interpretation. However, the preliminary analytical stage was the transcription of audio recordings (see: part 3.2. Data

collection). Data in a written form were encoded, and the individual fragments were given appropriate labels for the categories under consideration (a priori, deductive coding). Collections of data with identical labels were subjected to a comparative analysis in order to capture similarities and possible repeating regularities. In the analytical process, the semantics of statements in the context of the studied categories were verified. The last stage of data analysis was the interpretation of the content of the interviews. Descriptions of individual aspects were presented in the form of narratives with references to directly quoted fragments of the respondent's statements collected during the interviews (abbreviated respondent's statements are presented in Part 4. Results and analysis; while selected full statements made by the respondent are in Appendix A, Table A2). As a result of the semi-structured interview, a summary of the main influencing factors for changes in CBMs in VTR was developed and "R-activities" were identified. The interview guides mentioned above, in turn, result from the literature review.

Secondly, data presented on enterprise's websites (e.g., reports, official documents, interviews with various enterprise's representatives) or other data (e.g., press releases, end-user reviews) were reviewed in parallel to better understand R-activities as well as external and internal forces which may accelerate or delay the achievement of higher levels of circularity by VTR. The result of this research method is the exemplification of VTR's circular activities, business achievements and relevant regulations. A flowchart summarises the research methods used and the outputs of each one of them, as shown in Figure 1.

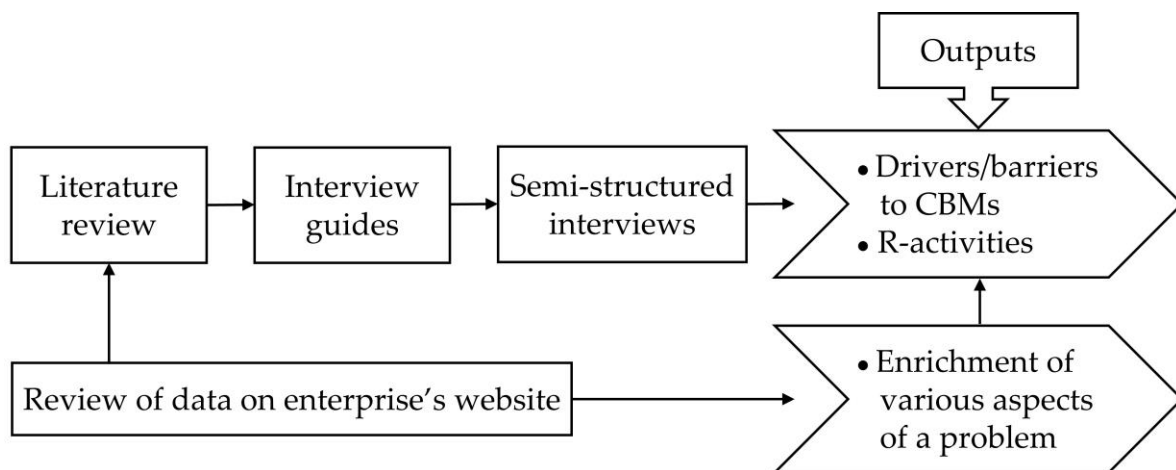


Figure 1. Research methodology review. Source: own elaboration.

3.2. Data Collection

Only one-to-one interviews were conducted [33]. In total, 7 semi-structured interviews were conducted with a business practitioner. The respondent was a manager employed in a position included in the highest management level (top management teams, TMT) in VIVE Textile Recycling.

Over the course of the interviews, open-ended questions were asked (see: Appendix A, Table A1), which allowed the respondent to explain complex issues. As a rule, the interviews were aimed at getting to know views on the factors inhibiting and enhancing changes in business models in the surveyed enterprise in which the respondent has been employed for several years. Basing on the interviewee's consent, the interviews were recorded and then all transcribed for further analysis. Data collection was taking place from November 2021 to June 2022. The data were then triangulated with publicly available information from the enterprise's website. In preparing for the interviews, information was gathered about the enterprise and its CBMs through a review of official documents, reports, interviews, press releases, and end-users' reviews. Making consultations with the respondent (VTR's internal stakeholder) was favouring the triangulation of the literature results and provided

more details on the factors influencing changes in the business models already existing in VTR.

4. Results and Analysis

4.1. Drivers: External Environment

Changing business models is seen as the key to organisational success, especially in times of increased competition, advancing globalisation, and the advent of new technologies [50]. Following this trend, VTR is actively trying to redesign its business models.

The analysis of the content of the interviews allowed for identifying what and how drives the development of business models in an enterprise which has been successfully operating in the textile recycling sector for 30 years. The VTR's representative believes that there are three main factors driving VTR to change its business models towards higher levels of circularity: *"Here we have the three most important factors (. . .), but we are talking about the three main ones, absolutely the most important in my opinion"*.

From the perspective of the respondent's business practice, it follows that one of the most important driving forces behind the development of CBMs in an enterprise are the relevant regulations required at the international level: *"Very important factor is legislation at the European level, through which we move in the world of waste, which should be very precisely accounted for and landfilled. Legislation has a huge impact on this"*. As a result of changes in international regulations and policies, changes are made to national regulations specifying the conditions for running a business in the textile recycling sector, which may close the current directions of textile waste imports and open up new ones as well as (do not) support the transition to higher levels in the textile waste management hierarchy. External pressure (such as regulatory and policy pressures) means that through changes to regulations, governments and institutions may encourage or discourage businesses and consumers to or from adapting to CBMs. Therefore, it is important that the legislation on recycling and life-cycle extension issues should focus on both environmental performance and economic incentives.

At the same time, the respondent pointed out of regulatory tools is their change from time to time: *"Waste storage and processing issues. The legislator defines them very precisely and, what is more, wants to change them from time to time"*. For enterprises, this implies a change in the conditions of market competition, changes in customers' needs, and may reveal discrepancies between existing VTR's operating routines and competition requirements. This is because turbulent environment reduces the potential value of existing products due to changes in market needs, technologies and competing products. Therefore, adaptation to the new legal regulations is necessary for VTR to conduct this type of economic activity in accordance with the applicable regulations.

Gaps between the current configuration of operational routines in VTR and the requirements of the environment, if they have existed so far, they were only temporary (see further: lockdown in the event of the unprecedented COVID-19 pandemic, introduction of an ad hoc public holiday connected with National Independence Day in Poland on 12 November) [51] as VTR's capabilities were and are still adapted to the changing requirements of the environment. The achievements of this enterprise (e.g., [52]) show that it may use dynamic capabilities (e.g., [53]) to adapt to the type of changes in the environment in which it operates, knowing that a highly dynamic environment offers new opportunities which at the same time offer more options for improving existing operational routines.

In this interview, the respondent also highlighted the importance of the growing number of socially and environmentally conscious consumers looking for cleaner and more sustainable ways to express their attitudes through fashion. In the era of shifting away from the linear economy model and transition to the circular economy model, re-using and the best possible using of textile waste (i.e., second-hand clothes) become a necessity. Re-use is part of a circular economy which seeks for greater use of material goods. The main change noted only in this respect by VTR is the development of the market of *second-hand stores* (e.g., [54]). The respondent explained this in these words: *"Social awareness, which is key*

in this second-hand market, circular economy, CE. (. . .) Today is a complete shift in awareness. This is the glory of modern times. The whole peer 2 peer movement, reselling or donating clothes; second, third, fourth, fifth life. This is exactly the case with our stores as well. It is all the result of our social awareness which we create, but also which creates us. This social awareness is a huge factor of change. Because we have many such detailed factors, and I could list them for a long time”.

Growing social and environmental awareness of the importance of re-using and recycling of old clothes drives the development of CBMs. Enterprises have already recognised the fact that consumers are increasingly seeing that their choices may have an impact on the environment. Therefore, enterprises begin to look at what customers buy, and VTR does the same or even more than other enterprises, thanks to a professional marketing team (e.g., [55,56]). Customers are aware that second-hand shops exist and have now overcome changes in the above-mentioned behaviour. Of course, second-hand clothing resale practices have always existed. People have long been selling second-hand clothes at flea markets or in second-hand stores. However, this “R-activity” offered by VTR is booming today. More and more buyers, as the awareness of the negative impact of disposable culture grows, begin to understand that fast fashion has little to do with sustainable development. They start to make choices guided not only by their own style, but also by environmental and social values. Therefore, slow fashion business models, such as a re-sale model (longer use of clothes) used by VTR, reflect a fundamental shift in customers’ thinking and subsequent purchasing decisions. Consumers buying recycled clothes create a trend against fast fashion, which may limit the fast fashion industry, or at least its impact on the environment. Thus, social expectations are another factor driving the development of CBMs. However, according to Masi et al. [20] business practices related to green purchasing and customer cooperation are still not very widespread. Eco-design and in-house environmental management practices have a medium level of implementation.

4.2. Drivers: Organisational Environment

According to business arguments, apart from external pressure (legislative changes, customers’ environmental and social awareness), changes in the internal environment of the enterprise, including those in the technological area, motivate VTR to re-design business models as well.

The respondent further argued that changes in VTR’s business models are currently driven by the creation of modern business and technological solutions, which at the same time are an example of VTR’s conscious operation taking corporate social responsibility and a circular economy into account: *“Technological changes related to digitisation, automation, but also other alternative methods of using waste, which directly translate into business models, because they create new business opportunities. This is a space for research and development, for new technologies. R&D is here”.* While discussing the future, the interviewee emphasises the role of new recycling technologies (e.g., [57]) along with sorting technologies (e.g., [53]) and the construction of installations for the pyrolysis of the discards from sorting processes, which are to respond to market challenges. Respondent explained this challenge: *“It takes energy to turn it [textile waste—authors’ explanation] into a composite. In this approach, I will have my own power station in the form of pyrolysis. I will generate energy that will cover my composite needs. (. . .) But there are a lot of technical problems to be solved, but this is what we are here for to solve. (. . .) It is a project that is thoroughly researched. (. . .) This is the concept and it shows how it changes the structure of the enterprise. Well, circular economy generates R&D costs, it is absolutely a cost item”.* It is also worth mentioning that the technological transformation, which generates new business opportunities, is also emphasised by the European Commission in the study entitled “Circular Economy Perspectives in the EU Textile Sector” [58]. “R-activities” undertaken by VTR fit into this perspective.

In sum, the regulations at the European level and, by analogy, national regulations, social and environmental awareness of consumers towards sustainable development, “consumers’ social and environmental awareness and attitudes towards sustainability”, as well as product (i.e., innovative textile composites made of recycled textiles) and process

(development and implementation of more sustainable methods of using textile waste) innovations based on, for example, digital technologies or materials engineering create a set of main drivers of circular practices in this enterprise, which push it to change its business models. Teece [59] also draws attention to the relationship between technological innovations and a business model, and stated that product or process innovation based on new technologies is often not effective without the appropriate adjustment of the business model. Therefore, VTR's activities in this area confirm the findings of Teece [59], because the implementation of new methods and technologies for the management of textile waste less harmful to the environment and most desirable by VTR is associated with the change of existing business models.

The respondent's above statements also reveal the very high cognitive ability of top managers, which contributes to understanding the value of the potential of new business models. This observation is very important. The mere fact that an enterprise has dynamic capabilities does not guarantee its success. The use of dynamic abilities is intentional, just like in the case of VTR. Although dynamic capabilities are embedded in VTR, the ability to assess and determine changes in resource configuration is already on the shoulders of top managers, including our interviewee. Dynamic capabilities are therefore a tool that top managers may use to manipulate the enterprise's existing resources and operational capabilities, and re-group them in order to create new configurations in response to the challenges of a changing market. As such, other very important enhancing factors for changes in circular models of second-hand clothing reuse and textile recycling are managerial capabilities.

4.3. Barriers: External Environment

This study also provides an overview of the factors which were preventing the top management from changing business models. The three most important of them have been described in detail. The first barrier mentioned by the respondent is the large scale of business which in crisis situations requires top management to solve many times more and more complex decision-making problems in various dimensions, such as suppliers, customers, employees, revenues and costs, than required by a small scale of business. One of the crisis situations took place in Poland on 13 March 2020 when, by means of the Regulation of the Minister of Health, an epidemic threat had been introduced in the territory of the Republic of Poland, covering the period from 14 March 2020 until the state was recalled [60], which caused serious disruptions in the activities of the surveyed enterprise. The scale of the VTR's business, previously well-established in terms of infrastructure, people and processes, required at that time a thorough and at the same time quick analysis of its various aspects, and the creation of an action plan aimed at making the enterprise's operation more flexible in the conditions of turbulent changes in the environment. Of course, the introduced changes are covered not only by VTR, but also by the ecosystem in which VTR is embedded. The respondent expressed it in these words: *"The first factor is the scale of an enterprise. (. . .) When we run over 40 stores directly across Poland, medium-sized and large-area stores, it is not simple anymore [managing such a business—author's explanations]. For example, such a problem as changing the size of store is of great importance (. . .) At over 40—it is [i.e., changing the size of stores, termination of contracts, changes in the work schedule—author's explanations] "n" times more difficult. It is not 10 times more difficult, but many times more difficult, that is the scale of the enterprise is a limiting factor. Just like in every area of activity"*. According to the respondent, a serious obstacle to changes towards more circular activities is the complexity of the chain of cooperating business partners in connection with the large scale of business.

Problems in managing a large retail chain appeared in a crisis situation, because the introduced business bans in connection with the SARS-CoV-2 coronavirus pandemic also affected the VIVE Profit chain of stores. They lost their capacity to function from day to day. In the short term, this was associated with a huge drop in their revenues and thus difficulties in meeting their liabilities (e.g., [61]). As the epidemic progressed, the

number of bans and restrictions on their activities grew (i.e., limited number of customers served in a store) (see: [60]). The introduced restrictions caused by the COVID-19 pandemic situation also delayed the implementation of planned projects to change the business models of the VIVE Profit chain of stores throughout Poland. The respondent explained this situation in these words: *“The events were crazy. After total closure, the shipment was suddenly unblocked and left overnight. Stores could trade and then suddenly could not trade. The first lockdowns completely ploughed Poland (. . .). And all this resulted in: stores opening, stores closing, limiting the number of people in the store, then closing stores again, opening stores again. All this had a significant impact on the current work, but also on the operating costs. This also destroyed the stability, and thus threatened the implementation of the change projects being under implementation, because then all the efforts and resources went to support the enterprise and make it more flexible in this respect, which nobody planned to make more flexible”*. As may be seen, unprecedented events influenced the need to re-think the enterprise’s supply chain in terms of resistance to various types of variability, not only those in the past, but also these which would be in the future. Therefore, the supply chain would be created with flexibility in mind, as emphasised by the respondent, so that it may guide VTR through the following bigger/smaller disruptions in the supply chain. This would be in line with the suggestion Sarkis [62] that a crisis is a difficult and at the same time inspiring challenge for managers, because there are opportunities to improve the enterprise, for which there would be no will of stakeholders under normal conditions, including sufficient mobilisation of managers’ attention for such changes.

During the COVID-19 pandemic, the enterprise was also unable to continue production activities in the short term. The production lines were closed until 10 April 2020. Workers’ health and safety were a major concern. When VTR was able to continue its activity, limiting the possible transmission of coronavirus among workers in the workplace became a key challenge. VTR has implemented safety measures to protect its employees from infections or to prevent the spread of coronavirus by limiting physical interactions during work and introducing enhanced sanitation measures, among others.

As mentioned above, the disruptions caused by the COVID-19 pandemic had negative effects in the area of manufacturing activities, such as that when the enterprise was suffering from severe obstacles to its operations, including supply chain disruptions caused by problems with smooth border crossing (see: Appendix A, Table A2, ID.1).

It may be said that during the unprecedented COVID-19 pandemic, the conditions of the market game changed significantly and abruptly. As a result, the main source of costs in the enterprise, in accordance with the above findings, was the maintenance of downtime in production. Maintaining a reserve of resources (personnel, machinery, equipment, buildings) related to adapting to changes in the environment caused by the introduction of the above-mentioned sanitary cordons at the border generated costs for the recipient, i.e., VTR in this case.

These recent developments have shown that management may begin to consider over-reliance on Just-in-Time (JIT). The weaknesses of the JIT supply chain model which even led to a global logistics bottleneck were revealed: *“The pandemic has also made our logistics systems very difficult for us (. . .). Shipments and cost of shipment, that is unintentional situations, but such on a macro scale. This pandemic really hit us, but not only us . . . ”* As may be seen, the COVID-19 pandemic has changed the business world in an unprecedented way. Enterprises applying Just-in-Time strategies, just like VTR, were drastically affected by forces beyond their control. These enterprises had an increased susceptibility to external disruptions. For this reason, management had to develop strategies to deal with these short-term discontinuities and considerable uncertainty in order to survive.

Although the effects of the global COVID-19 pandemic are fully noticeable in the minds of the top management team, this is not the first major event to cause significant disruptions to the VTR’s supply chain. A public holiday on the occasion of the 100th anniversary of regaining independence by the Republic of Poland on 12 November 2018 [51] was another event that also posed a logistical challenge (see: Appendix A, Table A2, ID.2).

This shows that disruptions have always (i.e., before, during the pandemic and thereafter) been part of supply chain management. However, the last crisis situation was even more unpredictable than the previous ones. As a result, the Just-in-Time supply chain models became a burden, not only for VTR, as the effects crossed the organisational boundaries of VTR and affected other stakeholders (i.e., suppliers, customers) of the circular ecosystem [5]. Thus, the dynamic and unpredictable business environment and global exposure of VTR show that there is an urgent need to re-think supply chain models to better reflect today's realities.

4.4. Barriers: Organisational Environment

What is more, the respondent indicated that another factor which slows down changes in business models is significant geographic diversification of sales markets: *"A very large variety of markets we work with. If my target market is one market and I know it perfectly well, then I adapt to it, predict it, react to it. And if my target markets are many different markets such as the Western Europe, Poland as well as Russia, Kazakhstan, or even further markets such as Pakistan, South America, Africa, then we come to a situation in which I have many markets and there is no economic justification for knowing them so deeply [markets—authors' explanation]. I am not able to know all of these markets so thoroughly and simultaneously. It is very hard to have several irons in the fire, that is, to have one level of quality for Western markets, because there is higher quality required, another level of quality for Polish stores and another level of quality for Kazakhstan, and yet another level of quality for export to India. It is simply so difficult. Although having the knowledge of this weakness and despite this awareness, it is difficult to find a solution to this problem, so that it would be obviously economical and would also involve access to such staff that would be able to crack it on. Theoretically, it is all possible to be cracked on, but it is not simple"*. The respondent's statement indicates that export is the form of foreign expansion which allows VTR to use the potential of foreign markets. However, these markets are very different from each other (e.g., [32]). Sale of products for the above-mentioned geographically distant markets causes VTR to experience problems due to uncertainty, which in this case is equated with an information gap resulting from, among other things, large geographical distance between contractors, fluctuations in the economic situation, different needs of customers. Therefore, a big challenge for an enterprise which offers products practically all over the world is to match the offer to local needs.

The third important inhibiting factor of change in BMs in an enterprise which constantly improves its product offer and discovers completely new paths of business development (VTR often operates outside the beaten path and behavioural patterns) is the readiness to take the so-called "being the first on the market" risk. In the case of such innovative products as textile composites (e.g., [63,64]), new recycling technologies along with sorting technologies i.e., [65], or the construction of a textile waste pyrolysis installation (a case of large-scale production volume in the textile recycling sector), there are no well-trodden paths for the enterprise's development. VTR has to work out all this from scratch and each investment involves some risks. They are examples of courage in action which allow for undertaking and consistent implementation of entrepreneurial ventures despite the natural risk in such situations.

This study documents that risk is always present in business and includes both negative and positive effects of events. For example, "being the first on the market" gives the chance to reach for the "Schumpeter's pension", i.e., the "priority rent in the market", the "candy" as called by the respondent. However, it is burdened at the same time with "entry costs" (i.e., technology and R&D expenditures) which do not have to be borne by subsequent players entering the market. As a consequence, it may mean that the competitor's product or technology would be much cheaper. Because the competitor, by analysing an already functioning market, is able to better develop a product or technology. The respondent told about it in these words: *"Well, that is the problem, but we also think it has some advantages. So, we are looking at the market where we are the pioneer in most cases. Especially in Poland. And generally, in this part of Europe. And this is, on the one hand, the*

<<first advantage>>, and it is OK, but on the other hand, we are the <<first in costs>>". Well, the enterprise which is the first, then it goes through this minefield; when it crosses this minefield, it is the first for the <<candy>> which is there. (. . .) but it also bears all these risks and costs. And it is not just about the risks associated with a sudden entry with a new technology or a new model. It is not just that this particular process or technology will not work. In developing new activities, the path towards them itself is equally important. And being the first, I risk that this path will also fail, apart from the technology itself".

These studies and the existing literature [27,37,44,66] clearly show that innovations may be commercialised in different ways, which means that an identical innovation commercialised in different ways is likely to bring two different results. The commercialisation of technology includes not only the physical implementation of technological changes, changes in hardware resources, and finally changes in production processes. It also includes a number of additional factors—sometimes equally costly—related to communication with the market, marketing message, or even educating the market itself. A number of commercialisations do not bring the intended business results, not because they did not have the potential, but they were burdened with enormous costs of education, transforming the target market, etc. Costs that imitators bear only a fraction of the original outlay. The commercialisation paths chosen by enterprises may be highly diversified, despite the fact that they are based on a similar technological potential or a similar optimisation of processes. The absorbed financial resources may or may not be returned. It means that the BMs do not represent a single objective value. Innovative BMs rather develop from commercialisation possibilities which are realised by a unique setup [67]. Our findings confirm the views of Chesbrough [37] and Breier et al. [44] who claim that BMs are necessary for enterprises and require constant improvements and adjustments. Therefore, it would be desirable for top managers to see the potential for improvements and adjustments [66,68].

Based on the results of this study, it may be concluded that experimenting and trying out different ways of implementing BMs to achieve enterprise's goals requires the effort and attention of different members of this organisation [66], including additional interaction and collaboration between managers and individuals at different levels and from different units in the enterprise [22,45], who may distract managers from matters important to the enterprise. Because some issues, tasks or domains (creating value or delivering value or capturing value) attract more attention or priority than others [66,69,70]. The respondent highlighted these issues as follows: *"And if I am doing this, that is implementing an innovation, as the first one on the market, I have a lot of additional communication with the staff and people. Lots of extra thinking, many such side roads where you can go astray and they can turn out to be dead ends. A lot of the enterprise's energy can be absorbed in this way, which means that the focus of the enterprise starts to fade a little. (. . .) When, just like in our case, we are the first. Everybody says that being the first is so great but forgets about the high costs of not only the potential risk, but also organisational distraction carried by "being the first". How easy it is to get lost, how easy it is to confuse goals. And to get bogged down in some minor topics"* (see more: Appendix A, Table A2, ID.3).

The study also found that "being the first" involves making improvements to an enterprise, which may reduce its operational efficiency before improving it in the initial period. As Obłój [71] (pp. 103–104) claims, there is no simple solution to this problem, which often appears in management practice as an "either-or" dilemma, while it must be perceived as an "and-and" necessity. The enterprise's successes cannot be postponed until an undefined future. The enterprise must be successful both now and in the future. Therefore, one of the key issues is the dilemma of how to build the enterprise's future without sacrificing the enterprise' current performance.

In sum, large-scale business in crisis situations, a large scope and range of geographic diversification of outlets in the perspective of the consequences of the information gap, and the readiness to take the "being the first in the market" risk (lower level of this readiness in relation to that required by a given situation) may be those factors which inhibit the enterprise from implementing changes in business models.

5. Discussion

5.1. Drivers to CBMs

This study is part of the ongoing broad discussion on the antecedents of business models by highlighting enhancing and inhibiting factors. Business models are not static; they are dynamic [66,72] and their role is strategically important [44]. The literature studies indicate that the business model takes shape through experimentation, which may vary depending on organisations and competitive environments [68,73]. Therefore, the development of a business model requires constant changes, adaptation, experimentation, and thus the constant attention of managers [74]. In this context, the enhancing factors create the need to change and further support the development of BMs, which may result in new prospects and profit potential for enterprises which seize the opportunity for change.

However, it should be borne in mind that changing existing business models may put the enterprise's actual business model at risk, and enterprises may hesitate to change and thus leave too many activities unchanged. Changing value creation, value proposition and value capture may not be radical enough. As a consequence, future development and changes to the business model may be too limited [66]. In order to increase the chances of success of the new, alternative business model, it should be adequately supported by managers [68,75] who saw the potential for improvement.

The main factors enhancing and inhibiting changes in the existing CBMs in VTR were identified through interviews. The set of main driving factors for the development of CBMs in VTR includes relevant regulations at the European level, appropriate technologies and digitisation, and increasing social and environmental awareness of consumers and managerial capabilities. Table 1 shows the categories of drivers explored in this study.

Table 1. Drivers and barriers to CBMs.

| Driver Category | Description |
|----------------------------|---|
| Organizational environment | <ul style="list-style-type: none"> • Managerial capabilities • Appropriate technologies and digitisation (an enterprise itself creates and implements new, more ecological and efficient technological solutions in the field of reuse and recycling as well as related to the enterprise's digitisation) |
| External environment | <ul style="list-style-type: none"> • Relevant regulations at the European level • Increasing social and environmental awareness of consumers |
| Barrier category | Description |
| Organizational environment | <ul style="list-style-type: none"> • Readiness to take the "being the first in the market" risk • A large scope and range of geographic diversification of outlets in the perspective of the consequences of the information gap |
| External environment | <ul style="list-style-type: none"> • Supply chain complexity and supply chain collaboration in connection with a large scale of business in crisis situations |

Source: own study.

These factors may inspire or underpin new and developed business models in enterprises in the textile recycling sector. They may influence enterprise's decisions, among other things, to move up the tiers of the "textile waste management hierarchy" [76], which have long-term implications and require changes to existing business models. For example, changes made to whether the alternative fuel is a fully functional product or a waste see: [34,76]. In this context, the dynamically changing societal temporal construction of

the concept of “waste” will strongly influence the perception and management of material resources in the design of CBMs [25].

Lewandowski [77] in his research argues that implementing the principles of circular economy often requires new visions and strategies as well as a fundamental redesign of product concepts, service offers and channels towards long-life solutions. It is worth emphasising that technological and business ideas have economic value only when they are commercialised through the enterprise’s business model. In this respect, technology and innovation alone have no measurable economic value [75]. Chesbrough [78] even claims that “a better BM often will beat a better idea or technology” [75].

Thus, the ways in which enterprises successfully implement new technologies or other innovations are largely related to its CBMs.

In addition, it should be added that enterprises should pay great attention to digitisation, taking advantage of opportunities in technology, processes and markets. Digital technologies may currently take various forms, including e-platforms (i.e., B2B online store, B2B wholesale platform) see more: [50], or the development of systems automating processes based on the so-called artificial intelligence and deep machine learning algorithms. It was indicated that digital technologies are the basis of digitisation in an enterprise. Based on the suggestions by Bouncken et al. [66], the advances in digital technology would require enterprises to develop and implement a wide range of digital activities (i.e., improved or new internal processes and within their supply chains and environment) in business models. Enterprises should therefore consider appropriate and perhaps develop new business models in digitisation. However, as suggested by Reim et al. [79] it is important not to choose an overly ambitious business model where the risk of failure is high. Rather, the enterprise should strive for the gradual development of a given business model.

Further research provides evidence that the growing segment of ecologically and socially minded individual and institutional customers in recent years is also putting pressure on the introduction of business models to support them. For this reason, enterprises verify their business models from time to time. The example of the VIVE Profit retail chain shows that after the COVID-19 pandemic, the second-hand market is undergoing a revolution. Small and local second-hand shops are disappearing, and large-scale networks and e-sales platforms with second-hand clothes are growing.

These research findings are in line with recent evidence provided by Mostaghela and Chirumallab [5] who claim that the retail sector is evolving not only as a result of technological advances, but also due to crisis situations as well as governments and customers’ new requirements for ethical and sustainable products.

Currently, without focusing on an organisation’s customers, any strategy will eventually fail in a competitive environment [80]. According to Jansson et al. [80], customer focus is the degree to which an organisation views its purpose as creating satisfied customers and the extent to which the organisation puts a customer first. Thus, the enterprise’s main goal must be the satisfaction of its current and future customers. In this case, the enterprise guided by social responsibility strives to achieve environmental and social goals which go beyond the legal requirements, and thus commits itself to achieving better environmental performance. Environmental impacts need to be integrated into the global process of enhancing productivity and competitiveness [81].

5.2. Barriers to CBMs

Our research also broadens the existing knowledge about the factors inhibiting enterprises from introducing changes in business models. These factors include: supply chain complexity and supply chain collaboration in connection with a large scale of business in crisis situations, a large scope and range of geographic diversification of outlets in the perspective of the consequences of the information gap, and the readiness to take the “being the first in the market” risk. Table 1 shows the categories of barriers explored in this study.

This study revealed that the enterprise has faced, for the first time since its thirty-year international operation, a serious threat to its supply, failure to meet its delivery

times and operational efficiency in an uncertain environment. Recent disruptions have demonstrated the dangers of the supply chain built around JIT strategies, which have become serious problems, not only from an organisational, but also inter-organisational points of view. VTR and other enterprises from this sector suddenly needed appropriate mechanisms to fix themselves, i.e., ones which would correspond to the challenges of the modern world. This would be in line with the findings by Ritter and Pedersen [82] who emphasise that the COVID-19 crisis is going to affect established business models (BMs). These insights therefore contribute to the debate on the pros and cons of highly coordinated global manufacturing supply chains.

During this serious crisis, other important weaknesses in the enterprise's operations were also revealed, such as preparation for disasters, or the organisation and conditions of working in executive positions, taking the new ad hoc rules and regulations on hygiene as well as social distancing into account. This required the implementation of new ways of arranging the enterprise's operations.

Building on the results of this study, lockdown has contributed to changing the way business in the textile recycling sector may be conducted in the future. Crises have one important feature, namely, they provide an excellent "cover-up" and are an excellent motivating factor, an ideal element of permission for change. If there were no crises, organisations would be less active. Crises serve to renew organisations and accelerate changes. This is perfectly illustrated by the metaphor—"Sequoias like fires because then their bark bursts and they can grow larger" [83] (p. 190).

Moreover, Meyer et al. [84,85] (p. 93) described the pandemic environment in which the VTR was operating: "From time to time, organizational environments undergo cataclysmic upheavals—changes so sudden and extensive that they alter the trajectories of entire industries, overwhelm the adaptive capacities of resilient organizations, and surpass the comprehension of seasoned managers".

However, according to Obłój [71] (p. 93), managers consistently make mistakes and may do so. Therefore, it is obvious that organisations would fall into periodic crises because they are too complex systems to be fully steered and controlled, no matter what illusion of control supervisory boards and managers want to maintain [71]. At the same time, the way in which leaders intend to balance solutions for creativity and product innovation with administrative solutions, such as risk management and management control, is important [86].

The respondent expressed a similar opinion in the above quotations, pointing not only to the very issues of the risk of these mistakes and difficulties in management, but also to the risk of losing the enterprise's focus on achieving goals and paying too much attention to solve smaller problems.

Koźmiński [83] (pp. 197–198), in turn, argues that cognitive limitations concern the recognition of operating conditions by managers and are obviously related to a lack of competences. He emphasises that it is a sin not to recognise crisis symptoms, conflicts and an excess of polemics and debates. Moreover, he claims that they should give top management food for thought, and are often ignored or misinterpreted, too hastily and superficially interpreted. In his opinion: "(. . .) it is a mistake to try to implement difficult, ambitious plans too early or too late, in unfavourable conditions".

Concluding that the ability to properly read and understand the situation of an organisation is extremely important. Thus, this managerial skill is very important in making decisions. At the same time, according to Obłój [71] (pp. 96–97), every more important decision is made in the conditions of incomplete information; otherwise, there is no problem of choice and decision at all. In his opinion, the key mental problem of managers is the acceptance of uncertainty.

This quantum discontinuous change described by Meyer et al. [84], now caused by the unprecedented COVID-19 pandemic, also required a response from VTR. Top management at VTR has developed strategies to deal with short-term discontinuities and significant

uncertainty by making significant changes to components and/or their configurations in the existing CBMs. These solutions enabled the enterprise to overcome the crisis.

However, bearing in mind the earlier suggestions of North [87] concerning a new equilibrium, it continues to change after such a serious disturbance. If so, according to Hitt et al. [85], even after the COVID-19 pandemic, long-term strategic changes may be needed to ensure that enterprises in many industrial activities, and VTR is among them, may operate in the newly created competitive environment resulting from technological, social, political, and institutional changes [88] which resemble the causes of environmental shocks explained by Meyer et al. [84].

These factors influence an enterprise's decisions when it comes to creating new ideas [27]. It has been emphasised in the management literature that enterprises need to identify or get ideas for new BMs even outside their boundaries (e.g., [44,89,90]), which are burdened with a high degree of risk [27]. Simply, enterprises have to take risks to increase the likelihood not so much of survival as of growth and success [71]. However, this risk must be handled by the enterprise's ability to take it.

In sum, VTR's product life extension and recycling models faced supply chain and market challenges. The findings of Wrålsen et al. [13] are identical as he argued that circular supply business models are mainly threatened by the supply chain and market barriers. Identification of these challenges is an indication for decision-makers and politicians in the search for solutions in the area of regulation and appropriate support for entrepreneurs in the face of crisis situations or the requirement of effectiveness of a specific "R-activity".

The above considerations are summarised in Table 1. Enhancing and inhibiting factors for the development of circular models of second-hand clothing reuse and textile recycling in VTR are grouped according to two categories as to their origins: internal and external to an organisation. Previously, similar categories were proposed by Galvão et al. [10] for the grouping barriers to CMBs. This division was also used for drivers to CBMs.

Our research findings indicate that implementing of circular actions in an organisation is largely dependent on regulations, especially at the European level, and increasing social and environmental awareness of consumers, i.e., on factors included in the external environment in which the enterprise operates. This suggests that the previously described wholesale and retail of second-hand clothing is evolving not only as a result of the digitisation of commerce (i.e., e-platforms: B2B online store, B2B wholesale platform) (see more: [50]), but also due to new government and customers' requirements for ethical and sustainable products. Social and environmental awareness of consumers and proper legal regulations are crucial for the successful implementation of circular business models. However, few studies focus on the role of customers in enabling circular business models [5].

Organisational factors such as the capabilities of the management team responsible for developing and implementing CBMs are also of great importance. It is believed that these capabilities help VTR to overcome obstacles on its way to change. In addition, the developed and used technologies for recycling textile waste, better in terms of the environment, which allow to obtain textile composites (i.e., composite board) with better properties and their recycling uses less and less energy, and in the near future the discards from sorting textile waste processes (the so-called waste which does not meet the prescribed recycling requirements) are an equally important factor facilitating the sustainable development of CBMs. Other recent studies have also recognised the role of technology in business models based on the reuse and recycling of waste materials [91]. This indicates that enhancing factors create a need to change and further support a CBMs (Figure 2).

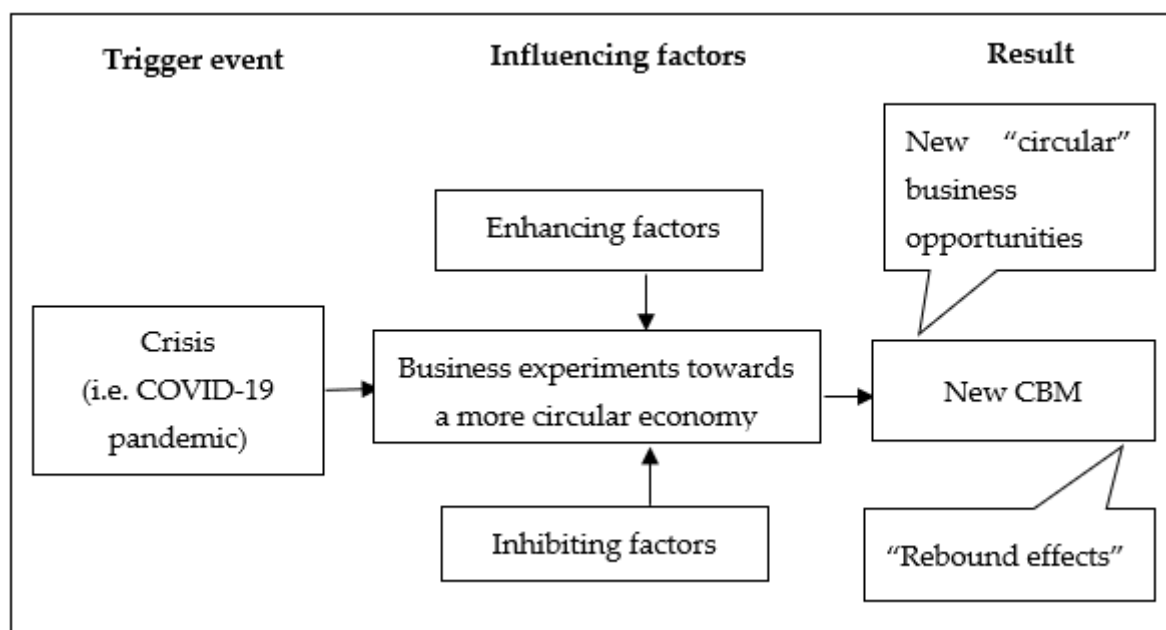


Figure 2. Crisis—New CBM relationship model in the context of influencing factors. Source: own elaboration.

On the other hand, the reported barriers seem to originate from the internal limitations experienced by an organisation, such as the readiness to take the “being the first in the market” risk, a large scope and range of geographic diversification of outlets in the perspective of the consequences of the information gap; on issues external to organization, such as supply chain complexity and supply chain collaboration in connection with a large scale of business in crisis situations. According to the respondent’s statements, VTR faces these challenges as temporary problems to be overcome. Nevertheless, these barriers may delay the achievement of higher levels circularity (Figure 2).

The so-called drivers and barriers to CBMs discovered by us will complement or exemplify those previously identified by other researchers (e.g., [5,9,10,43,91]). Therefore, our findings contribute to the ongoing discussion on circular business models by expanding the existing knowledge base in this field. Our theoretical research contribution is to deepen our understanding of drivers and barriers and their links to the development of CBMs.

However, it is worth emphasizing that CBMs might not be more environmentally sustainable. Perceived savings from circularity can sometimes lead to rebound effects by increasing consumption of other resources. Business experiments conducted by companies that may have started out as “circular” or sustainable, could either create new “circular” business opportunities, or move them towards linearity through unintended “rebound effects” [12]. The above discussion is summarised by the conceptual model presented in Figure 1.

On the basis of presented findings, the crisis—New CBM relationship model for the textile recycling sector, is proposed (Figure 2). The model comprises the results and shows that a crisis can be a trigger event [44,82,83] to start changes in established circular models of second-hand clothing reuse and textile recycling, through business experiments towards a more circular economy, which can help firms that are shut down to create new CBMs and open up again. This overall finding is consistent with recent evidence provided by Kraus et al. [27] in a cross-industry context from various European countries, that the role of new BMs may be even more strategically important in the context of the crisis. While individual enterprises adjust BMs only temporarily to maintain liquidity, it turns out that a new business model innovation (BMI)—initiated in response to the crisis—may also have long-term consequences. In other words, the crisis may result in new prospects and profit potential for enterprises which seize the opportunity for change.

6. Conclusions and Practical Implications

The textile recycling industry is one of those industries which may benefit economically from efforts for CE, that is they aim to address the challenges not only of resource scarcity but also of waste disposal in a win–win approach with an economic and value-added perspective. This means that enterprises in this sector, by thinking more specifically about promoting sustainable development, may want to engage in CBMs.

The carried out analysis of data collected directly from the top manager during interviews in conjunction with secondary data provides a unique, credible and valuable justification for the formulated practical implications, which may be of a great interest to a broad interdisciplinary audience. Therefore, major factors discovered which enhance and inhibit the development of circular models of second-hand clothing reuse and textile recycling may be the subject of intervention or support of business managers, practitioners, consultants and policy makers, as well as academics by minimising the negative impact of post-consumer textile waste on the environment.

For instance, top management of enterprises with Just-in-Time (JIT) supply chain models should be aware of the potential long-term implications for supply chains in the post-COVID-19 world. Given the uncertainty surrounding the consequences of the SARS-CoV-2 coronavirus, it is theorised that it is worth re-thinking supply chains for resilience to various types of variability in the competitive landscape. To the best of our knowledge, this would build greater long-term resilience of enterprises to the crisis and increase the chances of success. If top management develops a new standard, it should be associated with a better understanding of risk so that risk management stops the destruction of supply chains caused by crisis situations. Thus, insisting on JIT supply chain models may not be the best way to go. It is worth considering that several stakeholders need to work together to strengthen drivers and overcome barriers to retrieve values from used clothing.

In addition, thinking about the circular business model is ecosystem-oriented, not a central enterprise, should be taken into account. CBM in fact functions at the level of other ecosystem participants, which can be both B2B enterprises (i.e., suppliers, wholesalers, retailers) and private individuals who are end users in the B2C market. This means that changes in the circular business model may require changes at the system level, i.e., they should take cooperation with external partners into account. After all, a business organisation is part of a larger ecosystem. Therefore, the above suggestions for solutions to the problems of strategic cooperation with partners in the supply chain built around JITs in crisis situations provide, at the same time, new information to the literature.

Moreover, the closure of VIVE Profit physical stores proved that running an on-line business has become not only a good practice, but a necessity to maintain operational efficiency. Thanks to increasing numbers of buyers in the on-line space, these stores may be better at reaching their target groups, and thus the risk of failure would be relatively lower in the event of a pandemic that may be still observed. Therefore, today's best practice in the trading industry is the e-commerce model, or hybrid business models.

Based on the respondent's statements, the view that new technologies open the door to many business models used in the recycling industry is highlighted. Osterwalder et al. [92] also state in their study that managers analyse the adequacy of the current business model to environmental pressures and design a new business model.

Due to the emergence of these new technologies and the invention of new products (i.e., textile composites), BMs in enterprises in the textile recycling sector may have to be improved or changed to new ones. According to Osterwalder et al. [92], new business models may become the goal to be achieved and may guide planning, change, and reaction. In this context, understanding the enterprise's business model may facilitate and rationalise the choice of infrastructure. This suggestion also applies to the integration of digital technologies and their use in new business models. This may require managers to engage in digital transformation and the digitisation of business models. Bouncken et al. [66] have recently found that enterprises may already apply digital technologies to improved or innovative internal and external processes and integrate them into new business models.

At the same time, it is important to foresee the potential environmental impact of new business models at an early stage in order to maximise their impact reduction potential. To do this, the organization must give a senior manager the resources and authority to define and launch business-model experiments [78].

From a practical point of view, this article also aims to deepen understanding of how policy makers can facilitate the development of CBMs in the textile recycling sector. Our findings are consistent with the evidence of Evans et al. [45], Ranta et al. [38] and Galvão et al. [10] who recognise that policy may have an impact at the individual enterprise level as well as at the broader level of the industrial system by appropriately modifying stakeholder's behaviour through appropriate policy interventions such as: regulation, legislation, taxation, education, and incentives. For instance, Galvão et al. [10] suggest that tax incentives are needed to help enterprises to invest more in circularity.

Thus, the contribution of this study to the theory of crisis management, supply chain management, to the emerging CBM literature as well as the implications for practice indicate that the studies on the development of CBMs in the textile recycling industry are empirically important in this industry.

7. Limitations and Future Studies

This study has some limitations that should be taken into account when interpreting its results. Firstly, a case where the enterprise is actively working on the development of its CBMs offer was chosen, and insights from its 30 years of experience were obtained. These observations, however, are limited to a large Polish enterprise dealing in second-hand clothing reuse and textile recycling into innovative textile composites used in industry (i.e., construction industry) on a global scale. Thus, adopting a broader case selection would provide scope for better cross-case analysis.

Secondly, research results based on the subjective assessment of the respondent should be treated with caution. Case study does not allow for an empirical generalisation in probabilistic or deterministic terms [44]. Therefore, presented results should be treated as ideas that provide reasonable expectations for similar results in other cases of enterprises dealing with reusing and/or textile recycling and which may be confirmed or falsified by future quantitative research.

Therefore, future research could conduct further empirical studies to validate or extend the present study findings through quantitative analysis. Thus, this article may be seen as the basis for further research.

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Appendix A

Table A1. Interview guides.

| Context | Interview Question |
|-----------------------|--|
| Introduction question | How long have you been working for company X and what is your current position? |
| | How do you understand the concept of circular economy /sustainable development? |
| | Has your enterprise take any actions which are aligned with circular economy/sustainability development? What are these activities? |
| | What business model does your enterprise use? |
| | How does your enterprise confront the business model with reality and verify the assumptions on which it is based? |
| | What are your enterprise's plans to continue investing in circular economy/sustainable development? |
| Context for RQ1 | What, in your opinion, mainly enhances your enterprise to implement new circular processes and products? Could you explain it? |
| | What do you think will be the future opportunities for your enterprise? |
| | What, in your opinion, determines the success in implementing new circular processes and products? Could you explain it? |
| Context for RQ2 | What, in your opinion, mainly inhibits your enterprise from implementing new circular processes and products? Could you explain it? |
| | What do you think will be the future threats for your enterprise and the consequences of them? |

Table A2. List of selected full responses of the Respondent.

| Respondent's Response ID | Respondent's Full Response |
|--------------------------|--|
| 1 | <p>"Those events were a limiting factor. Actually, we are still being affected by their consequences. Our raw material shipments suddenly got stuck at the borders. We were totally swept off by the pandemic. All our development plans were put into question. The pandemic caused a huge scale of damage to us. That is, not the pandemic as such, but an uncoordinated government response to it. The biggest problems were lockdowns being introduced practically overnight, minute by minute, in a way which had been impossible to predict before. Basically, it was done without any communication with the market. For example, in the initial period, there was no formal lockdown in Poland, but the introduction of the so-called sanitary cordons at the border made our lorries, that is our suppliers got stuck for 4–5 days. We have a plant which has to receive 40 lorries every day. Every day. And it cannot receive more than 40 lorries. Because if we received 100 lorries, extra 60 lorries would block Kielce [Kielce—a Polish city in the central part of the country, where the VTR's manufacturing plant is located—authors' explanation], because they would block all those streets around. Am I right? In our plant, one lorry arrives and another one leaves. All the time. Collection and shipping all the time. And then suddenly all such shipment got stuck at the border. This means that two thousand people did not get raw material to work and no one planned it. Not to mentions the costs."</p> |

Table A2. Cont.

| Respondent's Response ID | Respondent's Full Response |
|--------------------------|--|
| 2 | <p>“Such an example, introducing 12 November as a day off from work cost us 25 times more than a standard Sunday costs us. It is also a day off, that is a standard holiday, a standard day off. Why? Because this 12 November was introduced by law at the last minute just before 12 November. [It is about an additional day off related to 11 November, i.e., the Polish National Independence Day. It was on 12 November, based on the Polish Parliament’s act in connection with the 100th anniversary of regaining independence by the Republic of Poland in 2018.—authors’ explanation] While our foreign partners had already sent us shipments and expected those shipments from us under the concluded contracts. And suddenly we said that we would not receive the shipment, because we were not allowed to do that and we could not send an employee on a non-working day as overtime to receive that shipment, because it was a holiday. We had to explain them that they could not drive lorries around Poland on holidays (. . .). A day off from work bears all these consequences. Our partners did not understand why this was happening. How was it possible that suddenly there was a holiday which had not been included in the production plans? It should be understood that these costs are completely different than when we know that there is a day off. When getting to know of it in advance, such a day is simply taken out of the production schedule. In the production schedule, which we close in January, we inform our contractors about the production plan up to December. Everybody knows when there is a working day and when not, when we work our free days off, but it does not concern only us, everyone does it. In our scale, 40 arriving-leaving lorries each day are booked, contracted, etc.”</p> |
| 3 | <p>A good example is the franchise business model. I go to the nearest Żabka store [Żabka is a chain of convenience stores in Poland based on the franchise business model.—authors’ explanation] and see that such chains as Żabka are successful and replace some local shops. Why? Well, because I can see the way the store is organised, delivery rules, network contracts, etc. I can see that it works. So, I can copy this model, right? Moreover, I can even improve it. But, if I were the first such chain as Żabka in Europe or even in Poland. So, let us assume that we go back in time and there are no such franchises, then please see how many enterprises had tried it and how difficult the issue was. Please see how many of them failed. Developing your own franchise is not as easy as it seems and as many entities thought, even though it seems that the very essence of the franchise is not very innovative. Franchise business models are known to us. I do not know, but they have been on the market for 70 years, at least the mass ones. It seemed that McDonald’s has exploited them to the limit. Since McDonald’s, one could speak of an actual franchise factory. These franchisees manuals are perfected there. And this does not change the fact that if someone has to develop a new franchise, it turns out to be not as simple as it might be, although having all these manuals and all this great knowledge. So let us turn this example into the implementation of a completely new technology, new business models.</p> |

Source: own elaboration.

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