

Economy Business Models in the Textile and Clothing Industry: An Exploratory Study

Susana BERNARDINO¹
J. Freitas SANTOS²
Margarida SILVA³

Abstract

Textile and clothing are among the world's most polluting industries. The introduction of the fast fashion concept in the early 1990s and the adoption of these practices by the main players in the market led some companies to change their strategy and adopt circular practices. However, the transition from fast fashion to a more sustainable way of production by introducing circular economy practices requires that companies restructure their existing business models or even design new ones.

The aim of this article is to illustrate the business models adopted by different companies in the textile and clothing sector in the context of the circular economy practices and the extent to which they are striving to ensure sustainability. To this end, the dimensions and components proposed in the Triple Layered Business Model Canvas are used as a reference for collecting evidence from different companies.

The exploratory research is based on a qualitative methodology, relying on semi-structured interviews with managers of six companies in the textile and clothing sector in Portugal that use circular practices. The primary data collection took place between 20 July and 30 September 2022.

The results obtained show that companies have adapted their internal practices and market relationships to the specificities of circular business models. In addition, the research shows the existence of the integration of economic, environmental and social dimensions in the business model of textile and clothing companies.

Keywords: *Business Models, Triple Layered Business Model Canvas, Circular Economy, Textile and Clothing Industry, Portugal.*

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¹ Susana Bernardino, CEOS/ISCAP, Polytechnic of Porto, Portugal, E-mail: susanab@iscap.ipp.pt

² J. Freitas Santos, CEOS/ISCAP, Polytechnic of Porto, Portugal, E-mail: jfsantos@iscap.ipp.pt

³ Margarida Silva, ISCAP, Polytechnic of Porto, Portugal, E-mail: 2200179@iscap.ipp.pt.

1. Introduction

The business model concept became relevant in the academic and business communities in the 1990s (Geissdoerfer et al., 2020). The increase attention to this topic is due to its potential for business innovation, transformation, and optimization in companies that want to maintain or improve their competitive position (Nielsen & Lund, 2014).

Over the last few years, the perception of the concept of business has changed and been expanded. The current understanding of the business model no longer focuses only on the operational activities that enable an organization to create value, but also on a more complex process that explores how value is created and captured by the organization itself in the interaction with the marketplace (Magretta, 2002; Osterwalder & Pigneur, 2010).

In addition, there has been a recognition in recent years that to be successful today, organizations can no longer be solely focused on the economic dimension of their business model (Upwards & Jones, 2016). In fact, changes in consumer behaviour related with environmental and social issues, have led to the need to introduce changes in the way companies operate and design their business models. This situation has intensified the need to (re)configure business models to consider issues such as climate change, resource scarcity, poverty, social inequality and unemployment (Bocken et al., 2014). As a result, new approaches have emerged that add new dimensions to the traditional business models that are now perceived as fundamental, such as the social and environmental dimensions. In these models, the measurement of value is no longer focuses solely on the economic component, but also includes other dimensions, such as the social and environmental ones, which together with the economic dimension contribute to the creation of sustainable value (Evans et al., 2017; Rocha et al., 2020). An example of this is the Triple Layered Business Model Canvas (TLBMC) that integrates three main dimensions of value creation: (i) economic, (ii) environmental; and (iii) social.

Simultaneously, changes in consumer behaviour and environmental concerns have led some companies to move away from the traditional model of linear production and face the environmental challenges by introducing more sustainable circular practices. The objective of these practices is to maintain the value of the product for as long as possible by implementing mechanisms that allow for the reduction, reuse and recycling of all resources involved in the production process (Antikainen & Valkokari, 2016; Rocha et al., 2020).

Textile and clothing are one of the most polluting industries in the world, right after the oil industry. The introduction of the fast fashion concept in the early 1990s (Reinach, 2005; Sull & Turconi, 2008) and the adoption of these practices by the main players in the market (Linden, 2016) led some companies to change their strategy and adopt more sustainable production practices. However, the transition from fast fashion to circular models of production requires that

companies restructure their existing business model or even design new ones (Massa & Tucci, 2013).

The aim of this investigation is to illustrate the circular business models adopted by different companies in the textile and clothing sector in Portugal and the extent to which they are striving to ensure sustainability. To this end, the dimensions and components proposed in the Triple Layered Business Model Canvas are used as a reference for collecting evidence from the companies. More specifically, the following elements were considered: (i) economic dimension: value proposition, customer segment, communication channels, key partnerships, key resources, costs and revenues; (ii) environmental dimension: environmental benefits and impacts; and (iii) social dimension: social benefits and impacts.

The exploratory research is based on a qualitative methodology, relying on semi-structured interviews with managers of six companies in the textile and clothing sector in Portugal that use circular economy practices. The primary data collection took place between 20 July and 30 September 2022.

Considering the proposed research objective, the article will be structured as follows. First, the theoretical framework will be outlined through a review of the literature on business models and business models applied to circular economy practices. Section two presents the research design and methodology. Section three analyses and discusses the findings based on the evidence collected from the different companies. Finally, the main conclusions, limitations and avenues for future research are presented.

2. Theoretical Background

2.1 Business Models

Companies are forced to regularly think and rethink their business models due to ongoing digital transformation, recurring changes in the profile of consumers and markets, and increasing concerns about environmental and social issues.

The concept of the business model gained special relevance in the academic and business communities in the 1990s with the emergence of the Internet and e-business (Geissdoerfer et al., 2020). Their potential and progressive attractiveness triggered a transformation of the business models of companies wishing to maintain their competitive position (Nielsen & Lund, 2014).

Initially, the business model was used only to describe how a company generates revenue through its activities. However, it was quickly recognized that this concept should be extended to other types of value. According to Magretta (2002), business models should not only be concerned how a firm generates revenue, but also seek to answer questions such as "who is the consumer?" or "what is the consumer's value?" (Magretta, 2002). Thus, a company's business model should blend the logic of creating value for the consumer with the most appropriate revenue and cost structure for delivering that value (Teece, 2010).

Taking these principles into account, Osterwalder and Pigneur (2010) provide a broader conceptualization of the business model, stating that it "describes how a company creates, delivers, and captures value" (Osterwalder & Pigneur, 2010, p. 14). According to the authors, companies should build their business model based on a structure consisting of nine fundamental elements: (i) the customer segment; (ii) the distribution channels; (iii) the relationship with the customer; (iv) the value proposition; (v) the key resources; (vi) the key activities; (vii) the key partners; (viii) the cost structure; and (ix) the revenue sources (Osterwalder & Pigneur, 2010).

Although the Business Model Canvas (BMC) is a simple, complete, flexible, and easy-to-use framework, it only considers the economic component and how the nine dimensions can help improve it. Upwards and Jones (2016) reinforce this idea by pointing out that the one-dimensional nature of the traditional model is an obstacle to value creation, as it only focuses on the economic component, leaving out other equally important components.

The need to re-evaluate business models has been exacerbated by changes in consumer behavior, driven by growing concern about environmental and social issues and increased pressure from governments for companies to operate in accordance with environmental and social standards. The lack of consideration for issues such as climate change, resource scarcity, poverty, social inequality and unemployment has also been an obstacle to the traditional business model, contributing to its long-term unsustainability (Bocken et al., 2014).

Therefore, to overcome all these limitations and to answer the needs of consumers and governments, several authors and entrepreneurs began to approach the business model in a more sustainable way, integrating the environmental and social component into the final value to be delivered to the customer. Sustainable business models have thus recognized that the economic, environmental and social components play an equally important role in creating, capturing and delivering value (Figure 1).

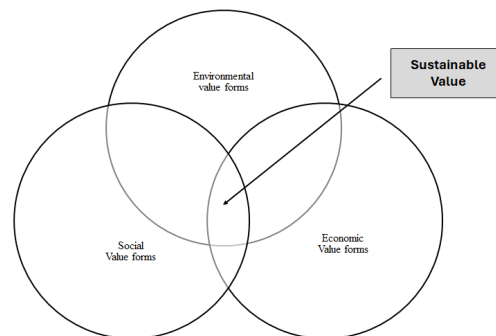


Figure 1. Sustainable value

Source: Adapted from Evans et al., 2017

As seen in Figure 1, the focus of value measurement has shifted from economic factors to other equally important elements, including energy efficiency, resource efficiency, carbon emissions, stakeholder welfare, community development, health, and safety.

While traditional business models (linear models) focus on the volume sold and the adoption of strategies to reduce the planned lifecycle of goods, the central objective of circular business models is to maintain the value of goods for as long as possible by implementing mechanisms to reduce, reuse, and recycle all resources involved in the production process (Antikainen & Valkokari, 2016; Rocha et al., 2020).

The transition to the circular economy requires companies to restructure their existing business model or even design a new one (Massa & Tucci, 2013). Therefore, different structures of the traditional business model have been developed to support this transition and to integrate the environmental and social components into the creation, capture and delivery of value.

The Triple Layered Business Model Canvas is an example of such a structure. Developed by Joyce and Paquin (2016) and based on the traditional BMC business model, the main purpose of this tool is to help companies create, capture and deliver economic, social and environmental value in a more holistic way.

In addition to incorporating the economic component introduced by Osterwalder and Pigneur (2010), the TLBMC expands its structure to include two new layers that explore value creation from an environmental and social perspective (Joyce & Paquin, 2016). This framework facilitates and supports the creation of sustainable businesses by providing a dynamic view of business models through a horizontal and vertical analysis of their components (Joyce & Paquin, 2016). While horizontal analysis offers an isolated understanding of each component and the aspects that make up, the vertical analysis offers a broader understanding, as it analyzes the three components in an interrelated manner and shows how the combination of the three contributes to the creation of final value (Joyce & Paquin, 2016).

Nevertheless, it is also worth mentioning that the incorporation of economic, social and environmental components in an interrelated way in this type of structure provides companies with a more holistic and creative perspective, giving them a competitive advantage over their competitors, as it provides greater security and preparation for possible changes in the environment (Bocken et al., 2014; Joyce & Paquin, 2016).

As can be seen in Table 1, the TLBMC structure is divided into three distinct components: (i) economic, (ii) environmental, and (iii) social.

Triple Layered Business Model Canvas

Table 1

Economic Component	Key partners	Key activities	Value proposition	Customer relationships	Customer segments
		Key resources		Channels	
	Costs			Revenues	

Environmental Component	Supplies and out-sourcing	Production	Functional Value	End-of-Life	Use phase
		Materials		Distribution	
	Environmental Impacts			Environmental Benefits	

Social Component	Local Communities	Governance	Social Value	Societal Culture	End-User
		Employees		Scale of Outreach	
	Social Impact			Social Benefits	

Source: Joyce and Paquin, 2016

2.1.1 Economic Component

The economic component is taken from the traditional model of Osterwalder and Pigneur, and its main purpose is to understand how value can be created, delivered and captured so that revenues exceed costs (Joyce & Paquin, 2016).

As can be seen in Table 1, the original framework is divided into nine key areas that contribute to the creation, delivery and capture of value. To provide a better understanding of each key area and how each contributes to the creation, delivery and capture of ultimate value, a detailed analysis of each block is provided below:

- **Customer Segments:** Defines the various groups of individuals or organizations that a company seeks to reach and serve. To adequately meet the needs of their customers, companies must rationally distinguish between segments based on their different characteristics.
- **Value proposition:** Describes the set of products and services responsible for creating value for a particular consumer segment. When well planned, the value proposition can be responsible for attracting and retaining new consumers (e.g., novelty, performance, customization, design, price, brand/status, cost reduction, risk reduction, accessibility, and convenience/ergonomics).
- **Channels:** Describes how the company communicates and delivers value to its consumers. Channels play an extremely important role in customer perception because of their direct contact with consumers (e.g., physical stores, online stores, partner stores, and wholesalers).
- **Customer relationship:** Represents the type of relationship a company has with specific consumer segments (e.g., personalized assistance, personalized support, self-service, automated services, communities, and co-creation).
- **Revenues:** Shows how the company generates revenue by providing value to different consumer segments (e.g., asset sale, usage fee, subscription fee, loan/rental/leasing, licensing, and advertising).
- **Key Resources:** Reflects the set of tangible or intangible assets that contribute to the creation, capture, and delivery of value (e.g., infrastructure, machinery, raw materials, labor, patents, copyrights, cash, credit lines, etc.).
- **Key activities:** This represents the set of activities that the organization must perform to operate successfully (e.g., production, problem solving, and networking).
- **Key partners:** Defines the network of partners and suppliers that enable the business model to function properly. Partnerships and alliances are an important focus because they optimize business models, reduce risk, and facilitate the acquisition of resources.
- **Cost Structure:** Describes the costs of operating the business (e.g., fixed costs, variable costs, economies of scale, and economies of scope).

2.1.2 Environmental component

The environmental component is based on a perspective of the life cycle of products/services and their impact on the environment (Joyce & Paquin, 2016). While in the economic component the main objective is to understand how revenues can outweigh profits, in the environmental component the main objective is to understand how environmental benefits can outweigh environmental impacts

(Joyce & Paquin, 2016). According to the authors, the structure of the environmental component allows companies to identify the key areas that create the greatest environmental impacts and the key areas they should focus on to create environmental value-driven innovations.

Similar to the economic component, the environmental component is divided into nine key areas that, when combined, provide companies with solutions to address environmental issues and increase environmental benefits (Proença, 2018). Below is a brief description of each block.

- **Functional value:** Describes the result of using a set of products and services and serves as a basis for identifying their contribution to environmental impacts (Joyce & Paquin, 2016).
- **Materials:** These describe the main physical and biological means that companies use to create functional and environmental value (Joyce & Paquin, 2016). In this block, companies must identify the main materials used to generate functional value, whether ecological or not, and analyze their environmental impacts (Proença, 2018).
- **Production:** This refers to the operations and activities carried out to develop products/services from materials (Joyce & Paquin, 2016; Proença, 2018). According to Joyce and Paquin (2016), it is not necessary to identify all the activities and operations carried out, but only those that have a high environmental impact and, for this reason, should be reconsidered in order to mitigate these impacts.
- **Supplies and outsourcing:** This describes other materials and operations that are necessary for value creation but are not considered fundamental for maintaining competitive advantage (Joyce & Paquin, 2016). Within these activities and partnerships, it is possible to distinguish between those developed by the company and those subcontracted by others (e.g., energy can be subcontracted by local companies or produced by the company through energy reuse processes or even renewable sources) (Joyce & Paquin, 2016).
- **Distribution:** This refers to all the activities that take place in order for the product to reach the final consumer (e.g., packaging, transportation, and storage). Joyce and Paquin (2016) warn of the importance of this block in terms of environmental impact, mentioning that these activities have a high burden of harmful effects on the environment, such as the emission of high amounts of CO₂.
- **Use phase:** This refers to the impact that the consumer's use of the product/service has on the environment (Joyce & Paquin, 2016). The use of the product/service includes activities such as maintenance and repair, as well as the use of secondary materials that may complement the use of the product (e.g., in the case of clothing, washing machines and the detergents used for this task are part of the use phase, as they are used to complement the product and therefore also contribute to environmental impacts).
- **End of life:** This refers to the customer's decision to forget the consumption of the functional value of the product/service, thus determining its end of life

(Joyce & Paquin, 2016). While in a linear economy scenario, these products would end up in landfills or incinerators, in a circular economy scenario, they have a second life and can be reused and recycled to produce new products. Therefore, companies need to be aware of the end of life of their products and create incentives for consumers to make more conscious choices so that they can be reused, thus reducing the environmental impact (Joyce & Paquin, 2016).

- **Environmental impact:** This describes the environmental costs of all activities undertaken by a company (Joyce & Paquin, 2016). These costs are determined by indicators such as CO2 emissions, population health, impact on ecosystems, depletion of natural resources, water consumption, and energy consumption (Joyce & Paquin, 2016). Identifying and analyzing these costs allows companies to rethink their business model and, consequently, mitigate some of the environmental impacts.
- **Environmental benefits:** This refers to the environmental value created by a company using sustainable strategies and the reformulation of business models (Joyce & Paquin, 2016). The structure of the environmental component is designed to help companies understand which key areas need to be reformulated for these benefits to outweigh the environmental costs.

2.1.3 Social component

The social component seeks to understand the benefits and impacts generated by the company on its stakeholders (customers, suppliers, workers, shareholders, governments and communities) (Joyce & Paquin, 2016). Analyzing this component gives companies a better understanding of where their primary social impacts lie and helps them to take actions that intensify the creation of social value (Joyce & Paquin, 2016).

In the same way as the previous components, the social component is also broken down into nine key areas which, when combined, offer companies a better understanding of their impact on society, helping them to make decisions that enable them to achieve stable and lasting relationships with their stakeholders.

- **Social Value:** This refers to the value that the company creates for its stakeholders and for society in general (Joyce & Paquin, 2016). Creating social value is an integral part of the mission of companies that adopt sustainable models (Joyce & Paquin, 2016). The delimitation of social value in the mission of companies guarantees them a more secure and confident position vis-à-vis stakeholders and also prevents them from deviating from their initial focus (Proença, 2018).
- **Employees:** Describes the performance and satisfaction of individuals who hold a position in the company (Joyce & Paquin, 2016). To carry out a proper assessment of this field, companies must reflect on the differences between employees, considering elements such as demographic variations, gender inequalities, race gaps and discrepancies in education (Joyce & Paquin, 2016). Once the analysis has been completed and the strengths and weaknesses of this

field have been identified, the company should make decisions to increase social value, namely through programs that expand employee knowledge and programs that boost personal and team development (Joyce & Paquin, 2016).

- **Governance:** This concerns a company's organizational structure and all its decision-making policies (Joyce & Paquin, 2016). In order to meet internal needs and achieve proposed goals, companies need efficient and prudent management that is highly responsive and prepared to respond to any changes that may arise, and that is also transparent with all its stakeholders (Joyce & Paquin, 2016; Proença, 2018).
- **Local communities:** Corresponds to the relationship the company has with the local communities where its facilities are located (Joyce & Paquin, 2016). Establishing stable and lasting relationships with local communities is beneficial for both companies and communities, as both develop faster when they help each other (Joyce & Paquin, 2016; Proença, 2018).
- **Societal culture:** This concerns the macro-environment and how the company influences it and is influenced by it (Joyce & Paquin, 2016). Companies are highly influenced by factors external to their activity and, for this reason, they need to be regularly aware of political, social, legal, technological and environmental changes in order to be able to respond quickly to the emergence of any type of difficulty.
- **Scale of outreach:** This refers to the relationship that the company establishes with all its stakeholders (Joyce & Paquin, 2016). In order to establish lasting and stable relationships with all stakeholders, the company needs to take into account the individuality and culture of each stakeholder (Joyce & Paquin, 2016).
- **End user:** The individual who benefits from the social value proposition (Joyce & Paquin, 2016). Unlike the economic component, the end user here is not exclusively the customer, but can also include other types of individuals (Joyce & Paquin, 2016). To ensure the loyalty of this individual, the company must focus on delivering a high social value that exceeds their expectations and makes them want to return (Proença, 2018).
- **Social impact:** This describes all the negative social repercussions that the company can have on its environment (Joyce & Paquin, 2016). These repercussions can be measured using indicators such as working hours, cultural heritage, the health and safety of stakeholders, community involvement, fair competition and respect for intellectual property rights (Joyce & Paquin, 2016). Once the company has identified all the social problems it has triggered, it must take measures to combat or even mitigate them.
- **Social benefits:** This refers to all the positive social value created by the company (Joyce & Paquin, 2016). Like social impacts, social benefits can also be measured using the same indicators (Joyce & Paquin, 2016). Once an assessment of all the key areas has been carried out and the social costs and benefits have been identified, companies must adopt strategies that allow the former to be outweighed by the latter.

3. Methodology

Due to the exploratory nature of the research and because it allows for a deeper understanding of the phenomenon under study, the research method chosen to answer the research objective was qualitative.

Primary data were collected through semi-structured interviews, supported by a script developed by the researchers based on the literature review. The units of analysis were Portuguese companies in the textile and clothing industry, directly related to the production of apparel and implementing circular economy policies. The selection of the companies to be interviewed followed a process of six different phases, as follows: (i) analysis of secondary information obtained through desk research to understand the working practices of circular companies in the textile and clothing industry; (ii) selection of companies that met the research requirements; (iii) preparation of a formal request for cooperation; (iv) random selection of companies to be contacted; (v) sending the request for cooperation to the selected companies; and (vi) random selection of new companies if the previously identified companies were not available for interview.

A total of five companies were interviewed between July 20 and September 30, 2022, as summarized in Table 2. The companies in the sample were geographically distributed throughout the national territory. After completing and transcribing the interviews, the data were analyzed and interpreted using content analysis (Fortin, 2009). In this type of analysis, the researcher attempts to understand the characteristics, structures or models at the root of the information collected through the interviews (Câmara, 2013; Campos, 2004).

Systematization of the interviews carried out

Table 2

Interviewed companies	Date of the interview	Length of interview (in minutes)
Company A	July 20th, 2022	52 minutes
Company B	August 04th, 2022	48 minutes
Company C	August 18th, 2022	37 minutes
Company D	August 19th, 2022	31 minutes
Company E	August 29th, 2022	36 minutes

Source: Author's own elaboration

4. Results analysis and discussion

The aim of this research is to understand the business models used by the companies that pursue circular economy strategies by analyzing each of the components recommended in the Triple Layered Business Model. To make the data more comprehensible, it was decided to divide this dimension into three main categories: (i) the economic component, consisting of the subcategories Value Proposition, Customer Segments, Channels, Key Partners, Key Resources, Key

activities, Costs and Revenues; (ii) the environmental component, consisting of the subcategories Environmental Benefits and Environmental Impact; and finally, (iii) the social component, consisting of the subcategories Social Benefits and Social Impact.

4.1 Economic component

Value Proposition

When designing the business model, it can be seen that the value proposition that the companies want to offer to the consumer is based on elements such as quality, design, affordable prices and personalization. Company A as well as companies E and F show that the quality of their clothing is one of their priorities and is something that sets them apart from other companies. According to the interviewee from Company A, "(...) our garments are of extremely high quality, we take great care in making them". In addition, companies E and F add that the value of their brand also lies in the design of the garments, stating that the fact that they have a designer responsible for drawing their patterns gives them a high degree of exclusivity. Similarly, Company C highlighted the design of their garments as a differentiating factor, with particular emphasis on the eye-catching patterns they use. However, the interviewee admitted that there are other companies with eye-catching patterns which means that also the price could be a competitive factor. Finally, Companies B and D demonstrated that their value proposition is personalization. While Company D offers a personalized service to its customers, Company B differentiates itself by the way it delivers its garments to its customers. Instead of using traditional washing instructions labels, which are often removed because they cause discomfort, Company B has chosen to print a QR code on each garment to make this information more accessible.

When explaining what distinguishes the company from the competition, the manager of company A argued that being a slow fashion producer is a key competitive factor, and at the time no other player was doing the same.

Customer segments

Although all companies have a predominantly female audience, only companies B, D and E target this segment exclusively. While companies A, B, D and E position themselves in the market as a clothing brand for a more adult audience, company C positions itself in the market as a youth clothing brand and company F as a children's clothing brand. Regarding consumers, it was also found that all the companies indicated that their customers are becoming increasingly aware of environmental issues. In addition, the interviewees from companies D and E mentioned that their customers are women who generally don't follow trends. Furthermore, respondents from companies A and F indicated that their customers have a "(...) medium-high standard of living" (Company F) and "(...) relatively high purchasing power (...)" (Company A).

In addition, all the managers interviewed indicate that they are targeting people who are environmentally conscious (company A, B, C, D, E and F). The manager of company E further mentioned that their customers prefer quality over quantity and are concerned about the sustainability of their choices.

Channels

Regarding the way in which companies establish contact with their customers, it was found that this is mainly done online and in stores. Within the sample, only companies B and E had a store. Curiously, both companies B and E experienced difficulties with consumers due to their reluctance to buy clothes online. It is therefore suggested that the two dimensions may be interrelated, as consumer reluctance may have led them to open a store. Nevertheless, these companies also have a strong online presence, as they are present online and in social networks, where they are in daily contact with their customers. In the same way, companies A, C, D and F also indicate that the contact with customers is made online, with companies A and F stating that, in addition to this type of contact, they are usually present at textile and clothing fairs, where they have face-to-face contact with the customer.

Key partners

Regarding the network of partners that enable the business models to work properly, the companies studied show that suppliers and ateliers are the most important partners. Companies A, C, D, E and F highlighted the importance of suppliers for their business, with the interviewee from company C saying that "(...) it's important to maintain a good relationship with them so that they show us first rather than others (...)". Similarly, companies B, C, D and E mentioned workshops and factories, again emphasizing the importance of maintaining close and transparent relationships with them. According to the manager from company A, "we like to work with other sustainable Portuguese companies and help each other, we're all in the same boat and we all have a common goal (...)". Company F also pointed out its technological partners, saying that they are "fundamental in terms of the digital tools we need to ensure the marketing of our final product". Furthermore, when asked how important the values and concerns of their key partners are to their business, only Companies A and F demonstrated that they asked more sustainable practices from their suppliers, with the interviewee from Company A saying that "today we can very easily monitor our entire supply chain and understand what they are polluting, what they are no longer polluting and which practices are actually more sustainable". The interviewee from Company F, on the other hand, said that "to ensure that our business strategy is fulfilled, we need partners who have a similar vision to ours, because only then we can achieve our goals in a sustainable way".

Key resources

When asked about the resources that companies need to use to create and deliver value to their customers, the answers varied from company to company. However, companies A, C and E all mentioned intangible resources, with company A mentioning know-how and internal intelligence, company E "(...) management capacity (...)" and company C "(...) contacts and knowing where to go when you need something (...)". On the other hand, companies A and F emphasized the importance of human resources for their business, with the manager of company F stating that they are "(...) essential for the development and marketing of our products" and the manager from company A mentioning that "(...) investing in qualified human resources is what sustains the company". In contrast, Company D emphasized the importance of financial resources and Company B found it difficult to identify just one resource because, according to the interviewee, "(...) for everything to work well, there has to be a combination of all the resources".

Costs

Regarding the costs that each company incurs in order to maintain its activity, the companies interviewed highlighted the costs of taxes, the costs of production, marketing and logistics as their main costs. Tax costs were the most common response, with four of the companies in the sample indicating that they have a major impact on their activity (Company B, C, D and E). Production and marketing costs were also mentioned by some companies (where production costs were mentioned by companies A, D, E and F; and marketing costs were mentioned by companies B, C and E). Finally, logistics costs were mentioned only by company C. These costs are more significant in company C than in the other companies studied because it is the only company with production in a foreign country.

Revenues

In terms of how the companies generate revenue through the provision of value to the different consumer segments, it was found that revenue is generated through the sale of clothing. When asked how they manage to ensure the profitability of their circular business, the companies gave different answers. While companies B, D and E stated that the absence of stock is an advantage for their financial stability, company C stated that the relocation of production to places where production costs are significantly lower allows them to have more competitive prices, thus ensuring their profitability. Similarly, company A emphasized the importance of "(...) continuous and recurring analysis of our sales flow and costs", stating that adaptability to adverse situations is what allows them to ensure financial stability. According to the interviewee, one of the ways they have found to reduce their costs and to cover their expenses is to make use of the surplus production of other brands instead of having to buy fabric. Likewise, Company F stresses the importance of "(...) re-evaluating costs and managing them in a regulated way" and says that once "(...) a global assessment of costs has been made", they always reserve a margin for the company.

4.2 Economic component

Environmental benefits

In terms of the environmental value that companies are creating by adopting circular business models and sustainable strategies, it was found that by using product life extension, resource recovery and circular sourcing models, companies are helping to mitigate issues such as air, water and soil pollution, virgin resource extraction, textile waste and the use of plastics and petroleum-derived materials. With regard to companies that adopt strategies to extend the life cycle of products, it was noted that "the fact that they are not trendy pieces and are made with high quality fabrics and materials means that the pieces can last as long as possible" (Company D), which ultimately mitigates the "(...) premature disposal of clothing" (Company E). Companies that adopt resource recovery strategies, by not producing raw materials, help to mitigate issues such as "(...) deforestation, pollution in the form of greenhouse gases released into the atmosphere, pollution of rivers and oceans (...)" (Company B) and also prevent materials from being "(...) dumped in landfills" (Company C). Finally, companies that implement circular sourcing strategies (Company A, C, E and F) contribute to reducing the extraction of virgin resources and the use of plastic and petroleum-based materials.

Environmental Impact

When asked which activities still have a significant environmental footprint, most companies, apart from F, answered transportation. According to the interviewee from company A, "transportation is undoubtedly one of the biggest obstacles to sustainability (...)". Company B even mentions that they haven't started exporting yet because "(...) what I save in emissions in a month is gone in just one trip". Company C, on the other hand, has found more sustainable alternatives and decided to switch from air to sea transport "(...) because the ecological footprint of a boat is much smaller than that of a plane". Similarly, Company F, which does not highlight transportation as an activity with a significant environmental footprint, says that the fact that they only work with local suppliers is an added value, as they don't contribute to greenhouse gas emissions in such an obvious way. In addition to transportation, the interviewee from Company E also pointed out that they are aware that the fabrics they incorporate into their garments have a significant environmental footprint because "(...) although I take care to choose natural and sustainable fabrics that are not derived from oil, I know that we always end up contributing to deforestation". Similarly, the interviewee from Company F begins by saying that although her company doesn't have a very significant ecological footprint, the yarns from the raw materials it incorporates into its garments end up having a negative impact because they come from third countries.

4.3 Social component

Social Benefits

Regarding how each company contributes to its stakeholders and society in general, it was found that the companies have demonstrated that they contribute to

issues such as local employability, developing human potential, social campaigns, and the wellbeing of their employees by ensuring good working conditions. In general, all the companies except F said that they contribute to local and national employability (Companies A, B, D and E) and company C said that it contributes to the employability of a developing country. Similarly, it is important to highlight the role of companies B and D in this respect, because unlike the other companies, they help alleviate a social problem by employing people over 55. In addition to providing employment opportunities, companies D, E and F are also concerned with ensuring good working conditions. The representative of company D even mentions that to ensure this, she regularly visits the factories to check out the working conditions. The interviewee from company F emphasizes that she contributes to good working conditions by building spaces where her employees can socialize and by "(...) ergonomic workstations adapted to the functions of each employee (...)". In addition, companies A and B state that they contribute to the personal development of their employees and suppliers. Company A invests in the continuous training of its employees and makes them aware of environmental issues, while company B also influences its suppliers to change their behavior and adopt more sustainable practices. Finally, Companies E and F also highlight their concern for social issues outside the company, mentioning that they contribute to humanitarian causes through donations.

Social Impact

When asked what improvements could be made at the social level, the companies gave different answers. For company A, it would be important to be able to pay above-average wages, since according to the interviewee "(...) mainly because of the pandemic, the drop in sales, the loss of customers and all the instability that has been generated, and the subsequent increase in the minimum wage that has happened over the last few years, we can no longer say that we pay above-average wages". For the interviewee from company B, it would be important to join the Portuguese program of the Institute for Employment and Vocational Training, 55 years and older. Although the company already employs people in this age group, she stressed the importance of this program by saying that joining it would not only benefit the company, but also individuals who are unable to find work because of their age. Alternatively, Company C highlighted its desire to join the 2030 Calculator, "(...) a tool that gives you a label to put on the garments with a level from 1 to 10 where it tells you what the carbon footprint of that garment is (...)", according to the interviewee, joining this type of tool would be beneficial for the consumer because "(...) when you make a purchase you will know what the real impact is that you are having with the purchase of that garment". Finally, while company E emphasized its desire to continue participating in social campaigns, company F emphasized its desire to "(...) provide health insurance for all employees".

5. Conclusions

In response to changes in consumer behaviour and increased competition in the marketplace, textile and clothing companies have been forced to rethink their strategies. Some companies are adopting circular economy practices, as opposed to traditional linear production models.

The main objective of this investigation was to understand the business models adopted by different companies in the textile and clothing sector in Portugal in the context of the circular economy practices.

In the Portuguese case, the strategy followed is targeted to a very specific consumer segment, that is characterized by a high environmental concern, who value different things and also have some purchasing power. The value proposition delivered to the consumer is mainly based on the quality of the products offered, their durability, design and also personalization. The use of physical channels is rare within the companies analyzed, as most of them relies on online channels, although the study indicates the difficulty in online sales for this type of business, where the intrinsic quality of the product can be more difficult to ascertain. Even so, the customer relationship is assumed through different approaches, either in store or online. Herein, a close relationship with the consumer is considered important by the companies. To support the development of circular practices, a whole range of resources is considered relevant, as well as links with a number of partners, including suppliers and the entire logistics chain. The main costs of the activity pursued are related to the production costs, especially raw materials and human resources, as well as marketing costs. The managers of the companies also highlight the volume of tax costs that affect the organization operations. To promote the financial sustainability of the companies some strategies are followed such as minimizing stock levels or efficient financial management.

The analysis of the business models adopted by the companies surveyed shows that these companies seek to balance the economic, environmental and social components of their business models. In contrast to traditional business models, companies whose business model aims to ensure sustainability extend their value creation to include environmental and social aspects. This shows that these companies are not only concerned with ensuring their profitability but are also directing their value creation towards minimizing the environmental and social impacts of their activities.

Among the environmental benefits identified, the most important are the reduction in the extraction of virgin resources and textile waste, but also the contribution to environmental campaigns. Nevertheless, some environmental impacts of the activity have been identified, mainly those related to the environmental costs of transport, which persist despite some efforts already made by companies in this domain.

From a social point of view, some benefits have been identified, particularly those related to employment, with a notable impact on the local population and people with greater difficulties in terms of employability, such as older people. Some concerns are also identified in terms of improving working conditions and fair remuneration

mechanisms, as well as developing human potential. Nevertheless, they admit that they cannot afford to pay above-average salaries and are aware of the social consequences of this fact.

Like all studies, this one has some limitations that should be highlighted, namely the limited number of interviews conducted and problems of subjectivity in the interpretation and analysis of the interviews.

In future work, it would be positive to extend the research to a larger number of companies, which could be done through a more quantitative approach. In addition, it would be positive to conduct a comparative study between companies that use linear and circular models to understand the main differences in the strategies adopted, as well as between companies located in different types of economies, namely developed and developing economies.

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Appendix 1- Script for semi-structured interview

1. Introductory questions: General characterization of the interviewee and the company
 - 1.1 Could you please introduce yourself and describe your role in the company?
 - 1.2 When you think about the company's history, what are the key milestones that you highlight?
2. Business Model
 - 2.1 The textile and apparel industry is one of the most polluting industries in the world. If you are aware of this fact, how does your company contribute to minimizing the negative impacts associated with this industry?
 - 2.2 The consumer
 - 2.2.1 Can you briefly describe the consumer?
 - 2.2.2 What benefits do you offer them that make your company more attractive than the competition?
 - 2.2.3 How do you communicate with your customers?
 - 2.3 Key Partners
 - 2.3.1 Who are your key partners and what kind of relationship do you have with them to ensure that your circular economy strategy works?
 - 2.3.2 Do your key partners share your company's concerns and values?
 - 2.4 Resources
 - 2.4.1 What resources do you consider to be most important for the company?
 - 2.5 Social Benefits and Impacts
 - 2.5.1 What are the social benefits of your company's activities?
 - 2.5.2 In your opinion, what additional measures could be taken in this area?
 - 2.6 Environmental Benefits and Impacts
 - 2.6.1 Can you identify which activities still have a significant environmental footprint?
 - 2.7 Costs
 - 2.7.1 What do you consider to be the main costs to the company?
 - 2.7.2 To what extent do you think that following a circular economy strategy influences the cost level of the company?
 - 2.7.3 Given your circular practices, can you please indicate how your profitability is ensured?