Review

Can Fashion Be Circular? A Literature Review on Circular Economy Barriers, Drivers, and Practices in the Fashion Industry's Productive Chain

Andreza de Aguiar Hugo *, Jeniffer de Nadae and Renato da Silva Lima

Engineering and Management Institute (IEPG), Federal University of Itajubá (UNIFEI), Itajuba, MG 37500-903, Brazil; jeniffer.nadae@unifei.edu.br (J.d.N.); rslima@unifei.edu.br (R.d.S.L.)

* Correspondence: andrezahugo@unifei.edu.br

Abstract: Circular economy (CE) principles have gained prominence in the fashion industry since it is a highly polluting industry and requires sustainable changes. Even though there are several CE initiatives already in place within the fashion production chain, changes towards CE are still slow. This study seeks to identify the drivers, barriers, and practices that influence implementing circular economy concepts in the fashion industry production chain using a systematic literature review. The results show that some more barriers and criteria keep consumers away from circular fashion concepts than drivers. These barriers include fast fashion consumer culture, even though more consumers are environmentally conscious. This is because awareness has not reached large-scale populations, despite the world being more aware of social and environmental issues. Consumers still do not see ethical and ecological problems associated with the fashion industry and continue to be targeted for large fast fashion retailers that sell a misguided version of consumerism. This study contributes to both academia and new fashion business models that seek to become more sustainable since it presents opportunities for investments and the obstacles that must be overcome for reaching CE within this sector.

Keywords: circular economy; fashion industry; circular fashion; sustainability; fashion productive chain

1. Introduction

The fashion industry accounts for $450 billion in global sales [1], making it one of the most significant industries in the global economy [2]. However, this industry is the second largest polluter worldwide, and its carbon emissions are greater than all maritime transportation and international flights combined [3], causing serious social and environmental impacts in its supply chain [4].

Since it is one of the most environmentally harmful industries, it has faced continuous pressure to transition from a linear economic model to a circular economy (CE) model [2,5]. CE models seek to mitigate environmental impacts, reduce the waste generation in the environment, and promote sustainable supply chains. CE also aims to maximize a product's life cycle, from origin to production and consumption to disposal, by promoting zero-waste design, reuse, repairability, and resource-sharing practices [6]. In CE, stakeholders work together to maximize product value to create positive social and environmental impacts [7]

Since 2010, the Ellen Macarthur Foundation has been advocating against linear business models worldwide and spreading CE concepts, increasingly influencing many industries, including the textile and fashion industries [8]. To adapt to this new model, fast fashion companies tend to adopt defensive sustainability strategies due to the risks associated with brand cannibalism and reduced performance [9]. By contrast, fashion

businesses that are sustainable from their onset follow sustainability values and principles and tend to adopt much more proactive strategies, incorporating innovations and working with collaborative and innovative supply chain models [9]

Given the fast pace of consumption created by the fashion industry itself, which promotes mass production at high volume and low prices, the fashion industry, for the most part, still operates using a linear model of extracting, producing, and disposing of resources, mainly driving fast fashion. As a result, the industry is responsible for some of the most serious environmental impacts, e.g., using more than 98 million tons of non-renewable resources annually, including oil to produce synthetic fibers, fertilizers for cotton plantations, and chemical products for dyeing and finishing fibers and fabrics [10]. This industry uses 93 billion cubic meters of water, which aggravates drought conditions, and emits about 1.2 billion tons of CO_2, and 500 thousand tons of microplastic fibers dumped into oceans [10].

The fashion industry also has problems associated with textile waste [11], which can be generated in the form of yarn, fabric residues, fibers, and others, mainly generated during the clothing and textile production process in factories. There are also high levels of pre-consumption generated during clothing and textile sales online or offline at retail stores, e.g., defective, or damaged products, or unsold products. Lastly, there are high levels of post-consumption, in the form of unwanted clothes or fabrics that consumers no longer want after purchasing them, and these can be worn, damaged, outdated, or out of fashion [12].

According to [13], there was an increase of almost 50% in post-consumer textile waste generation, with more than 11 million tons (85%) of clothes going to landfills in the United States, in 2015 alone. Only about 20% of clothing waste is collected globally for reuse or recycling, and the remaining 80% goes to landfills or is incinerated, resulting in an increased carbon footprint and energy and raw material losses [14]. Specific laws are necessary for proper waste disposal [15] because waste also negatively impact landfills in the form of methane emissions and groundwater pollution from toxic leachate [16]. These waste management techniques must be monitored for sustainability [17,18]

Waste is considered a resource in CE regimes [19], and using reverse logistics, these textiles can be redistributed and returned to their supply chain at different stages [20,21] CE also implies that the fashion industry should prioritize sustainability, focusing more on longer-life products, using, and reusing materials, while properly disposing of products at the end of their lifespan [22]. As consumers become increasingly concerned about sustainability issues, upcycling or material recycling practices become more popular [2]

Several studies that address CE for the fashion industry have been conducted to offer different views on the matter; for example, [23] analyzed implementing and integrating CE practices for all fashion industry supply chains. The authors [9] made discoveries on a set of challenges and opportunities for sustainable fashion business models, and [12] investigated consumer values and intentions relative to circular fashion consumption concepts.

Nonetheless, the fashion supply chain is still one of the least addressed supply chains from a "green" standpoint [24]. According to [9], there is still a lot of uncertainty about how innovative a sustainable fashion business model could be structured, since there are few studies that propose successful models. It is, therefore, important to discuss divergences in sustainability dimensions to find solutions for sustainable retail practices [25].

To fill this research gap [26–32], all addressed the topic, offering comprehensive views on CE in the fashion industry based on the literature reviews. [32] made significant academic contributions by identifying practices, facilitators, barriers, and some indicators for evaluating sustainable performance in circular supply chains within the textile industry.

However, more research is still needed to identify CE initiatives, drivers, and barriers in the fashion industry, since this sector continuously changes, thus making informational updates necessary on the matter. Furthermore, several current studies have mainly focused on analyzing consumer perspectives on fashion sustainability [33–41], since it is extremely important to identify the main causes that drive consumption habits towards or away from sustainable fashion practices.

This study seeks to identify drivers, barriers, and practices that influence implementing circular economy concepts in the fashion industry production chain using a systematic literature review. This was performed using a systematic literature review consulting the Web of Science and Scopus databases. We expected that this study would contribute to presenting the most relevant characteristics both for academics and new fashion business models that seek to become more circular and who need to understand any initiatives that have already been implemented, as well as the challenges that must be overcome, and the critical values that drive success and consumer behavior towards sustainable fashion.

This paper is divided into four sections. The introduction is presented in Section 1. Section 2 presents the methodology. Section 3 presents the results and discussions. The conclusions are provided in Section 4, followed by the acknowledgments and the references.

2. Materials and Methods

The methodological approach used is a systematic literature review (SLR), which helps identify any of the academic literature relevant to a particular research area and critically evaluates the selected topic [42].

We employed the model proposed by [43] to conduct the SLR, which was divided into the following steps: Input, Processing, and Output, as shown in Figure 1. In the input step, the objective and research questions are defined, and the searches are conducted based on the inclusion and exclusion criteria. In the processing stage, the analysis of the content of the articles is conducted along with the synthesis of the characteristics of the literature. Finally, the results are analyzed, and the conclusions are presented in the output stage.
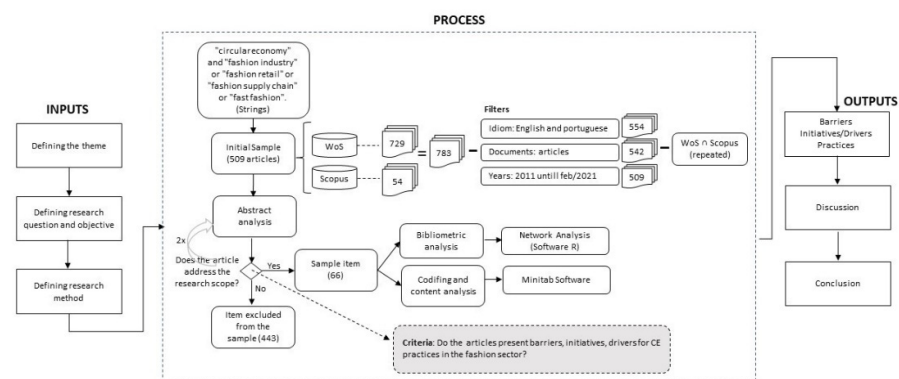
Figure 1. Systematic literature review flow diagram. Source: the authors of this study.

2.1. Inputs

2.1.1. Objective and Research Questions

The objective of this research study was to analyze the drivers, barriers, and practices that influence CE implementation in the fashion industry and to identify consumer characteristics on sustainable fashion practices. The following research questions (Q) were defined to achieve these goals:

Q1: What CE initiatives have already been adopted by the fashion industry?
Q2: What are the barriers that impede CE advancements in the fashion industry?
Q3: What are the CE drivers in the fashion industry?
Q4: What are the criteria that drive consumers away or bring them closer to sustainable fashion practices?

2.1.2. Searching for Academic Papers

The ISI Web of Science (WoS) and Scopus are indexed databases that allow users to export the necessary metadata to perform bibliometrics and were used to search for academic studies [44]. WoS is quite relevant in academia, given its differential data processing options [45]. Additionally, the Scopus database is the largest database containing abstracts and citations for the peer-reviewed literature, in the form of scientific journals, books, and conference proceedings [46]. The overlap between the publication sources in the WoS and Scopus was not large, and consequently, these sources can be used together to provide a broader view of the subject [47].

The keywords used in the search were: "circular economy" and "fashion industry" or "fashion retail" or "fashion supply chain" or "fast fashion". The search result returned 729 publications in WoS, and 54 in Scopus, resulting in 783 articles, listed in the number of publications per year.

2.1.3. Exclusion and Inclusion Criteria

From the 783 publications, we decided to apply exclusion criteria by applying some refinement filters, such as "type of document" (only articles), a "language filter" (only texts in English and Portuguese), and "year" (only articles published between 2011 to 2021). After applying these filters, the result was 509 publications for both databases. Within this number, 17 articles were duplicated (found on both databases).

2.2. Processing

The processing steps consisted of reading the articles to identify the content, such as what the sector studied, the results, etc. The titles and abstracts from the 492 articles were carefully read to identify relevant records for this review, the first screening was based on the analysis of the titles and abstracts. Then, we excluded 426 papers that did not meet the criteria for inclusion, which were to fit the research scope of circular economy in the fashion industry. Some articles were about the circular economy, but in different sectors, and the other 7 were not available for a full reading. When the consensus was not achieved among authors, the full paper was analyzed and discussed. Next, the snowball sampling technique was employed to identify the most relevant references that were not retrieved in the initial sample, considering the most cited studies that fit the research scope, using the same screening process. The result was a final sample of 66 articles (WoS Ω Scopus and WoS υ Scopus) that resulted from this process.

2.3. Output

The third and final phase of SLR consists of a detailed analysis of each preselected paper from the previous stages. The 66 publications were exhaustively read and analyzed to answer the research questions.

The papers were analyzed, highlighting CE barriers in the industry, CE drivers in the fashion industry, relevant criteria that led consumers to consume and/or not consume sustainable fashion items, and CE initiatives in the fashion industry. The results are presented in the following section.

3. Results and Discussion

The publications included in the final sample returned 66 publications over a period of 10 years and 5 months. The number of publications has grown over time, as can be seen

in Figure 2. It is important to highlight the increasing number of publications that analyze circular fashion consumer behavior. Of the 66 articles analyzed, 20 addressed this issue, which shows the importance of this type of research.
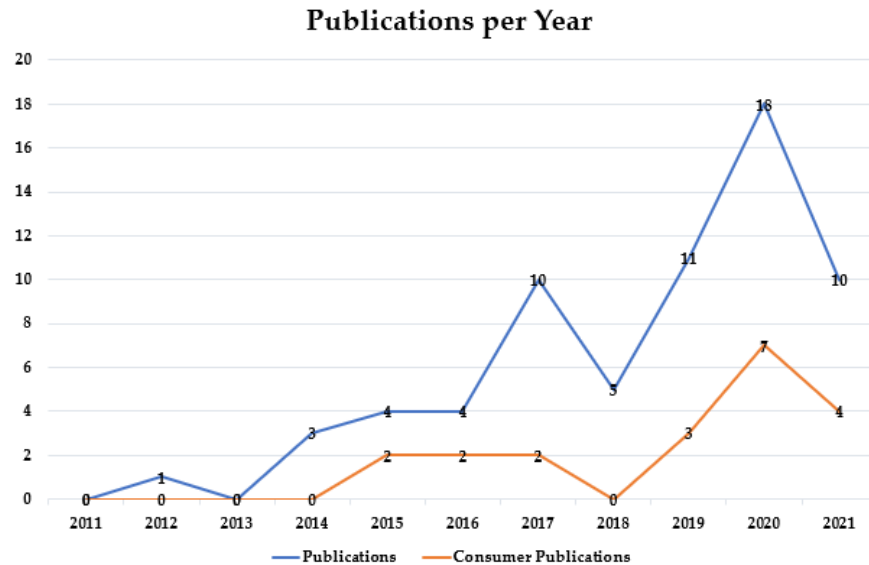

Figure 2. Publications per year until May 2021. Source: the authors of this study.

Growth in this research area can be explained by the fact that current linear fashion systems impose high production volumes, which have increased by almost 100% since 2002. However, less than 1% of these materials are recycled into new clothes or other products [44]. This fact conflicts with environmental challenges, and this ends up being a great research opportunity, given the complexity of including circularity principles in this industry.

One of the objectives of the SLR in this study was to identify and gather important information on CE for the fashion industry, and so some research questions were elaborated. The following sections present the results of this investigation. The SLR results are summarized in Figure 3.
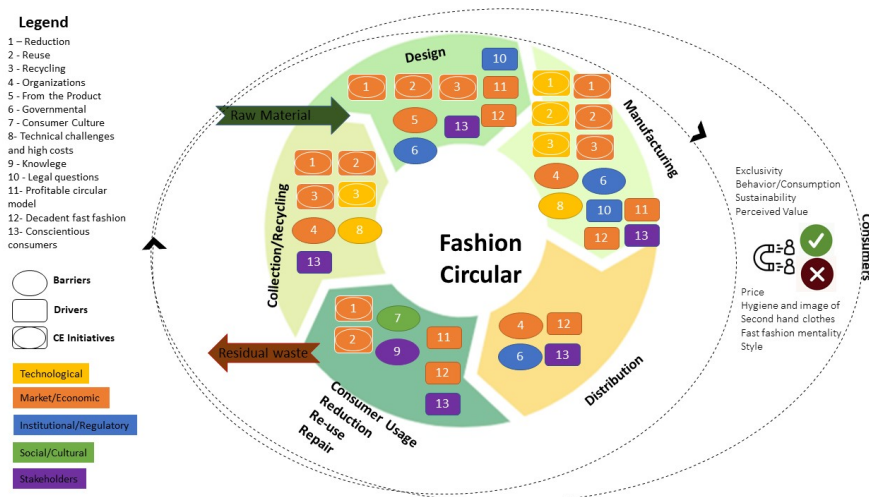

Figure 3. Initiatives, barriers, and drivers in CE applied to various stages within the fashion industry. Source: The authors of this study.

Figure 3 summarizes the initiatives, barriers, drivers, and actions that bring consumers closer to or farther from CE practices in the fashion industry. Each analyzed initiative, barrier, and driver is presented in the figure and is identified by numbers, according to the captions. All are analyzed and discussed in the following sections. However, we can see that there is a need for circular initiatives in the distribution stage since failures were observed in the logistics sector of this supply chain, given the large carbon emissions coming from this sector, which could be abated by using more efficient routes and cleaner transport means, for example.

3.1. CE Initiatives Adopted by the Fashion Industry

First, it is important to highlight the circular initiatives that the fashion industry has already implemented so that the difficulties faced by the sector can be better understood. We observed several practices and examples of companies that seek to be more ecological and ethical in their production systems. However, we opted to prioritize the most frequent initiatives found in the literature. These were divided between Technological and Economy/Market perspectives [48], and among reduction, reuse, and recycling practices, which, despite having some limitations, have great potential for making business models more sustainable [49]. Table 1 summarizes these initiatives.

Table 1. Circular initiatives developed in the fashion sector.

Initiatives	R's	Short Description	Stage	Authors
Technological Market/Economic	Reduction	Reducing Raw Materials—can optimize material resources to use only what is needed and reduce waste. Reducing Natural Resources and Chemicals—fashion companies are adopting technologies that reduce the consumption of natural resources, such as water, and reducing chemical products in production processes. Reducing Consumption—slow fashion extends the product's lifespan, so that it lasts longer, and reduces the need for purchasing more goods, contrary to fast fashion.	Collection/Recycling/ Design Manufacturing/ Consumer usage	[6,9,50–53]
Market/Economic Technological	Reuse	Secondhand Clothes and Rented Clothes—secondhand clothing sales and rental stores extend the lifespan and reduce the production of more fashion items. Reusing Natural Resources and Raw Materials—some fashion industries are implementing techniques to reuse natural resources and pre- and post-consumer raw material residues when manufacturing new products.	Collection/ Recycling/ Design Manufacturing/ Consumer Usage	[54,55]
Technological Market/Economic	Recycling	Mechanical Recycling—textile waste is opened, disassembled, and cut into smaller pieces. Chemical Recycling—synthetic materials are decomposed for repolymerization. Upcycling—existing materials that would otherwise be discarded, are used to improve original materials and maintain quality equal to or better than the original materials.	Collection/ Recycling/ Design/ Manufacturing	[56] [56] [57]

Source: prepared by the authors based on [6,9,50–57].

One reduction technique practiced by the fashion industry is the zero-waste practice, based on the notion of minimizing material waste in clothing production [9]. This may include techniques for efficiently using fabric cutting patterns, e.g., patchwork, which

helps optimize available materials [6]. This can also be performed using material management practices to reduce environmental impacts [50].

In addition to reducing raw materials, natural resources can be reduced, and harmful chemicals used in production processes can be eliminated, such as dyes for finishing [49,51]. According to [58], Nike defined different goals to try to reduce waste, such as color dry technology which dyes fabrics without using water. Using this technology, the company was able to save more than 20 million liters of water and eliminate chemicals used in the dyeing process [59,60]. This is a very effective way of reducing water and harmful product consumption, in what would otherwise be a highly polluting process (fabric dyeing).

Another reduction initiative is consumption reduction, more precisely slow fashion, which extends the lifespan of garments. Companies that adopt slow fashion practices have more local general infrastructures, in addition to reducing production to smaller batch sizes by using traditional craft techniques and local materials [52]. This practice also proposes extending clothing use, i.e., clothing items should be created to be used and valued for as long as possible, by using items that consumers already own, thus, abstaining from purchasing more clothes in quick succession [53], in turn reducing exacerbated consumption promoted by fast fashion.

Two reuse practices often found in the literature and defended by some scholars are second-hand stores and clothing rentals. The authors of [61] carried out a study on Chinese consumers to identify their consumption patterns concerning second-hand clothing. The authors of [62] proposed a closed-loop supply chain based on sustainable rent practices for fashion products, investigating actions that could improve sustainability. The authors of [63] also conducted a study on comparative life cycles assessments for rental business models versus a linear dress sales model.

These two models are based on extending clothing lifespans: one by reselling used clothing and the other by using rentals. One way to extend the lifespan of clothing is by mending clothes or products. The author of [54] addressed the importance of workshops that teach these techniques, to minimize unnecessary clothing disposals. Shelf lives can also be extended by producing single material longer-lasting garments, not using short-lived materials, and using specialized cleaning services to make clothes last longer [55].

Reuse also includes techniques for reusing natural resources by employing water recapture systems, heat-recovery systems, and CO_2 recovery systems, or by reusing raw materials, such as leather scraps, cotton waste, wool scraps, or reused fabrics [55].

Textile recycling reuses or reprocesses used clothing, fibrous material, and clothing waste recovered from manufacturing processes [62]. It is a very important process for CE in the fashion industry and has been addressed by several studies [64–70].

There are two forms of recycling: mechanical and chemical recycling. Mechanical recycling entails opening discarded clothing, disassembling them, and cutting fabrics into smaller pieces [56]. Antique cardigans and pullovers can be unraveled, and the material can be used to make rugs or sweaters, and dresses can be cut into strips and crocheted to create tablecloths as exemplified by [71] in her study.

Chemical recycling, on the other hand, is a process by which synthetic materials are decomposed for repolymerization [56]. Petroleum-based synthetic fibers, such as recycled PETs derived from plastic bottles, are an example of chemical recycling. Vaude's outdoor collection includes recycled polyester fibers, and some pieces are designed as fully monomaterials, making them easier to recycle in the future [72].

Currently, new technologies are emerging to help in the recycling process, e.g., classification technology, which uses sorting equipment to classify fabrics by the fiber type [8]. Another example is prototype chemical recycling technology that reprocesses mixed fibers and cotton textile waste back into fiber [72].

Upcycling is an evolution in recycling that reuses resources. Upcycling creatively uses materials that would otherwise be discarded in new ways or for better purposes without degrading quality and composition. The idea is to use existing materials to

improve original materials and maintain a quality that is equal to or better than the original material [57]. The authors of [16] addressed this by exemplifying fashion collections created from post-consumer and pre-consumer textile waste.

3.2. Barriers that Impede the Advancement of CE in the Fashion Sector

We selected four perspectives suggested by [48] to classify barriers and drivers, which are Technological, Economic/Financial/Market, Institutional/Regulatory, and Social/Cultural. However, a frequently cited barrier that is often missed in analyses is the transition to a green supply chain in the fashion industry and barriers related to supply chain stakeholders, especially consumers.

To develop a sustainable business, fashion brands must cooperate with all members within the product development process [73]. According to [74], supply chains (SC) are the main gateways to sustainability. However, SC within the fashion industry is very complicated, since it involves different stakeholders and various interconnected processes. Furthermore, globalization has led to having partners in different parts of the world [73]. This becomes a critical factor for circularity, since it is very difficult to detect all suppliers in a chain that has several layers [75].

Another obstacle cited among scholars concerns the lack of government policies and knowledge in this sector for achieving economic sustainability [76]. The author of [77] state that systems are too bureaucratic and complex; for example, there is a lack of clear government guidelines and policies, and installation prices are high, and this has prevented fashion companies from adopting alternative energy sources [76]. Additionally, government certificates are crucial for sustainability but are viewed negatively since they are very expensive [78]

A major challenge for the fashion industry is to rethink the design phase of sustainable product development. The decision to reduce, reuse, and adopt organic materials in the production of fashion items represents a challenge for companies that do not yet see them as strategic priorities [9]. Therefore, fashion design courses should include ecological practices in their curricula, so that new professionals can be made aware of ecological practices since sustainability starts with product design. However, the fashion educational system still operates with traditional design methods, which ends up being a major obstacle to implementing CE practices within the sector [71].

One of the main barriers addressed in the surveys is reduced consumption, e.g., slow fashion practices. According to [79], slow fashion economic sustainability is still questionable, since companies that employ slow production and small quantity practices cannot compete with companies that use economies of scale, such as fast fashion companies that create multiple accessible fashion identities [80]. The authors of [81] also state that companies that adopt environmental management systems have reduced profits and sales and significant inventory turnover reductions.

Furthermore, according to [34], consumers prefer fast consumption, i.e., offering higher-quality and higher-priced products may not reduce environmental impacts. The authors of [38] state that, although consumers are increasingly aware of the social and environmental impacts of their clothing consumption, many still look for traditional fashion product attributes when shopping. The authors of [82] state that participants justified unsustainable clothing consumption by declaring that excessive consumption impacts were too far removed from them, i.e., they could not see the negative implications of their actions.

The logistics for opening clothing rental and second-hand stores is very complicated for certain fashion brands [23]. The authors of [55] state that some consumers still struggle to understand the rental model. The literature has also shown that poor clothing presentations at second-hand stores is an obstacle [6]. According to a survey by [61], only 10% of respondents indicated a willingness to consume second-hand clothing.

There are several obstacles to the recycling evolution. There are technical challenges that include the need to make recycling processes sustainable, or technical challenges

surrounding separating mixtures, additives and finishing, and quality restorations [8]. Technical issues may also include the fact that post-consumer recycling technologies fail to deliver the desired level of quality, and some brands have difficulties in developing internal recycling initiatives due to a lack of technological capabilities [23,55].

The high costs involved in recycling processes are also inhibiting factors for the advancement of recycling since these processes are often not financially viable [8]. Textile separation and recycling suffer from system costs and inefficiencies [83] and lack of supporting infrastructure for collecting clothing from consumers, which can make producing recyclable clothing difficult [51]. Furthermore, low-quality fast fashion clothing means that large quantities can only be partially reused given the high costs of shredding or disposing of the material, for example [53].

One other barrier that is often mentioned in the literature is a lack of consumer awareness surrounding ecological fashion options and/or the lack of credibility that consumers place on sustainable fashion businesses [36,80]. The authors of [82] state that only a few participants were aware of sustainability issues in the fashion industry. This is due to a lack of knowledge surrounding the environmental effects of different fiber production practices and the limited availability of sustainable clothing in stores [6]. The lack of knowledge about something causes insecurity in people [84]. Furthermore, most consumers are unaware of the negative effects of fast fashion consumption [85]. Their awareness is often limited to energy consumption issues and recycled products, and they do not recognize sustainability as an issue inherent to purchasing clothing [86].

Regarding the lack of sustainable fashion brand credibility, it can be difficult for traditional fast fashion companies to promote sufficient sustainability changes and effectively change their brand image [9]. The authors of [52] proved that participants claimed that companies such as H&M, Mango, and Zara may state that they are ethical and ecological, but people do not believe this. Therefore, sustainability and ethical production processes must be more explicit [36]. Table 2 summarizes these barriers.

Table 2. Barriers to implementing circular economy practices in the fashion industry.

Barriers	Short Description	Stage	Authors
Market/Economic	Organizational—Due to globalization and many partners in the fashion industry, it is more difficult to create a completely circular/sustainable chain. Product—Much of the fashion industry has not yet realized that everything starts with product designs that are less harmful to the environment, and there is a lack of conscientious fashion design professionals.	Design and Manufacturing and Distribution	[9,71,73,75].
Institutional/Regulatory	Governmental—Lack of support from governments to create openness, guide efforts, and reduce costs, to implement more ecological solutions.	Design and Manufacturing and Distribution	[76–78]
Social/ Cultural	Consumer culture—Consumers are still very attached to fast fashion consumption and do not see the negative consequences associated with high levels of consumerism. Slow fashion has not yet conquered market space because of this. Consumer culture—Ideas such as second-hand clothing and rental stores are not widely used by consumers to reduce high consumption and textile waste generation due to several factors, such as clothing appearance and hygiene issues.	Consumer Usage	[6,34,38,61,80]
Technological	Difficulties range from technical challenges, such as separating fabric mixtures, to high costs for recycling.	Collection/Recycling and Manufacturing	[8,23,55]

Stakeholders	Knowledge—Consumers are not aware of the consequences of traditional fashion models, and there few sustainable fashion brands that exist and those that do, do not convey credibility to consumers.	Consumer Usage	[36,80].

Source: Prepared by the authors based on [6,8,9,23,34,36,38,55,61,71,73,75–78,80].

3.3. CE Drivers in the Fashion Sector

Just as legal issues can be a barrier to sustainable adaptations, as was highlighted in the previous section, legal issues are also external drivers since they cannot escape environmental and ethical obligations. Given growing natural resource scarcity, legislation has restricted the availability of these resources [8]. CE practices should not be implemented for merely philanthropic reasons, since companies are being forced to change their current production models and adapt to imposed legislation to maintain their businesses [8,23]. Furthermore, legal standards and certificates are substitutes for supplier assessments, and serve as tools for communicating unique sales proposals to customers [87].

Furthermore, CE models are very profitable for fashion companies contrary to what has been generally observed in academic research. This profitability can come in two ways, via the business model itself or via economic gains from sustainable production measures. According to [9], service-based business models, such as rental companies, can reduce stock and completely forgo production. The idea is to migrate from acquiring new fashion items to reinventing and restyling existing goods. Sustainable businesses that adopt a value-based pricing strategy, by contrast, have higher quality products, allowing them to charge more per unit item [53], and this can further increase profit [33].

In addition, implementing green initiatives can generate higher revenues in the fashion industry and increase cost savings, using measures that reduce energy consumption and cut packaging waste, for example [88]. H&M has been using recycled materials in its production, and this has resulted in energy and water savings [89]. The authors of [90] give another example of a company that built a sustainable factory and was able to sell surplus energy, resulting in additional financial gains. Nike is another company that was able to improve resource use by adopting sustainable operations in their supply chain [73].

Another EC driver in the fashion industry is increased consumer awareness on environmental issues. The authors of [10] showed that younger generations pay more attention to sustainability and circular economy principles, which allows researchers to conclude that these factors are important strategic elements resulting in lasting competitive advantages for the fashion industry. By contrast, a study by [91], indicated that sustainability, i.e., incorporating recycled materials in products, has a positive effect on consumer purchase intentions in relation to fashion products and that positive/altruistic perceptions (of consumers) increase when brands produce more sustainable product lines [35,92]. Additionally, pressures imposed by NGOs also affect company choices in terms of sustainability demands [90].

The fast fashion model has registered declining sales [9]. This is because some consumers avoid these types of brands due to low product quality or unoriginal and mass-produced styles, which negatively affect the individuality of the piece and the lack of the brand's social and environmental responsibility [40]. This places fast fashion retailers in the social pressure spotlight [93].

According to projections in a report prepared by the [47], by the 2030s, the fashion industry will face declining profits if they continue in this way. Furthermore, given the COVID-19 pandemic, many fashion companies have changed their projections and are more inclined to adopt more sustainable production approaches and sales processes [94]. Even though the pandemic has increased waste generation [95], there are opportunities for fashion business models that employ circular and ethical strategies since these businesses could fill market gaps if they are committed to sustainable products [96].

Table 3 summarizes these drivers.

Table 3. Circular economy drivers in the fashion industry.

Drivers	Short Description	Stage	Authors
Institu-tional/Regula-tory	Legal Issues—Companies start to adopt environ-mental measures to remain in the market and meet legal pressures.	Design and Manufacturing	[8,23]
Market/Eco-nomic	Circular models are profitable—Profitability can come via reducing lost revenue by focusing on quality and increasing prices, or by implementing sustainable and waste reduction measures in manufacturing processes.	Design, Manufacturing, and Consumer	[8,23,88]
	Fast fashion model in decline—Fast fashion sales have been falling due to changes in consumer be-havior, generating opportunities for new business models, such as circular fashion.	Design, Manufacturing, Dis-tribution, and Consumer	[9,40]
Stakeholders	More aware consumers—Consumers are more aware of environmental and ethical issues and are pressuring fashion companies to change.	Collection/ Recycling, De-sign, Manufacturing, Distri-bution, and Consumer	[10,90]

Source: prepared by the authors based on [8–10,23,40,88,90].

3.4. Sustainable Fashion Consumers

It is very important to identify the criteria that consumers consider when making fashion-related purchases since this can show which paths a company should follow to please its customers. Additionally, these criteria also help understand why sustainable fashion is still not popular among consumers.

Aesthetics is one of the main reasons cited for why consumers distance themselves from sustainable fashion consumption. For most consumers, clothing style or aesthetics are more important than sustainability [12,23,51]. Consumers may be interested in "green" and ethical fashion items; however, if these do not meet their aesthetic criteria, they prefer to consume traditional fashion items. This has been proven in the research by [52], who found that most participants were aware of sustainability, but these factors did not seem to play a key role in their final decision-making process. Furthermore, some consumers believe that sustainable fashion items do not look good, are old-fashioned, or are related to a counter-culture hippie style [36,39].

Another major problem the study pointed out was high prices for sustainable fashion items, due to increased production and processing costs [97]. According to a survey of participants conducted by [39], price is one of the most important factors when choosing how to clothe, and since most people already assume that sustainable fashion products are more expensive, consumers do not see them as alternatives. Likewise, several partici-pants in a study by [82] stated that sustainable brand clothing was expensive and not af-fordable. These participants preferred to buy cheaper clothes and stated that their limited budgets did not allow them to change their consumption behavior.

Specifically, regarding second-hand clothing businesses, many consumers are con-cerned about hygiene [86]. Many people are still hesitant to buy used clothes because they do not know where they came from, if they have been properly sanitized or if there is a contamination risk from a previous owner [82]. Furthermore, the image may weigh heav-ily on the general concerns of Chinese consumers regarding used items [61]. Italians also have this behavior, since lower income classes usually buy from second hand stores [10]; therefore, clothing is still very related to social status.

Another bad characteristic identified in the literature is consumer fast fashion men-tality, i.e., discarding clothes after using them a few times [23]. People find it easier to buy

new and cheap fast fashion clothes than to fix their own clothes, for example [56]. Some participants in a survey by [39] stated that they felt powerless, since most people still buy from fast fashion brands. They see no possibility of changing this situation toward more sustainable behavior unless more people can be reached.

On the other hand, it was also possible to identify characteristics that attract circular fashion consumers in the literature. The main criteria that bring consumers closer to sustainable fashion can be summarized in three factors: associations with sustainable causes, exclusivity, and perceived product value.

More consumers are becoming interested in sustainable products, as there is more demand for sustainable commitments [58]. This is no different for fashion items, especially for a highly polluting industry that also suffers from several social labor criticisms. According to a study [33], people intend to spend more when clothes are recycled and pollute less. Likewise, some participants in a study by [82] described that they were more likely to purchase clothing from certified or recycled organic material since this would make them feel good about taking care of the environment.

This relationship between intent to purchase and willingness to pay higher prices also increases when consumers realize that sustainable clothing is exclusive and differentiates them from popular fashion [86]. This exclusivity is observed for slow fashion and second-hand items. Slow fashion can attract people who want to differentiate themselves from others and achieve fashion individuality by wearing exclusive items [79] Second-hand fashion consumers claim that they regularly feel a certain level of exclusivity when wearing rare pieces of clothing—something that would not have been possible had they bought new clothes, indicating that exclusivity was the main reason for getting involved in these practices [82].

A product's perceived value is another factor pointed out by consumers to engage in sustainable fashion purchases, due to higher product quality with longer life spans. One study [82] showed that people valued more expensive and better-quality sustainable fashion clothes when they realized that they were well made and more durable. Participants also shared that they ended up saving money when they purchased quality items and did not need to buy clothes as often. Second-hand clothing consumers perceive this value by pointing out the following benefits: economic value from low priced clothing; rarefied value in the form of looking for exclusive items; and environmental value from reducing new product consumption [98].

In addition, it was found that when consumers are aware of the social and environmental issues surrounding clothing manufacturing and the fashion business, they develop more trust in the brand, adding perceived value [99]. The authors of [64] showed that consumers feel a sense of pride when using a second hand luxury product. These findings suggest that sustainable fashion brands should provide reliable proof for their sustainability claims and encourage consumer education by encouraging conscientious apparel consumption [99].

4. Conclusions

CE is a very important concept that has been studied in different areas, such as cosmetics [100], for agriculture [101], and for plastics [102], for example. Thus, this study presented an in-depth analysis of 66 articles that dealt with CE in the fashion industry/sector. Four main contributions to the literature stood out for each proposed research questions. First, we identified existing CE initiatives in the fashion industry, which production chain stages are most present and the most widespread types of initiatives. Second, we identified many non-fashion-industry-specific barriers and drivers that are comprehensive and generic. Third, we identified that price and style are the main criteria that distance and/or bring consumers closer to CE fashion concepts. Finally, it was clear that there was no consensus among consumers about sustainable fashion because there were differing opinions. Many consumers say they do not consume sustainable fashion items because they

are more expensive, while others say they would be willing to pay more if they see that the item is sustainable. This shows that this sector still faces many challenges.

We observed that, despite several sustainable initiatives, real CE is still far from being fully implemented by the fashion industry, since there are more barriers and criteria that keep consumers away from circular fashion than drivers that bring them closer to sustainable consumption.

Large fast fashion chains employ clothing consumption among people who have not yet understood the problems associated with the strategies of these companies that promote and encourage exacerbated and unnecessary consumerism. Furthermore, problems are not only limited to the way garments are produced but also to generated textile waste from poor quality garments, which have shorter lifecycles and end up being discarded, since they are low value items.

Although it seems very difficult to achieve CE in the fashion industry, there is a growing trend toward more sustainable initiatives incorporated into this sector, whether due to government pressures, citizen pressure, or environmental pressures, as the latter can no longer sustain this pace of production. Several studies in recent years have proven this by addressing this topic in different ways. It is, therefore, very important to conduct more studies on CE in the fashion industry, to highlight this situation since most people are still unaware of the relevance of the topic.

This study contributes both to academia and to new fashion ventures that may seek to become more sustainable. It presents what must be invested in and the obstacles that must be overcome, to reach CE within the fashion sector. This study is limited in that the literature analysis was only directed at identifying CE initiatives, barriers, drivers, and characteristics for fashion consumers.

We suggest that future studies seek to verify whether the circular fashion chain has been able to mitigate these difficulties and achieve recognition as a productive, profitable, and sustainable process. In addition, studies need to be developed on barriers, drivers, and especially CE initiatives in the fashion industry for the distribution stage of the production chain. It is known that this stage also generates major environmental impacts, since the fast fashion model has high turnover rates for goods, which requires accelerated and continuous distribution streams, which in turn increases carbon footprints.

Finally, we note that most studies focus on countries such as the USA, China, and European ones. Therefore, we also suggest that circular fashion future studies be carried in other countries, especially emerging countries such as Brazil, Mexico, India, and South Africa, because they are also major contributors to global pollution and may have barriers, drivers, and initiatives different from those that have already been studied. Likewise, in these same countries, there is also a lack of studies that investigates the behavior of consumers of circular fashion. Thus, this is also a topic to be studied in future research, as countries have different cultures that can influence consumer behavior and decisions.

Author Contributions: Conceptualization, A.d.A.H. and J.d.N.; methodology, A.d.A.H. and J.d.N.; validation, A.d.A.H., J.d.N., and R.d.S.L.; formal analysis, A.d.A.H. and J.d.N.; investigation, A.d.A.H.; resources, A.d.A.H., J.d.N., and R.d.S.L.; data curation, A.d.A.H.; writing—original draft preparation, A.d.A.H.; writing—review and editing, A.d.A.H., J.d.N., and R.d.S.L. All authors have read and agreed to the published version of the manuscript.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement:

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Resta, B.; Gaiardelli, P.; Pinto, R.; Dotti, S. Enhancing environmental management in the textile sector: An Organisational-Life Cycle Assessment approach. *J. Clean. Prod.* **2016**, *135*, 620–632, doi:10.1016/j.jclepro.2016.06.135.
2. Wang, B.; Luo, W.; Zhang, A.; Tian, Z.; Li, Z. Blockchain-enabled circular supply chain management: A system architecture for fast fashion. *Comput. Ind.* **2020**, *123*, 103324, doi:10.1016/j.compind.2020.103324.
3. UNCTAD UN. Available online: https://news.un.org/en/story/2019/03/1035161 (accessed on 23 June 2021).
4. Chen, H.L.; Burns, L.D. Environmental analysis of textile products. *Cloth. Text. Res. J.* **2006**, *24*, 248–261, doi:10.1177/0887302X06293065.
5. Koszewska, M. Circular Economy—Challenges for the Textile and Clothing Industry. *Autex Res. J.* **2018**, doi:10.1515/aut-2018-0023.
6. Mishra, S.; Jain, S.; Malhotra, G. The anatomy of circular economy transition in the fashion industry. *Soc. Responsib. J.* **2020**, *17*, 524–542, doi:10.1108/SRJ-06-2019-0216.
7. Manninen, K.; Koskela, S.; Antikainen, R.; Bocken, N.; Dahlbo, H.; Aminoff, A. Do circular economy business models capture intended environmental value propositions? *J. Clean. Prod.* **2018**, *171*, 413–422, doi:10.1016/j.jclepro.2017.10.003.
8. Sandvik, I.M.; Stubbs, W. Circular fashion supply chain through textile-to-textile recycling. *J. Fash. Mark. Manag.* **2019**, *23*, 366–381, doi:10.1108/JFMM-04-2018-0058.
9. Todeschini, B.V.; Cortimiglia, M.N.; Callegaro-de-Menezes, D.; Ghezzi, A. Innovative and sustainable business models in the fashion industry: Entrepreneurial drivers, opportunities, and challenges. *Bus. Horiz.* **2017**, *60*, 759–770, doi:10.1016/j.bushor.2017.07.003.
10. Gazzola, P.; Pavione, E.; Pezzetti, R.; Grechi, D. Trends in the fashion industry. The perception of sustainability and circular economy: A gender/generation quantitative approach. *Sustainability* **2020**, *12*, 2809, doi:10.3390/su12072809.
11. Provin, A.P.; Dutra, A.R.D.A.; de Sousa e Silva Gouveia, I.C.A.; Cubas, E.A.L.V. Circular economy for fashion industry: Use of waste from the food industry for the production of biotextiles. *Technol. Forecast. Soc. Change* **2021**, *169*, doi:10.1016/j.techfore.2021.120858.
12. Kim, I.; Jung, H.J.; Lee, Y. Consumers' value and risk perceptions of circular fashion: Comparison between secondhand, upcycled, and recycled clothing. *Sustainability* **2021**, *13*, 1208, doi:10.3390/su13031208.
13. Diddi, S.; Yan, R.-N. Consumer perceptions related to clothing repair and community mending events: A circular economy perspective. *Sustainability* **2019**, *11*, doi:10.3390/su11195306.
14. Marques, A.D.; Marques, A.; Ferreira, F. Homo Sustentabilis: Circular economy and new business models in fashion industry. *SN Appl. Sci.* **2020**, *2*, doi:10.1007/s42452-020-2094-8.
15. Paes, C.E.; Bernardo, M.; da Silva Lima, R.; Leal, F. Management of Waste Electrical and Electronic Equipment in Brazilian Public Education Institutions: Implementation Through Action Research on a University Campus. *Syst. Pract. Action Res.* **2017**, *30*, 377–393, doi:10.1007/s11213-016-9399-y.
16. Han, S.L.C.; Chan, P.Y.L.; Venkatraman, P.; Apeagyei, P.; Cassidy, T.; Tyler, D.J. Standard vs. Upcycled Fashion Design and Production. *Fash. Pract.* **2017**, *9*, 69–94, doi:10.1080/17569370.2016.1227146.
17. Moraes, F.T.F.; Gonçalves, A.T.T.; Lima, J.P.; Lima, R. da S. An assessment tool for municipal construction waste management in Brazilian municipalities. *Waste Manag. Res.* **2020**, *38*, 762–772, doi:10.1177/0734242X20906886.
18. Alves, R.; Ferreira, K.L.A.; Lima, R. da S.; Moraes, F.T.F. An Action Research Study for Elaborating and Implementing an Electronic Waste Collection Program in Brazil. *Syst. Pract. Action Res.* **2021**, *34*, 91–108, doi:10.1007/s11213-019-09509-5.
19. Macarthur, E. Towards the Circular Economy: Opportunities for the consumer goods sector. *Ellen MacArthur Found.* **2013**.
20. Bouzon, M.; Govindan, K. Reverse Logistics as a Sustainable Supply Chain Practice for the Fashion Industry: An Analysis of Drivers and the Brazilian Case. In *Sustainable Fashion Supply Chain Management: From Sourcing to Retailing*; Choi, T.M., Cheng, T.C.E., Eds.; Springer International Publishing, 2015; pp. 1–205, ISBN 9783319127033.
21. Sas, I.; Thoney, K.A.; Joines, J.A.; King, R.E.; Woolard, R. Reverse Logistics of US Carpet Recycling. In *Sustainable Fashion Supply Chain Management: From Sourcing to Retailing*; Choi, T.M., Cheng, T.C.E., Eds.; Springer International Publishing, 2015; pp. 3–29 ISBN 9783319127033.
22. Earley, R.; Goldsworthy, K. Designing for Fast and Slow Circular Fashion Systems: Exploring Strategies for Multiple and Extended Product Cycles. *Prod. Lifetimes Environ.* **2015**, *2*, 1–7.
23. Brydges, T. Closing the loop on take, make, waste: Investigating circular economy practices in the Swedish fashion industry. *J. Clean. Prod.* **2021**, *293*, doi:10.1016/j.jclepro.2021.126245.
24. Majumdar, A.; Sinha, S. Modeling the barriers of green supply chain management in small and medium enterprises: A case of Indian clothing industry. *Manag. Environ. Qual. An. Int. J.* **2018**, *29*, 1110–1122, doi:10.1108/MEQ-12-2017-0176.
25. Hedegård, L.; Gustafsson, E.; Paras, M.K. Management of sustainable fashion retail based on reuse– A struggle with multiple logics. *Int. Rev. Retail. Distrib. Consum. Res.* **2020**, *30*, 311–330, doi:10.1080/09593969.2019.1667855.
26. Shashi; Centobelli, P.; Cerchione, R.; Mittal, A. Managing sustainability in luxury industry to pursue circular economy strategies. *Bus. Strateg. Environ.* **2021**, *30*, 432–462, doi:10.1002/bse.2630.

27. Shirvanimoghaddam, K.; Motamed, B.; Ramakrishna, S.; Naebe, M. Death by waste: Fashion and textile circular economy case. *Sci. Total Environ.* **2020**, *718*, 137317, doi:10.1016/j.scitotenv.2020.137317.

28. Nguyen, H.T.; Le, D.M.D.; Ho, T.T.M.; Nguyen, P.M. Enhancing sustainability in the contemporary model of CSR: A case of fast fashion industry in developing countries. *Soc. Responsib. J.* **2020**, *17*, 578–591, doi:10.1108/SRJ-03-2019-0108.

29. Akbar, S.; Ahsan, K. Investigation of the challenges of implementing social sustainability initiatives: A case study of the apparel industry. *Soc. Responsib. J.* **2020**, *17*, 343–366, doi:10.1108/SRJ-09-2019-0291.

30. Arrigo, E. Global sourcing in fast fashion retailers: Sourcing locations and sustainability considerations. *Sustainability* **2020**, *12*, 1-22, doi:10.3390/su12020508.

31. Štefko, R.; Steffek, V. Key issues in Slow Fashion: Current challenges and future perspectives. *Sustainability* **2018**, *10*, 2270, doi:10.3390/su10072270.

32. Jia, F.; Yin, S.; Chen, L.; Chen, X. The circular economy in the textile and apparel industry: A systematic literature review. *J. Clean. Prod.* **2020**, *259*, doi:10.1016/j.jclepro.2020.120728.

33. Chaturvedi, P.; Kulshreshtha, K.; Tripathi, V. Investigating the determinants of behavioral intentions of generation Z for recycled clothing: An evidence from a developing economy. *Young Consum.* **2020**, *21*, 403–417, doi:10.1108/YC-03-2020-1110.

34. Friedrich, D. Comparative analysis of sustainability measures in the apparel industry: An empirical consumer and market study in Germany. *J. Environ. Manage.* **2021**, *289*, 112536, doi:10.1016/j.jenvman.2021.112536.

35. Hill, J.; Lee, H.H. Sustainable brand extensions of fast fashion retailers. *J. Fash. Mark. Manag.* **2015**, *19*, 205–222, doi:10.1108/JFMM-09-2012-0056.

36. Mcneill, L.; Moore, R. Sustainable fashion consumption and the fast fashion conundrum: Fashionable consumers and attitudes to sustainability in clothing choice. *Int. J. Consum. Stud.* **2015**, *39*, 212–222, doi:10.1111/ijcs.12169.

37. Mellander, E.; Petersson McIntyre, M. Fashionable detachments: Wardrobes, bodies and the desire to let go. *Consum. Mark. Cult.* **2021**, *24*, 343–356, doi:10.1080/10253866.2020.1802258.

38. Park, H.; Lee, M.Y.; Koo, W. The four faces of apparel consumers: Identifying sustainable consumers for apparel. *J. Glob. Fash. Mark.* **2017**, *8*, 298–312, doi:10.1080/20932685.2017.1362988.

39. Wiederhold, M.; Martinez, L.F. Ethical consumer behaviour in Germany: The attitude-behaviour gap in the green apparel industry. *Int. J. Consum. Stud.* **2018**, *42*, 419–429, doi:10.1111/ijcs.12435.

40. Yoon, N.; Lee, H.K.; Choo, H.J. Fast fashion avoidance beliefs and anti-consumption behaviors: The cases of Korea and Spain. *Sustainability* **2020**, *12*, 5-7, doi:10.3390/SU12176907.

41. Zhang, B.; Zhang, Y.; Zhou, P. Consumer attitude towards sustainability of fast fashion products in the uk. *Sustainability* **2021**, *13*, 1646, doi:10.3390/su13041646.

42. Siemieniako, D.; Kubacki, K.; Mitręga, M. Inter-organisational relationships for social impact: A systematic literature review. *J. Bus. Res.* **2021**, *132*, 453–469, doi:10.1016/j.jbusres.2021.04.026.

43. Levy, Y.; Ellis, T.J. A Systems Approach to Conduct an Effective Literature Review in Support of Information Systems Research. *Informing Sci. J.* **2006**, *9*, 181–211, doi:10.1109/IEEM.2012.6837801.

44. Gonçalves, A.T.T.; Moraes, F.T.F.; Marques, G.L.; Lima, J.P.; Lima, R. da S. Urban solid waste challenges in the BRICS countries: A systematic literature review. *Rev. Ambient. e Agua* **2018**, *13*, 1–20, doi:10.4136/ambi-agua.2157 Received.

45. Franco, E.F.; Hirama, K.; Carvalho, M.M. Applying system dynamics approach in software and information system projects: A mapping study. *Inf. Softw. Technol.* **2018**, *93*, 58–73, doi:10.1016/j.infsof.2017.08.013.

46. SCOPUS No Title. Available online: https://www.scopus.com (accessed on 1 May 2021).

47. Ellen MacArthur Foundation A new textiles economy: Redesigning fashion's future. Available online: https://www.ellenmacarthurfoundation.org/assets/downloads/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf.

48. de Jesus, A.; Mendonça, S. Lost in Transition? Drivers and Barriers in the Eco-innovation Road to the Circular Economy. *Ecol. Econ.* **2018**, *145*, 75–89, doi:10.1016/j.ecolecon.2017.08.001.

49. Pedersen, E.R.G.; Earley, R.; Andersen, K.R. From singular to plural: Exploring organisational complexities and circular business model design. *J. Fash. Mark. Manag.* **2019**, *23*, 308–326, doi:10.1108/JFMM-04-2018-0062.

50. Talay, C.; Oxborrow, L.; Brindley, C. How small suppliers deal with the buyer power in asymmetric relationships within the sustainable fashion supply chain. *J. Bus. Res.* **2020**, *117*, 604–614, doi:10.1016/j.jbusres.2018.08.034.

51. Claxton, S.; Kent, A. The management of sustainable fashion design strategies: An analysis of the designer's role. *J. Clean. Prod.* **2020**, *268*, 122112, doi:10.1016/j.jclepro.2020.122112.

52. Blazquez, M.; Henninger, C.E.; Alexander, B.; Franquesa, C. Consumers' Knowledge and Intentions towards Sustainability: A Spanish Fashion Perspective. *Fash. Pract.* **2020**, *12*, 34–54, doi:10.1080/17569370.2019.1669326.

53. Freudenreich, B.; Schaltegger, S. Developing sufficiency-oriented offerings for clothing users: Business approaches to support consumption reduction. *J. Clean. Prod.* **2020**, *247*, 119589, doi:10.1016/j.jclepro.2019.119589.

54. Durrani, M. "People gather for stranger things, so why not this?" Learning sustainable sensibilities through communal garment-mending practices. *Sustainability* **2018**, *10*, 2018, doi:10.3390/su10072218.

55. Colucci, M.; Vecchi, A. Close the loop: Evidence on the implementation of the circular economy from the Italian fashion industry. *Bus. Strateg. Environ.* **2021**, *30*, 856–873, doi:10.1002/bse.2658.

56. Leonas, K.K. Textiles and Clothing Sustainability. Textile Science and Clothing Technology. In *The Use of Recycled Fibers in Fashion and Home Products*; Muthu, S., Ed.; Springer: Singapore, 2017, ISBN 978-981-10-2146-6.

57. RES_Brasil Upcycling: Entenda o conceito de reaproveitamento que está na moda. Available online: https://www.resbrasil.com.br/upcycling-entenda-o-conceito-de-reaproveitamento-que-esta-na-moda/ (accessed on Jul 5, 2021).

58. Fung, Y.N.; Chan, H.L.; Choi, T.M.; Liu, R. Sustainable product development processes in fashion: Supply chains structures and classifications. *Int. J. Prod. Econ.* **2021**, *231*, 15, doi:10.1016/j.ijpe.2020.107911.

59. Ki, C.W.; Park, S.; Ha-Brookshire, J.E. Toward a circular economy: Understanding consumers' moral stance on corporations' and individuals' responsibilities in creating a circular fashion economy. *Bus. Strateg. Environ.* **2021**, *30*, 1121–1135, doi:10.1002/bse.2675.

60. Moorhouse, D.; Moorhouse, D. Sustainable Design: Circular Economy in Fashion and Textiles. *Des. J.* **2017**, *20*, S1948–S1959, doi:10.1080/14606925.2017.1352713.

61. Liang, J.; Xu, Y. Second-hand clothing consumption: A generational cohort analysis of the Chinese market. *Int. J. Consum. Stud.* **2018**, *42*, 120–130, doi:10.1111/ijcs.12393.

62. Hu, Z.H.; Li, Q.; Chen, X.J.; Wang, Y.F. Sustainable rent-based closed-loop supply chain for fashion products. *Sustainability* **2014**, *6*, 7063–7088, doi:10.3390/su6107063.

63. Johnson, E.; Plepys, A. Product-service systems and sustainability: Analysing the environmental impacts of rental clothing. Sustainability **2021**, *13*, 2118, doi:10.3390/su13042118.

64. Adıgüzel, F.; Donato, C. Proud to be sustainable: Upcycled versus recycled luxury products. *J. Bus. Res.* **2021**, *130*, 137–146, doi:10.1016/j.jbusres.2021.03.033.

65. Ha, S.; Kwon, S.Y. Spillover from past recycling to green apparel shopping behavior: The role of environmental concern and anticipated guilt. *Fash. Text.* **2016**, *3*, doi:10.1186/s40691-016-0068-7.

66. Ma, Y.; Zeng, B.; Wang, X.; Byrne, N. Circular Textiles: Closed Loop Fiber to Fiber Wet Spun Process for Recycling Cotton from Denim. *ACS Sustain. Chem. Eng.* **2019**, *7*, 11937–11943, doi:10.1021/acssuschemeng.8b06166.

67. O'Reilly, S.; Kumar, A. Closing the loop: An exploratory study of reverse ready-made garment supply chains in Delhi NCR. *Int. J. Logist. Manag.* **2016**, *27*, 486–510, doi:10.1108/IJLM-03-2015-0050.

68. Peters, G.M.; Sandin, G.; Spak, B. Environmental Prospects for Mixed Textile Recycling in Sweden. *ACS Sustain. Chem. Eng.* **2019**, *7*, 11682–11690, doi:10.1021/acssuschemeng.9b01742.

69. Randviir, E.P.; Kanou, O.; Liauw, C.M.; Miller, G.J.; Andrews, H.G.; Smith, G.C. The physicochemical investigation of hydrothermally reduced textile waste and application within carbon-based electrodes. *RSC Adv.* **2019**, *9*, 11239–11252, doi:10.1039/C9RA00175A.

70. Sanchis-Sebastiá, M.; Ruuth, E.; Stigsson, L.; Galbe, M.; Wallberg, O. Novel sustainable alternatives for the fashion industry: A method of chemically recycling waste textiles via acid hydrolysis. *Waste Manag.* **2021**, *121*, 248–254, doi:10.1016/j.wasman.2020.12.024.

71. Atalay Onur, D. Integrating Circular Economy, Collaboration and Craft Practice in Fashion Design Education in Developing Countries: A Case from Turkey. *Fash. Pract.* **2020**, *12*, 55–77, doi:10.1080/17569370.2020.1716547.

72. Norris, L. Waste, dirt and desire: Fashioning narratives of material regeneration. *Sociol. Rev.* **2019**, *67*, 886–907, doi:10.1177/0038026119854273.

73. Fung, Y.N.; Choi, T.M.; Liu, R. Sustainable planning strategies in supply chain systems: Proposal and applications with a real case study in fashion. *Prod. Plan. Control.* **2020**, *31*, 883–902, doi:10.1080/09537287.2019.1695913.

74. Cortes, A. a Triple Bottom Line Approach for Measuring Supply Chains Sustainability Using Data Envelopment Analysis. *Eur. J. Sustainability Dev.* **2017**, *6*, 119–128, doi:10.14207/ejsd.2017.v6n3p119.

75. Mejías, A.M.; Bellas, R.; Pardo, J.E.; Paz, E. Traceability management systems and capacity building as new approaches for improving sustainability in the fashion multi-tier supply chain. *Int. J. Prod. Econ.* **2019**, *217*, 143–158, doi:10.1016/j.ijpe.2019.03.022.

76. Nayak, R.; Akbari, M.; Maleki Far, S. Recent sustainable trends in Vietnam's fashion supply chain. *J. Clean. Prod.* **2019**, *225*, 291–303, doi:10.1016/j.jclepro.2019.03.239.

77. Yasin Petit Pli: Clothes that Grow. *Utop. Stud.* **2017**, *28*, 576, doi:10.5325/utopianstudies.28.3.0576.

78. Warasthe, R.; Schulz, F.; Enneking, R.; Brandenburg, M. Sustainability prerequisites and practices in textile and apparel supply chains. Sustainability **2020**, *12*, 1-19, doi:10.3390/su12239960.

79. Jung, S.; Jin, B. Sustainable development of slow fashion businesses: Customer value approach. *Sustainability* **2016**, *8*, doi:10.3390/su8060540.

80. Neumann, H.L.; Martinez, L.M.; Martinez, L.F. Sustainability efforts in the fast fashion industry: Consumer perception, trust and purchase intention. *Sustain. Accounting, Manag. Policy J.* **2020**, *12*, 571–590, doi:10.1108/SAMPJ-11-2019-0405.

81. Li, B.; Wu, K. Environmental management system adoption and the operational performance of firm in the textile and apparel industry of China. *Sustainability* **2017**, *9*, doi:10.3390/su9060992.

82. Diddi, S.; Yan, R.N.; Bloodhart, B.; Bajtelsmit, V.; McShane, K. Exploring young adult consumers' sustainable clothing consumption intention-behavior gap: A Behavioral Reasoning Theory perspective. *Sustain. Prod. Consum.* **2019**, *18*, 200–209, doi:10.1016/j.spc.2019.02.009.

83. Bukhari, M.A.; Carrasco-Gallego, R.; Ponce-Cueto, E. Developing a national programme for textiles and clothing recovery. *Waste Manag. Res.* **2018**, *36*, 321–331, doi:10.1177/0734242X18759190.

84. Nadae, J. De; Carvalho, M.M. A knowledge management perspective of the project management office. *Brazilian J. Oper. Prod. Manag.* **2017**, *14*, 350, doi:10.14488/bjopm.2017.v14.n3.a8.

85. Ozdamar Ertekin, Z.; Atik, D. Sustainable Markets: Motivating Factors, Barriers, and Remedies for Mobilization of Slow Fashion. *J. Macromarketing* **2015**, *35*, 53–69, doi:10.1177/0276146714535932.

86. Munir, S. Eco-Fashion Adoption in the UAE: Understanding Consumer Barriers and Motivational Factors. *Fash. Pract.* **2020**, *12*, 371–393, doi:10.1080/17569370.2020.1777729.

87. Oelze, N.; Gruchmann, T.; Brandenburg, M. Motivating factors for implementing apparel certification schemes-a sustainable supply chain management perspective. *Sustainability* **2020**, *12*, doi:10.3390/SU12124823.

88. Wang, X.; Chan, H.K.; Yee, R.W.Y.; Diaz-Rainey, I. A two-stage fuzzy-AHP model for risk assessment of implementing green initiatives in the fashion supply chain. *Int. J. Prod. Econ.* **2012**, *135*, 595–606, doi:10.1016/j.ijpe.2011.03.021.

89. Shen, B. Sustainable fashion supply chain: Lessons from H&M. *Sustainability* **2014**, *6*, 6236–6249, doi:10.3390/su6096236.

90. Ciasullo, M.V.; Cardinali, S.; Cosimato, S. A strenuous path for sustainable supply chains in the footwear industry: A business strategy issue. *J. Glob. Fash. Mark.* **2017**, *8*, 143–162, doi:10.1080/20932685.2017.1279066.

91. Grazzini, L.; Acuti, D.; Aiello, G. Solving the puzzle of sustainable fashion consumption: The role of consumers' implicit attitudes and perceived warmth. *J. Clean. Prod.* **2021**, *287*, doi:10.1016/j.jclepro.2020.125579.

92. Miotto, G.; Youn, S. The impact of fast fashion retailers' sustainable collections on corporate legitimacy: Examining the mediating role of altruistic attributions. *J. Consum. Behav.* **2020**, *19*, 618–631, doi:10.1002/cb.1852.

93. Garcia-Torres, S.; Rey-Garcia, M.; Albareda-Vivo, L. Effective disclosure in the fast-fashion industry: From sustainability reporting to action. *Sustainability* **2017**, *9*, doi:10.3390/su9122256.

94. Pelikánová, R.M.G.; Němečková, T.; MacGregor, R.K. CSR statements in international and czech luxury fashion industry at the onset and during the COVID-19 pandemic-slowing down the fast fashion business? *Sustain.* **2021**, *13*, doi:10.3390/su13073715.

95. de Aguiar Hugo, A.; Lima, R. da S. Healthcare waste management assessment: Challenges for hospitals in COVID-19 pandemic times. *Waste Manag. Res.* **2021**, *39*, 56–63, doi:10.1177/0734242X211010362.

96. Macchion, L.; Da Giau, A.; Caniato, F.; Caridi, M.; Danese, P.; Rinaldi, R.; Vinelli, A. Strategic approaches to sustainability in fashion supply chain management. *Prod. Plan. Control.* **2018**, *29*, 9–28, doi:10.1080/09537287.2017.1374485.

97. Zhao, R.; Zhong, S. Carbon labelling influences on consumers' behaviour: A system dynamics approach. *Ecol. Indic.* **2015**, *51*, 98–106, doi:10.1016/j.ecolind.2014.08.030.

98. Xu, Y.; Chen, Y.; Burman, R.; Zhao, H. Second-hand clothing consumption: A cross-cultural comparison between American and Chinese young consumers. *Int. J. Consum. Stud.* **2014**, *38*, 670–677, doi:10.1111/ijcs.12139.

99. Park, H.; Kim, Y.K. Proactive versus reactive apparel brands in sustainability: Influences on brand loyalty. *J. Retail. Consum. Serv.* **2016**, *29*, 114–122, doi:10.1016/j.jretconser.2015.11.013.

100. Fortunati, S.; Martiniello, L.; Morea, D. The strategic role of the corporate social responsibility and circular economy in the cosmetic industry. *Sustainability* **2020**, *12*, doi:10.3390/su12125120.

101. Fortunati, S.; Morea, D.; Mosconi, E.M. Circular economy and corporate social responsibility in the agricultural system: Cases study of the Italian agri-food industry. *Agric. Econ. (Czech Republic)* **2020**, *66*, 489–498, doi:10.17221/343/2020-AGRICECON.

102. de Jong, A.M.; Mellquist, A.C. The potential of plastic reuse for manufacturing: A case study into circular business models for an on-line marketplace. *Sustainability* **2021**, *13*, 1-16, doi:10.3390/su13042007.