European Journal of Social Impact and Circular Economy

Sustainable fashion in the circular economy paradigm: Reduce, reuse and recycle as the new sustainable corporate strategy

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Received: 29/05/2024
Accepted for publication: 26/08/2024
Published: 28/08/2024

Abstract

The aim of this paper is to analyse emerging trends in the fashion industry, focusing on the growing role the circular economy is playing in introducing a new business paradigm based on the so-called "3 Rs" principle: reduce, reuse and recycle. Six interesting case studies are presented; three focus on fashion companies (Rifò, Rapanui and Cingomma) that base their business model on this circular economy principle, while the other three relate to companies (Orange Fiber, Ananas Anam, Due di Latte) using sustainable materials to produce fashion items. The careful selection of raw materials and the application of technological innovation in the production system allow companies to implement new sustainable approaches to production, resulting in two critical outcomes: recycled fashion products that can be reintegrated into the environment and the reuse of products that can be revalued without rather than wasted.

Keywords: Fashion Industry, Sustainability, Circular Economy, Product Innovation, Business Models, Corporate Strategy

European Journal of Social Impact and Circular Economy - ISSN: 2704-9906
DOI: 10.13135/2704-9906/10383 Published by University of Turin http://www.ojs.unito.it/index.php/ejsice/index

1. Introduction

The fashion industry, one of the worst polluters in the world with multiple environmental impacts (Brand-Correa and Steinberger, 2022), is facing a radical transformation. Global demographic and digitalisation growth, resource scarcity and climate change acceleration are challenging companies both to produce sustainable fashion products and to innovate their business models based on the circular economy paradigm (Abdelmeguid et al., 2022; D'Adamo et al., 2022; Galatti and Baruque-Ramos, 2022) in order to remain competitive and profitable in the long run (Hahn and Figge, 2011). Consumers around the world are increasingly aware that the fashion industry largely has a significant adverse impact on the environment, as a result of both the industry's complex supply chain and the shift towards the fast fashion paradigm (Vătămănescu et al., 2021). The scandals that have occurred over the years in the fashion sector, in particular linked to the unregulated intensive use of resources or the exploitation of animals, have led to the acquisition of greater awareness of the unsustainability of a model like the current one. Fast fashion giants often come under scrutiny for the exploitation of workers throughout the entire production chain and for non-existent environmental policies (the investigation - '*Untold: Inside the Shein Machine'* - is recent and has impressed the world). But even over the years there has been no shortage of reports of animal exploitation (as in the documentary '*Slay'*). The Moncler case is emblematic.

According to recent research conducted by BOF McKinsey (2021), today's consumers are more ethically minded, and they are asking to companies to build their businesses with a conscience. Companies are also facing pressure from consumers to take actions, but the situation is not clear, as there is not an agreed-upon definition of what is sustainable, natural or clean. Nevertheless, technological advancement, marked by the continuous impulse to innovate products and the increase in applications for new sustainable fibres (Nayak et al., 2023), are paving the way to a more sustainable future for fashion.

The importance of the change in strategy is also emphasised by the European Union, which in recent years has approved a series of regulatory interventions aimed at increasing the sustainability of economic activities and encouraging the adoption of circular economy practices, as opposed to the traditional linear economy model. In particular, as pointed out by a study by the European Parliament (2023), 2.1 billion tonnes of waste are produced in the EU every year, but despite this, the way in which this waste is managed has improved: a decrease in the use of landfills has led to an increase in recycling and composting, i.e. a gradual transition towards the circular economy. While recent European regulations (e.g. the Green Taxonomy, CSRD) have fostered the development of sustainable practices, the European Parliament in recent years has passed a number of measures to realise the circular economy (among others, a resolution on the new action plan for the circular economy in 2021 and the revision of the EU regulations on packaging and packaging waste in 2023). In 2020, the European Commission presented the action plan for a new circular economy in which special attention was paid to the textile sector, a high impact sector, where textile purchases in the EU in 2017 generated approximately 654 kg of CO2 emissions per person (European Environment Agency, 2019). Two years later it then published the first package of measures to accelerate the transition to a circular economy. All this in a global context in which attention to the environment has become central in strategies, one only has to think of the UN Millennium Development Goals 2000 (15 MDGs) or the UN Sustainable Development Goals (17 SDGs). The circular economy is also very important in Italy, which is the European leader in waste recovery and recycling and in the circular economy, having the highest percentage of recycling on all waste equal to 79%, a productivity of resource use and a circularity rate of material in the economy higher than the European average (Symbola Foundation, 2021).

Fashion companies today are pressed by the need to invest in new technologies (Kemp et al., 2005) and to reinvent their manufacturing processes in order to reduce the environmental impact of their activities and to increase safety for consumers. At the same time, fashion companies increasingly focus on sustainability by investing in both product and process innovation

with the aim of creating fashion products that respect the environment and respond to purchase choices increasingly driven by ethical and emotional motivations. In this context, the concept of eco-fashion, understood as an approach oriented to employing best practices to attain environmental sustainability and to address social responsibilities, has spread in recent years. These needs have led to the development of new business strategies geared towards sustainability. Sustainability issues in the fashion industry are the result of the balanced integration of economic, social and environmental performance (Pedersen, Earley and Andersen, 2019). Circular fashion (Peleg Mizrachi and Tal, 2022; Shou and Domenech, 2022; Ki, Chong and Ha-Brookshire, 2020) represents the implementation of sustainability principles within the corporate strategy. According to Claxton and Kent (2020), the fashion industry implements sustainability strategies mainly related to the choice of materials and production steps recommended by the circular design approach. Lately, however, research has identified other aspects of the life cycle, such as "*design for durability or longevity, recycling, zero-waste approaches and disassembly*" (Claxton and Kent, p. 8, 2020). The circular economy in the fashion industry is an area of research that has been investigated in the literature but has several significant gaps. Most studies focus on specific aspects, such as material recycling or sustainable production, without considering the interconnectedness between the different phases of the product life cycle (Geissdoerfer et al., 2017). The current literature often does not adequately consider the role of emerging technologies and emerging paradigms in facilitating the transition to the circular economy (Minunno et al., 2020). Finally, there is limited study of the social implications of the circular economy in the fashion industry, especially in terms of its impact on working conditions and social justice (Henry et al., 2020). These gaps highlight the need for alternative methodological approaches to fill existing gaps.

Based on these premises, the following research question was developed:

RQ1) How are fashion companies innovating their business model in relation to circular economy principles?

These new practices have resulted in the fashion industry applying the so-called "three Rs paradigm" (Recycle, Reuse and Reduce) as a way to improve the quality of life for both environments and people by paying increasing attention to sustainability and corporate social responsibility (Zbuchea, Petropoulos and Partyka, 2018).

For this reason, the second research question investigated is as follows:

RQ2) What are the positive consequences of fashion companies applying the three Rs paradigm?

This paper analyses emerging trends in the fashion industry, focusing on the growing role the circular economy is playing in introducing a new business paradigm based on the so-called "three Rs" principle: reduce, reuse and recycle. In particular, the paper develops the notion of corporate sustainability in the fashion industry in order to highlight sustainable issues faced by companies in the market. The study explores how some companies have adopted and developed this new business paradigm, considered a best practice in the fashion industry, and analyses the outcomes from a dual perspective: consumer perspective and quality of life perspective.

The structure of the paper is as follows: the introductory paragraph is followed by a review of relevant literature (circular economy in the fashion industry, the three Rs paradigm, SDG 12). This is followed by an explanation of the methodology and the analysis of six case studies. The selected case studies aim to show how sustainability represents a critical driver of growth

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DOI: 10.13135/2704-9906/10383 Published by University of Turin http://www.ojs.unito.it/index.php/ejsice/index

for fashion companies and a strategic tool to improve the quality of life (Papagiannis et al., 2018). The paper concludes by answering the two research questions based on the outcome of the case study analyses.

2. Literature review

2.1 Circular Economy in the Fashion Sector and the 3 Rs Principle

The circular economy aims to overcome the linear model of production and consumption (Camilleri, 2018; Merli, Preziosi and Acampora, 2018). Companies are increasingly adopting innovative business models (Colombi and D'Itria, 2023) inspired by sustainability as a main driver for enhancing their long-lasting competitiveness (Gazzola, 2018; Gazzola et al., 2019). Fashion, one of the most polluting sectors of the economy (Sehnem et al., 2024), is a resource-intensive industry, where opportunities to reduce environmental impact and innovate business models abound (Todeschini et al., 2017; Pollifroni, 2012) but only with the total involvement of stakeholders along the entire value chain (Mahanty and Domenech, 2024). According to Niinimäki (2017), building a truly circular economic system requires a new type of system and radical innovations, as well as ten challenges that management must face to deal with the transition from linear to circular economy (Abdelmeguid, Afy-Shararah and Salonitis, 2024).

Today's fashion companies are being called upon to take up the challenge of meeting consumers' needs without compromising the quality of both environment and life by progressively reducing their ecological impact and resource intensity in line with Earth's estimated carrying capacity (DeSimone and Popoff, 2000). The fashion industry is not yet comparable to a circular system, characterised by materials that generate 'additional value' and not 'additional wastes'. However, many pioneering companies are exploring the potential related to the application of circular models in fashion. In line with these trends, companies in the fashion sector are increasingly interested in the use of recycled fibres, yarns, and fabrics in the development and production of new products (Papamichael et al., 2023). Unfortunately, it's a slow transition because of regulations, logistics, technical and economic resources and appropriate infrastructures.

The ‘CEO’s Fashion Agenda’ is an international initiative with the ultimate goal of creating durable products that encourage the disassembly of fibres and the creation of recyclable garments. On the other hand, several initiatives have been launched to promote the collection of used garments among retailers. To achieve their goals, leading fashion companies should collaborate with governments to develop circular systems (Chalmer et al., 2018). Recycled textile materials can be obtained through two processes: through the supply chain and through post-consumer collection methods (Leonas, 2017).

For a 34-month period, Hvass and Pedersen (2019) examined a global fashion brand that launched a new in-store product recall initiative. The authors identified emerging challenges and sustainable solutions arising from the integration of circular economy solutions within existing business models. On the one hand, fashion companies are increasingly required to incorporate the circular economy paradigm in their business strategies; on the other hand, consumers expectations need to be carefully analysed to better understand how sustainability affects both consumer perceptions and behaviour. Hu et al. (2019) identified the drivers of participation and non-participation in the circular economy, as well as the emergence of potentially new circular economy

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micro-entrepreneur. This business model, which is likely to grow in the future, is based on consumers who easily access consumption (Battle, Ryding and Henninger, 2018).

In the world of fashion, in recent years, the three Rs have assumed increased importance in driving companies' strategies, both at corporate and business level, with an important impact on the path to innovation (Dymchenko et al., 2021). Savings in fashion manufacturing processes are based on energy efficiency, derived from the possibility of containing production costs and reducing the consumption of water required to process raw materials. The reuse principle refers to reusing a product by extending its life cycle; this allows the product to be revitalised and reintroduced into the market, a practice that allows companies to reduce waste and optimise production processes while responding to a growing market demand for conscious purchasing (Papagiannis et al., 2021). The practice of reuse in the fashion market follows the trend to produce customised items (i.e. craftsmanship and manual workmanship). An obvious virtuous example in the textile industry is the transformation of polyethylene terephthalate containers into continuous filaments that can be used in garments (Pavione and Pezzetti, 2015). Intervening in all phases of the value chain is important to ensure sustainability in the fashion industry (Gazzola, Pavione, and Pezzetti, 2017):

"- *provision of raw materials (low ecological impact, deriving from recycling, renewable sources or fair-trade initiatives);*

- *production (reusing and reducing water resources, reducing energy consumption in the manufacturing processes, adopting technologies funded on ecological principles, recycling discards and excess production, etc);*

- *logistics (rationalising transportation flow, using vehicles with low impact, reducing packaging or use recycling packaging);*

- *promotion (eco-compatible preparation, furnishings etc., forms of communication and encouraging reduced environmental impact);*

- *end of life (reuse, recycling, degree of biodegradability)*".

The different combinations of the three Rs could be considered a driver of enhanced differentiation in both the market andbusiness models, where sustainability is becoming critical to a company's long-lasting competitiveness , improving brand image, and building a solid market reputation.

As highlighted in the literature, there are barriers and opportunities for the implementation of circular economy principles in the different sectors (Kirchherr et al., 2018) and in particular in the fashion industry (Sehnem et al., 2024; Dissanayake and Weerasinghe, 2021). Among the main barriers identified, is the high fragmentation of the value chain (Mishra, Jain and Malhotra, 2021). Furthermore, the perceived poor quality of recycled materials (Jia et al., 2020), the lack of company policies oriented towards sustainability and the low knowledge of sustainability-related issues among workers prevent the shift towards the circular economy. One of the main problems identified is the absence (or poor presence) of teaching sustainability practices within political pedagogical projects, both at a generalist level and in Fashion Design courses (Sehnem et al., 2024). The implementation of the principles of the circular economy, despite the existing barriers, would make it possible to obtain a series of positive results, such as for example the protection of biodiversity, savings in the use of resources, the reduction of environmental impacts, but also an increase productivity of the territory, an improvement of working conditions and the reduction of company costs.

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2.2 SDG 12: Responsible Consumption and Production

In September 2015, the governments of the 193 United Nations member countries signed the 2030 Agenda for Sustainable Development Action Program. It encompasses 17 Sustainable Development Goals (SDGs). Each goal is interdependent and wide-ranging. Moreover, each goal is linked to a list of tangible results that are measurable with indicators (Colglazier, 2015). The circular economy is a key strategy for achieving the United Nations Sustainable Development Goals (SDGs). The link between the circular economy and the SDGs is particularly evident in several goals, mainly including Goal 12 (Responsible Consumption and Production), which promotes waste reduction through prevention, reduction, recycling, and reuse (Thakker and Sun, 2023; Velozo Valenga et al., 2023; Schroeder, Anggraeni and Weber, 2019). The circular economy is a particularly innovation that can also support the achievement of other objectives related to the Agenda, in particular the following: SDG 6 (relating to water), SDG 7 (relating to energy), SDG 13 (relating to climate change) (Geissdoerfer et al., 2017), SDG 14 (relating to the oceans) and SDG 15 (relating to terrestrial life). In summary, the circular economy not only directly supports various SDGs, but also promotes an integrated approach to sustainability in which economic, social, and environmental goals are closely interconnected.

In particular, the achievement of Goal 12, "*Responsible Consumption and Production*", calls into question the linear model of the traditional economic system. This Goal, fixed in the UN Agenda, originates from the fact that the world population currently consumes more resources than it can generate and supply; it also pushes to identify innovative solutions in the framework of social and environmental sustainability, involving both the production and consumption side (Gasper, Shah and Tankha, 2019; Gazzola et al., 2020). Therefore, it's a Goal with a dual purpose. Firstly, it pushes companies to implement sustainable practices aimed at reducing waste, including recycling and sustainable public procurement. Secondly, it encourages consumers to reduce waste and make responsible purchases and pushes them to inquire about the origin and composition of the products purchased (Bengtsson et al., 2018).

Decisions related to production and consumption must be made by all levels, from supranational and national bodies to individuals, each of whom contribute in different ways to the implementation of a new circular economy model. To achieve this goal, it's not enough to perform virtuous but disconnected actions that are not integrated via a structured strategy. Instead, it's important to follow real sustainable behaviour models (Andrei, Gazzola, Zbuchea and Alexandru, 2017). As the production cycle starts with the use of raw materials and natural resources, it's essential to minimise the impact on the environment in the acquisition of these resources. The circular economy model is based on secondary raw materials, which are materials recovered from scraps and waste or previously used in otherproduction cycles that are regenerated and reintegrated into a new production cycle (Prieto-Sandoval, Jaca and Ormazabal, 2018). The circular economy model involves careful management of products as they reach the end of their use, when the potential waste is about to be created. This management involves a series of three phases: collection, breakdown and recovery. The different phases must enable the materials to be recovered as widely as possible. This allows for the regeneration and reuse of recovered materials in new production cycles. Eliminating waste and reusing and extending the life of the goods in circulation are two behaviours that should guide consumers (Sala and Castellani, 2019).

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McDonough and Braungart (2013) propose applying new methods of cooperation between industry and final users to change the traditional way of thinking about waste. The suggested approach is based to the principle of eco-effectivity: the choice to do the right thing, meaning to thrive as a society, nourish the life cycle of the planet and feed the technological cycle of the industries without feeling guilty about consumption (Pessôa, Araújo and Arruda, 2015).

3. Methodology

To investigate the complex process of change that involves consumers' habits and companies' approaches to sustainable practices in the fashion market, six case studies related to the application of circular economy principles are presented. In particular, the qualitative methodology used follows that developed by Lanzalonga, Marseglia, Irace and Biancone (2024), based on case studies. In detail, the study was developed by considering two steps. In the first, six relevant case studies were identified. In the second, a research design was created.

The six start-ups that were chosen are characterised by corporate visions focused on sustainability and circular economy principles, an approach to business that has allowed them to grow in the market and successfully overcome the initial start-up phase. These fashion companies have particularly distinguished themselves in the field of the circular economy, having won awards and/or sitting at the top of international rankings, as specified in the sections dedicated to the analysis of the individual case studies. Only start-up companies were selected, i.e., companies that had made product or process innovations (and not exclusively business model innovations, such as Zara). The results are, therefore, replicable to other companies with similar characteristics.

The companies chosen share a common sustainable corporate strategy: improving the quality of life and creating value for consumers. They are as follows: Rifò, a company that reuses and transforms old clothing; Rapanui, a sustainable clothing brand born in 2009 based on the idea of creating clothing, from the production to the packaging phase, without producing any kind of waste; Cingomma, an eco-friendly Italian company that recycles bike tires and air chambers into belts, key holders and bags; Orange Fiber, an Italian start-up that uses orange waste to produce fashion items; Ananas Anam, which uses ananas fibre; and DuedilLatte, which uses milk fibre to produce fashion items.

These companies have the following characteristics (Table I):

Table I: Characteristics of companies

	Revenue	Number of employees	Geographic location
Rifò	€ 2.3 Million (2022)	19 (2024)	Prato (PO), Italy
Rapanui	$ 5.7 Million (2023)	87 (2023)	Freshwater, Isle of Wight, United Kingdom
Cingomma	€ 200 Thousand (2023)	0 (2023)	Torino (TO), Italy
Orange Fiber	€ 88 Thousand (2022)	4 (2024)	Catania (CT), Italy
Ananas Anam	$ 8.6 Million (2023)	22 (2023)	London, United Kingdom

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DuediLatte[1]	€ 13 Thousand (2021)	0 (2021)	Crans-Montana, Switzerland

Source: Authors own elaboration

The research design is structured in five key steps to ensure the reliability of the results (Cascante et al., 2022). After defining research objectives (Eisenhardt, 1989) and methodology (Massaro, Dumay and Bagnoli, 2019), six case studies were selected, considering the variables listed above. To collect the data, two authors independently analysed the company websites (publicly available official data) (Gazzola et al., 2020b). Next, according to Gioia, Corley and Hamilton (2013), the collected data were analysed "*through an iterative reasoning cycle based on an inductive search approach*" (Lanzalonga et al., 2024, p. 6). The results of the analysis were then compared and evaluated in light of the two variables investigated in our analysis: quality of life improvements and consumer perspectives).

4. Results

4.1 Rifò

Rifò (table II) is an Italian fashion company created in December 2017 and based in Prato, an historical textile district in the Tuscany Region. The idea was born when one of the funders, while working for the United Nations in Vietnam, realised that the clothing made in Vietnam and exported to Europe was returned to Vietnam in order to be landfilled or incinerated if it was not sold. Starting from this observation, he decided to bring back the Prato tradition of local cloth fabrics.

Rifò started out as a start-up with a crowdfunding campaign in which about 8,000 euros was invested, and in 2020, after about two years of activity, they had a turnover of 500,000 euros. Rifò has launched different green ideas over the years. Among them, the Rifò t-shirt collection is made with 1 kg of old clothing and four plastic bottles recovered from the ocean. The t-shirts are not dyed. Instead, the colour of the new regenerated yarn is obtained from old garments of the same colour in order to reduce the consumption of chemical products during the processing. In addition, a Rifò t-shirt requires only 30 litres of water for production instead of the 2700 litres required to produce a normal virgin cotton t-shirt. In 2018, Rifò launched its first 100% regenerated cashmere collection, an eco-friendly solution preserving all the qualities of virgin cashmere garments. Thanks to an innovation introduced in the production process, the use of pesticides and chemical products is drastically reduced. The cashmere is entirely lowered and sewn without any kind of cut.

In 2019, Rifò launched the Jeans Sweater collection. It consists of sweaters made from 100% recycled denim fabrics (jeans fabric); 97% is cotton and the remaining 3% is others fibres derived from jeans seams. The colours of these sweaters is the same as that of the original jeans, completely eliminating the use of artificial dyes and chemicals during production. For the production of each "jeans sweater", only 80 litres of water are required, instead of the 3000 litres necessary for producing virgin cotton jeans, reducing water consumption by 90%, energy consumption by 77% and CO2 emissions by 95%. The whole production process of these new "jeans sweater" is located within 30 km of Prato, thus improving the local economy with the

[1] Since 2022 the company has been taken over by Duedilatte Switzerland Sàrl.

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guarantee of quality and ethics in the whole production process (www.rifo-lab.com). Rifò is listed in the top 10 of responsible fashion brands in Italy (Luxiders, 2021).

Table II: Rifò

Rifò		
Improve quality of life	Recycle	Use remanufactured products
	Reduce	Reduce environmental impact by reducing clothing waste put in incinerators
	Reduce/Reuse	No discount prices during winter and summer sales, pushing consumers to buy only the necessary clothing
Consumer perspectives		Creating consumer awareness of the real need to buy clothing items
		Products are exclusively produced in Italy

Source: Authors own elaboration

4.2 Rapanui

Rapanui (table III) is a sustainable clothing brand born in 2009. The founders had the idea to create clothing, from the production to the packaging phase, without producing any kind of waste. They started to create this new venture in their garden shed. After two months, they created their first t-shirt; after one year, they launched their first collection. Since their business was growing, they had to move to a larger working space. In 2011, Rapanui developed the "*traceability map*", where every clothing production trajectory is identifiable. As their production increased, they acquired a new printing technology, the Teemill platform, a real-time printing technology that allowed them to radically reduce waste. Using this platform, waste is significantly reduced because t-shirts are printed only after customers express their preferred print, thus avoiding overproduction. Teemill is therefore a circular production process that can modify old T-shirts by creating new ones with regenerated natural systems. Access to the Teemill supply chain is free for start-ups, and, until now, it has enabled tens of thousands of brands to produce t-shirts in real time. In addition, all T-shirts are designed to be returned and remade when worn. The whole Teemill supply chain increases material utilisation and reduces chemical and water inputs and emissions outputs, sharing the benefits with customers and other businesses. In 2013, aware of the huge waste in throw away clothing, Rapanui created and implemented the *"return to base"* policy: once their customers are done with their Rapanui's clothing, they can return items to the store so that the company can reuse them to create new garments. In 2014, to make their customers aware of sustainability issues, they designed a collection in collaboration with WWF, and in 2018, they created the Ocean Collection to address the plastic problem (Rapanui, 2020). Rapanui is listed in the top 10 Ethical Clothing Companies (ethicalconsumer.org).

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Table III: Rapanui

Rapanui		
Improve quality of life	Reduce	Reduce negative environmental impacts
	Reduce/Recycle	Reduce waste
	Reuse	Transform old t-shirts into new ones
Consumer perspectives		Value as a priority
		To offer something new, innovative and really eco-friendly

Source: Authors own elaboration

4.3 Cingomma

Cingomma (table IV) was established in 2010. It is an eco-friendly Italian company that recycles bike tyres and air chambers. The company transforms old tires, neoprene waste and discarded advertising signs into belts, key holders and bags (Tortello, 2012). In Italy alone, 380,000 tons of tyres are destined for disposal every year. Cingomma has chosen to recycle these materials, treating them with advanced cleaning systems and transforming them into highly desirable handmade clothing accessories that are 100 per cent made in Italy. Cingomma aims to combine passion, skills and talent to create a product that embodies sustainable and ethical values. Fashion accessories are characterised by a progressively numbered fabric label that testifies to the uniqueness of each product. This numbering is negative in order to communicate how much material Cingomma has managed to keep out of landfills since its first product. Cingomma has chosen to focus production on local Italian artisans in order to avoid the delocalisation of the production process and to sustain the creation of jobs in the local communities where the company operates. This mission has earned it a certification from Positive Causes.

Table IV: Cingomma

Cingomma		
Improve quality of life	Recycle	Recycles bike tyres and air chambers
	Reduce	Environmental values embedded in their core businesses and reduces waste
	Reduce	Eco-friendly attitude and practices represent an added value
Consumer perspectives		Handmade by artisans in Italy
		Added value for their customers

Source: Authors own elaboration

The company mostly uses a business-to-business commercial strategy by providing clothing items to stores. Cingomma has also launched its own website, offering the possibility to purchase Cingoma's products online. However, the availability of online shopping is strictly restricted to certain areas where physical shops are not available to customers (Lava, 2019).

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Cingomma has environmental values embedded in their core businesses and mission. These eco-friendly attitudes and practices represent an added value for their customers and other strategic stakeholders. They create advantages not only for the company but for the environment. By using old materials, Cingomma is able to save on the cost of raw materials while reducing waste and CO2 emissions (Cingomma, 2020). The company is listed in the top 10 Italian Sustainable Fashion Brands (vestilanatura.com).

4.4 Duedilatte

Duedilatte (table V) is currently one of the most innovative Italian brands in the fashion scene. The company was created in 2013, when the founder had the idea of creating a new textile fibre starting from spent milk. She was inspired while making her morning coffee. Opening the fridge only to find that her milk was expired, she thought about how it might be used. According to the Italian agricultural association Coldiretti, the country wastes an estimated 30 million tons of dairy each year. The company gives a second life to what most people consider waste. Another advantage is that milk-based fabrics require much less water to produce: to make 1 kg of milk-based fibre requires only 1 litre of water, while the production of 1 kg of cotton requires 50 litres of water. Fashion professionals love the soft and pleasant textures of milk fibres, which caress and hydrate the skin thanks to the naturally high amounts of amino acid. Milk fibre is soft, 10% lighter then silk, hypo-allergic, anti-bacterial, and has a natural thermoregulatory property. Moreover, it's soft to the touch, shiny, and maintains the same characteristics after numerous washings.

Table V: Duedilatte

Due di latte		
Improve quality of life	Innovation	Promotes a new material without the use of toxic materials
	Reduce	Promotes a circular economy model for waste processes improve waste reduction
	Sustainability	Disseminates sustainable practices
Consumer perspectives		Combining fashion, quality and well-being
		Eco-friendly features throughout the production process

Source: Authors own elaboration

Duedilatte debuted with a t-shirt collection for men, women and children. The research and development team has invested time and resources to become a reference point in the technological field for the sustainable textile sector, creating new innovative textile fibres starting from agro-food surpluses, such as Cìcoffee and rice yarns.

Protein and vegetable fibres that arise from circular economy and environmental sustainability processes are the cornerstones of their corporate philosophy.

The production is now 100 per cent chemical-free. Even the dyes are from natural sources like blueberries and red onion (Duedilatte, 2020). The company is listed in the top 10 Italian start-ups that are changing the fashion world (Balena, 2018).

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DOI: 10.13135/2704-9906/10383 Published by University of Turin http://www.ojs.unito.it/index.php/ejsice/index

4.5 Orange Fiber

Orange Fiber (table VI) is an Italian company founded in 2014 that creates sustainable fabrics from citrus juice by-products that would otherwise be thrown away, representing hundreds of thousands of tons of precious resources every year. Orange Fiber has developed a process for extracting cellulose fibre from orange peel and transforming these fibres into biodegradable yarn. The sustainable fabric is similar to silk; they envision a new life for these materials, transforming them into refined, ethereal fabrics perfectly suited to the Italian tradition of high-quality fabrics and high fashion. Orange Fiber was able to attract the attention of high-end fashion brands. The company's yarn was first brought to market by Salvatore Ferragamo, who launched a daily wear capsule collection using the fibre on Earth Day 2017. The developed product can be printed, coloured and packaged, so brands don't have to modify their suppliers, and it can be woven together with any other material.

The company's patented technique responds to market drivers from both consumers and producers. Whereas consumer demand for sustainable materials is rising, citrus juice companies face increasing burdens and challenges in properly disposing of waste. The fibre from citrus juice by-product does not require additional natural resources. Instead, it reuses waste, preserving land and water, avoiding the use of fertilisers and reducing environmental impact because it does not produce additional industrial waste. This practice reduces the costs and environmental impact of pollution related to the management of citrus juice by-products, which measure more than 700,000 tonnes in Italy per year.

Orange Fiber wants to establish themselves as the first Italian mover in the segment of sustainable fabrics through the "green" production of cellulosic fabrics from renewable sources and to create a highly recognisable textile brand for its commitment to environmental protection and transparency (Orange Fiber, 2020). The company is in the top 10 Italian start-ups that are changing the fashion world (Balena, 2018).

Table VI: Orange Fiber

Orange fiber		
Improve quality of life	Recycle	Created from citrus juice by-products that would otherwise be thrown away
	Reduce	Doesn't produce additional industrial waste
	Reduce	Reduces the environmental impact of pollution from citrus juice by-products
Consumer perspectives		Answers the consumer demand for sustainable materials
		Practices transparency

Source: Authors own elaboration

4.6 Ananas Anam

Ananas Anam (table VII) is a London-based company that produces Pinatex, an innovative textile that offers a sustainable alternative to leather and synthetic materials. Pinatex is one of those rare products of design thinking that has a significant

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DOI: 10.13135/2704-9906/10383 Published by University of Turin http://www.ojs.unito.it/index.php/ejsice/index

environmental and welfare impact, bringing new income streams to subsistence farmers and allowing them to fully utilise their crops. The implementation of Pinatex will have far-reaching societal and environmental benefits.

The extraction of the fibres is done by the farming community at a plantation. The company has created an automated decorticating machine that allows farmers to utilise greater quantities of their waste leaves. When the leaves have been stripped of fibre, nothing is wasted, and the residual leaf biomass can be used as a nutrient-rich natural fertiliser or a biofuel. The fabric is entirely made from agricultural waste, without using other water resources, pesticides or fertilisers. It transforms what already exists and brings commercial value to growers thanks to the exploitation of the leaves.

The company totally applies the values of the circular economy model. Ananas Anam combines research and innovation to enhance the well-being of the people and the planet during the entire life cycle of their product. To obtain the raw material, no additional environmental resources are necessary, and no chemicals on the list of banned substances are used in production. Non-woven mesh is biodegradable. The raw material is found in the Philippines, where there are large pineapple crops, and the local population is involved in the collection and the first stages of processing (Ananas-Anam, 2020). The company is the winner of the 2020 Fashion Innovation Award, which is awarded every year in Switzerland (Loumish, 2020).

Table VII: Ananas Anam

Ananas Anam		
Improve quality of life	Support rural communities	Supports rural communities by working directly with agricultural cooperatives
	Reduce	Enables farmers to utilise greater quantities of their waste
	Reduce	Does not require other water resources, pesticides or fertilisers
Consumer perspectives		Combines research and innovation to enhance the well-being of people
		Avoids the use of chemicals necessary for leather, which are particularly harmful to people

Source: Authors own elaboration

5. Discussion and conclusion

The selected case studies were aimed at showing how sustainability represents a critical driver of growth for fashion companies and a strategic tool to improve the quality of life (Papagiannis et al., 2018). The elements investigated highlight the main emerging trends in the fashion sector, underlining the growing use of the circular economy and the paradigm of the 3Rs principle. In particular, in the group of three companies that base their business model on the principles of the circular economy, Rifò and Rapanui are the companies that, in order to improve the quality of life, adopt a business paradigm based on the 3Rs. Cingomma, on the other hand, mainly uses two R's (recycle and reduce). The other three companies use sustainable materials to produce fashion products. In this group Orange Fiber and Ananas Anam, by virtue of their business model, adopt the R of reduction. It therefore appears that "reduce" is the principle of the circular economy that is developing the most, followed by "recycle" and finally by "reuse". The analysis also led to the identification of the consumer's perspective. It is clear that all

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companies adopt this perspective in the production of fashion products. Localised production in Italy, the hand-crafting of products, attention to quality, the adoption of transparent practices, the non-use of harmful chemical elements, are all examples of strategies used with a view to focusing on the consumer. In general, however, both in response to growing regulatory pressures and in response to real needs to improve the quality of life and attention to consumer needs, fashion companies are increasingly adopting sustainable practices (Gazzola, Pavione and Pezzetti, 2017). This will lead to the progressive transition towards forms of circular economy (Dissanayake and Weerasinghe, 2021). The fashion industry can therefore achieve sustainable development through the circular economy and the involvement of consumers (and stakeholders in general) (Ki, Chong and Ha-Brookshire, 2020).

The transition of the fashion industry from a traditional high-environmental impact model to a circular economy model (Colombi and D'Itria, 2023) shifts the focus to reusing, adjusting, renovating and recycling both materials and final products. This transition is not only necessary to address a growing demand for goods and services that contrasts with an ever-decreasing availability of natural resources, but also allows fashion companies, especially start-ups, to innovate their business models according to sustainability principles. In relation to RQ1, in the circular economy model, what is normally considered "waste" can be transformed into a valuable resource by applying a new paradigm based on the so-called "three Rs principle": reduce, reuse and recycle. The application of this new paradigm (RQ2) not only allows fashion companies to transform waste into new resources, but also impacts the continuous desire for both product and process innovation, with important effects on the competitiveness of fashion players. Besides, the application of circular economy principles in the fashion industry leads to the implementation of the UN's 2030 Sustainable Development Goals, in particular Goal 12, which is related to Responsible Consumption and Production. In addition, it reduces the risks of fluctuating costs due to the variation in the prices of raw materials. In particular, the application of the "three Rs principle" encourages and drives both product and business model innovation while simultaneously encouraging the establishment of stronger and longer-lasting relationships between companies and customers based on mutual trust and the sharing of common ethical values. From an environmental point of view, the circular economy approach based on the "three Rs" paradigm reduces greenhouse gas emissions, water consumption and the use of primary scarce resources while simultaneously increasing soil productivity, with an overall positive impact on both the environment and quality of life.

Even if awareness of the importance of the three Rs has improved among both fashion companies and consumers in recent years, the application of such principles today is still only happening in small-scale projects, mostly proposed and promoted by start-up companies that are basing their competitive advantages on sustainability and new business models inspired by the circular economy model. The six selected case studies show how these companies' ability to apply the three Rs principles (reduce, recycle and reuse) through product and process innovation has enabled them to achieve their vision of improving the quality of life by reducing waste, the use of resources, and the impact on the environment, all while supporting rural communities. At the same time, their ability to innovate products by offering sustainable and eco-friendly fashion items has generated value for their consumers while helping to create awareness in the market, an element capable of implementing corporate social responsibility.

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The present study therefore overcomes the limitation of many studies that focus on specific aspects (material recycling or sustainable production) without considering the interconnection between the different phases of the product life cycle (Geissdoerfer et al., 2017). It also considers the role of emerging paradigms in facilitating the transition towards the circular economy, often little considered in the literature (Minunno et al., 2020).

Considering the practical and managerial implications of the paper, circular economy models open interesting perspectives for entrepreneurs in the fashion industry, going far beyond sustainability. The application of the "three Rs principles", in particular, can create new market opportunities for start-ups, such as Orange Fiber, Anas Anam and Duedilatte, which enhance recovered waste and transform it into new raw materials, because this practice is particularly appreciated by consumers, it creates new niche markets, allowing companies to rapidly increase their brand awareness and reputation.

The main limitation of this study is the use of official information (taken from the companies' websites), without the use of interviews to enrich the research results. Further development could, therefore, combine a methodology of public website analysis with semi-structured interviews with company management and, possibly, main stakeholders. Furthermore, as highlighted in the methodology, only start-ups that have carried out product/process innovations and not model innovations were considered in the current study.

6. Acknowledgements

This publication is part of the project NODES which has received funding from the MUR – M4C2 1.5 of PNRR funded by the European Union - NextGenerationEU (Grant agreement no. ECS00000036).

7. References

Abdelmeguid, A., Afy-Shararah, M., & Salonitis, K. (2022). Investigating the challenges of applying the principles of the circular economy in the fashion industry: A systematic review. *Sustainable Production and Consumption*, *32*, 505-518.

Abdelmeguid, A., Afy-Shararah, M., & Salonitis, K. (2024). Mapping of the Circular Economy Implementation Challenges in the Fashion Industry: a Fuzzy-TISM Analysis. *Circular Economy and Sustainability*, *4*(1), 585-617.

Ananas-anam (2020), https://www.ananas-anam.com/

Andrei, A. G., Gazzola, P., Zbuchea, A., & Alexandru, V. A. (2017). Modeling socially responsible consumption and the need for uniqueness: A PLS-SEM approach. Kybernetes, 46(8), 1325-1340.

Balena C. (2018), 10 startup che stanno cambiando il mondo della moda, Fortune Italia, https://www.fortuneita.com/2018/07/28/10-startup-che-stanno-cambiando-il-mondo-della-moda/

Battle, A., Ryding, D., & Henninger, C. E. (2018). Access-Based Consumption: A New Business Model for Luxury and Secondhand Fashion Business?. In *Vintage Luxury Fashion* (pp. 29-44). Palgrave Macmillan, Cham.

Bengtsson, M., Alfredsson, E., Cohen, M., Lorek, S., & Schroeder, P. (2018). Transforming systems of consumption and production for achieving the sustainable development goals: moving beyond efficiency. Sustainability science, 13(6), 1533-1547.

BOF McKinsey (2021), *The state of fashion 2021*, McKinsey & Company

Brand-Correa, L. I., & Steinberger, J. K. (2022). Max-Neef and sustainability: theoretical, methodological and empirical contributions. *International Journal of Sustainable Development*, *25*(1-2), 114-131.

European Journal of Social Impact and Circular Economy - ISSN: 2704-9906
DOI: 10.13135/2704-9906/10383 Published by University of Turin http://www.ojs.unito.it/index.php/ejsice/index

Camilleri, M. A. (2018). Closing the loop for resource efficiency, sustainable consumption and production: A critical review of the circular economy. *International Journal of Sustainable Development*, *21*(1-4), 1-17.

Cascante, M. Q., García, N. A., & Fold, N. (2022). The role of external forces in the adoption of aquaculture innovations: An ex-ante case study of fish farming in Colombia's southern Amazonian region. *Technological Forecasting and Social Change*, *174*, 121185.

Chalmer C., Eder-Hansen J., Lehmann M., Tochtermann T. and Tärneberg. S.- CEO AGENDA - Global Fashion Agenda – (2018) – Pag 7-17 Available at: https://www.globalfashionagenda.com/ceo-agenda-2019/

Cingomma (2020), www.cingomma.com

Claxton, S., & Kent, A. (2020). The management of sustainable fashion design strategies: An analysis of the designer's role, in *Journal of Cleaner Production*, 268, 122112.

Colglazier, W. (2015). Sustainable development agenda: 2030. Science, 349(6252), 1048-1050.

Colombi, C., & D'Itria, E. (2023). Fashion digital transformation: innovating business models toward circular economy and sustainability. *Sustainability*, *15*(6), 4942.

D'Adamo, I., Lupi, G., Morone, P., & Settembre-Blundo, D. (2022). Towards the circular economy in the fashion industry: the second-hand market as a best practice of sustainable responsibility for businesses and consumers. *Environmental Science and Pollution Research*, *29*(31), 46620-46633.

DeSimone, L. D., & Popoff, F. (2000). *Eco-efficiency: the business link to sustainable development*. MIT press.

Dissanayake, D. G. K., & Weerasinghe, D. (2021). Towards circular economy in fashion: Review of strategies, barriers and enablers. *Circular Economy and Sustainability*, 1-21.

Dymchenko, O., Gazzola, P., Pezzetti, R. R., & Severi, C. (2021). From food to fashion: reusing waste for promoting sustainable fashion. Economia Aziendale Online-, 12(4), 433-446

Due di Latte (2020), https://antonellabellina.wixsite.com/duedilatte

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of management review*, *14*(4), 532-550.

Ethical Consumer (2021), https://www.ethicalconsumer.org/fashion-clothing/top-10-ethical-clothing-companies

European Environment Agency (2019), https://www.eea.europa.eu/publications/textiles-in-europes-circular-economy

European Parliament (2023), https://www.europarl.europa.eu/topics/it/article/20151201STO05603/economia-circolare-definizione-importanza-e-vantaggi

Galatti, L. G., & Baruque-Ramos, J. (2022). Circular economy indicators for measuring social innovation in the Brazilian textile and fashion industry. *Journal of Cleaner Production*, *363*, 132485.

Gasper, D., Shah, A., & Tankha, S. (2019). The framing of sustainable consumption and production in SDG 12. Global Policy, 10, 83-95.

Gazzola, P., Pavione, E., & Pezzetti, R. (2017, February). Sustainable consumption in the luxury industry: Towards a new paradigm in China's high-end demand. In Proceedings of the 2nd Czech-China Scientific Conference 2016. IntechOpen.

Gazzola, P. (2018). Behind the sharing economy: innovation and dynamic capability. In *Knowledge Management in the Sharing Economy* (pp. 75-94). Springer, Cham.

Gazzola, P., Pavione, E., Pezzetti, R., & Grechi, D. (2020). Trends in the fashion industry. The perception of sustainability and circular economy: A gender/generation quantitative approach. Sustainability, 12(7), 2809.

Gazzola, P., Pezzetti, R., Amelio, S., & Grechi, D. (2020b). Non-financial information disclosure in Italian public interest companies: A sustainability reporting perspective. *Sustainability*, *12*(15), 6063.

European Journal of Social Impact and Circular Economy - ISSN: 2704-9906
DOI: 10.13135/2704-9906/10383 Published by University of Turin http://www.ojs.unito.it/index.php/ejsice/index

Gazzola, P., Vătămănescu, E. M., Andrei, A. G., & Marrapodi, C. (2019). Users' motivations to participate in the sharing economy: Moving from profits toward sustainable development. *Corporate Social Responsibility and Environmental Management*, *26*(4), 741-751.

Geissdoerfer, M., Savaget, P., Bocken, N. M., & Hultink, E. J. (2017). The Circular Economy–A new sustainability paradigm?. *Journal of cleaner production*, *143*, 757-768.

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational research methods*, *16*(1), 15-31.

Hahn, T., & Figge, F. (2011). Beyond the bounded instrumentality in current corporate sustainability research: Toward an inclusive notion of profitability. *Journal of Business Ethics*, *104*(3), 325-345.

Henry, M., Bauwens, T., Hekkert, M., & Kirchherr, J. (2020). A typology of circular start-ups: An Analysis of 128 circular business models. *Journal of cleaner production*, *245*, 118528.

Hu, S., Henninger, C. E., Boardman, R., & Ryding, D. (2019). Challenging Current Fashion Business Models: Entrepreneurship Through Access-Based Consumption in the Second-Hand Luxury Garment Sector Within a Circular Economy. In *Sustainable Luxury* (pp. 39-54). Springer, Singapore.

Hvass, K. K., & Pedersen, E. R. G. (2019). Toward circular economy of fashion. *Journal of Fashion Marketing and Management: An International Journal*.

Jia, F., Yin, S., Chen, L., & Chen, X. (2020). The circular economy in the textile and apparel industry: A systematic literature review. *Journal of Cleaner Production*, *259*, 120728.

Kemp, R., Parto, S., & Gibson, R. B. (2005). Governance for sustainable development: moving from theory to practice. *International journal of sustainable development*, *8*(1-2), 12-30.

Ki, C. W., Chong, S. M., & Ha-Brookshire, J. E. (2020). How fashion can achieve sustainable development through a circular economy and stakeholder engagement: A systematic literature review, in *Corporate Social Responsibility and Environmental Management*, 27(6), 2401-2424.

Kirchherr, J., Piscicelli, L., Bour, R., Kostense-Smit, E., Muller, J., Huibrechtse-Truijens, A., & Hekkert, M. (2018). Barriers to the circular economy: Evidence from the European Union (EU). *Ecological economics*, *150*, 264-272.

Lacy, P., & Rutqvist, J. (2016). *Waste to wealth: The circular economy advantage*. Springer.

Lanzalonga, F., Marseglia, R., Irace, A., & Biancone, P. P. (2024). The application of artificial intelligence in waste management: understanding the potential of data-driven approaches for the circular economy paradigm. *Management Decision*.

Lava P. C., "*Cingomma. Un nuovo "modo per fare moda*", quando il riciclo fa tendenza" 9thApril 2019, Alessandria Today

Leonas, K. K. (2017). The use of recycled fibers in fashion and home products. In *Textiles and Clothing Sustainability* (pp. 55-77). Springer, Singapore.

Loumish (2020), https://awards.loomish.ch/?p=3096

Luxiders (2021), https://luxiders.com/10-responsible-fashion-brands-made-italy/

Mahanty, S., & Domenech, T. (2024). Working along the value chain for circular economy transitions in fashion textiles: A participatory framework. *Journal of Cleaner Production*, *465*, 142627.

Manzini E. (2008), Design para inovação social e sustentabilidade - Comunidades criativas, organizações colaborativas e novas redes projetuais/ Ezio Manzini; [coordenação de tradução Carla Cipolla; equipe Elisa Spampinato, Aline Lys Silva]. Rio de Janeiro: E-Papers, 2008 –16

Massaro, M., Dumay, J., & Bagnoli, C. (2019). Transparency and the rhetorical use of citations to Robert Yin in case study research. *Meditari Accountancy Research*, *27*(1), 44-71.

European Journal of Social Impact and Circular Economy - ISSN: 2704-9906
DOI: 10.13135/2704-9906/10383 Published by University of Turin http://www.ojs.unito.it/index.php/ejsice/index

Mcdonough W., Braungart M (2013), Cradle to cradle: criar e reciclar ilimitadamente [translatedtoPortugueseby Frederico Bonaldo].São Paulo: Edtora G. Gili, 2013 – 8

Merli, R., Preziosi, M., & Acampora, A. (2018). How do scholars approach the circular economy? A systematic literature review. *Journal of Cleaner Production*, *178*, 703-722.

Minunno, R., O'Grady, T., Morrison, G. M., & Gruner, R. L. (2020). Exploring environmental benefits of reuse and recycle practices: A circular economy case study of a modular building. *Resources, Conservation and Recycling*, *160*, 104855.

Mishra, S., Jain, S., & Malhotra, G. (2021). The anatomy of circular economy transition in the fashion industry. *Social Responsibility Journal*, *17*(4), 524-542.

Nayak, R., Jajpura, L., & Khandual, A. (2023). Traditional fibres for fashion and textiles: Associated problems and future sustainable fibres. In *Sustainable Fibres for Fashion and Textile Manufacturing* (pp. 3-25). Woodhead Publishing.

Niinimäki, K. (2017). Fashion in a circular economy. In *Sustainability in Fashion* (pp. 151-169). Palgrave Macmillan, Cham.

Orange fiber (2020), http://orangefiber.it/

Papagiannis, F., Gazzola, P., Burak, O., & Pokutsa, I. (2018). Overhauls in water supply systems in Ukraine: A hydro-economic model of socially responsible planning and cost management, in *Journal of cleaner production*, 183, 358-369.

Papagiannis, F., Gazzola, P., Burak, O., & Pokutsa, I. (2021). A European household waste management approach: Intelligently clean Ukraine. Journal of environmental management, 294, 113015.

Papamichael, I., Chatziparaskeva, G., Voukkali, I., Navarro Pedreno, J., Jeguirim, M., & Zorpas, A. A. (2023). The perception of circular economy in the framework of fashion industry. *Waste Management & Research*, *41*(2), 251-263.

Pavione, E., & Pezzetti, R. (2015). Responsible and Sustainable Luxury in the Global Market: New Emerging Strategies in the Luxury Sector. In *Strategica. International Academic Conference: Local Versus Global* (pp. 73-80).

Pedersen, E. R. G., Earley, R., & Andersen, K. R. (2019). From singular to plural: Exploring organisational complexities and circular business model design, in *Journal of Fashion Marketing and Management: An International Journal*, 23(3), 308-326.

Peleg Mizrachi, M., & Tal, A. (2022). Regulation for promoting sustainable, fair and circular fashion. *Sustainability*, *14*(1), 502.

Pessôa, C., Araújo, K., & Arruda, A. (2015). Discussing Consumption and Sustainability in Clothing Production: a case study of a company in Recife/BR. *Procedia Manufacturing*, *3*, 6175-6182.

Pollifroni, M. (2012). Environmental sustainability and social responsibility: a theoretical proposal for an accounting evaluation. Economia Aziendale Online, 2(4), 345-354.

Prieto-Sandoval, V., Jaca, C., & Ormazabal, M. (2018). Towards a consensus on the circular economy. *Journal of Cleaner Production*, *179*, 605-615.

Rapanui (2020), https://rapanuiclothing.com/

Rifò (2020), https://www.rifo-lab.com/

Sala, S., & Castellani, V. (2019). The consumer footprint: Monitoring sustainable development goal 12 with process-based life cycle assessment. *Journal of Cleaner Production*, *240*, 118050.

Schroeder, P., Anggraeni, K., & Weber, U. (2019). The relevance of circular economy practices to the sustainable development goals. *Journal of Industrial Ecology*, *23*(1), 77-95.

Sehnem, S., Troiani, L., Lara, A. C., Guerreiro Crizel, M., Carvalho, L., & Rodrigues, V. P. (2024). Sustainable fashion: challenges and barriers for advancing the circular economy. *Environment, Development and Sustainability*, *26*(2), 4097-4118.

Shou, M., & Domenech, T. (2022). Integrating LCA and blockchain technology to promote circular fashion–A case study of leather handbags. *Journal of Cleaner Production*, *373*, 133557.

European Journal of Social Impact and Circular Economy - ISSN: 2704-9906
DOI: 10.13135/2704-9906/10383 Published by University of Turin http://www.ojs.unito.it/index.php/ejsice/index

Symbola Foundation (2021). *L'Economia circolare in Italia per il Next Generation EU.* https://symbola.net/ricerca/leconomia-circolare-in-italia-per-il-next-generation-eu/

Thakker, A. M., & Sun, D. (2023). Sustainable development goals for textiles and fashion. *Environmental Science and Pollution Research*, *30*(46), 101989-102009.

Todeschini, B. V., Cortimiglia, M. N., Callegaro-de-Menezes, D., & Ghezzi, A. (2017). Innovative and sustainable business models in the fashion industry: Entrepreneurial drivers, opportunities, and challenges. *Business Horizons*, *60*(6), 759-770.

Tortello L. (2012), *E dai copertoni distrutti nascono le cinture Torino bike*, 3rdJuly 2012, Eco dalle Città

Vătămănescu, E. M., Dabija, D. C., Gazzola, P., Cegarro-Navarro, J. G., & Buzzi, T. (2021). Before and after the outbreak of covid-19: Linking fashion companies' corporate social responsibility approach to consumers' demand for sustainable products. Journal of Cleaner Production, 321, 128945.

Velozo Valenga, A. C., Roberto Stefani, S., Cagica Carvalho, L. M., & Luiz Chiusoli, C. (2023). The influence of green fashion products on the achievement of the 12 Sustainable Development Goals for masters and doctoral students. *Brazilian Journal of Management/Revista de Administração da UFSM*, *16*(1).

Vestialanatura.com (2021), https://www.vestilanatura.com/top-10-Italian-sustainable-fashion-brands/

Zbuchea, A., Petropoulos, S., & Partyka, B. (2018). Nonprofit organizations and the sharing economy: an exploratory study of the umbrella organizations. In Knowledge Management in the Sharing Economy (pp. 95-114). Springer, Cham.

European Journal of Social Impact and Circular Economy - ISSN: 2704-9906
DOI: 10.13135/2704-9906/10383 Published by University of Turin http://www.ojs.unito.it/index.php/ejsice/index