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The 2050 zero-net agenda and fashion: The level of circularity in the fashion industryMarcjanna Bronowska ¹ Arkadiusz Dobkowski ¹ Marcin Janaszek ¹
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(CC BY 4.0)**Abstract:**

Sustainability and meeting the 2050 zero-net commitment of the Paris Agreement resonate across industries. The aim of this paper is to try to predict how the circularity trend can affect the fashion industry in the near future. The research and consumer attitudes survey give a data-based foundation for understanding how fashion brands can approach incorporating the principles of circular fashion into their daily operations. Examples of fashion companies are examined to show the possible discrepancy between declarations and actions. Currently, less than a third of consumers indicate circularity as a sufficient reason for making a fashion purchase. Recognition of sustainable terms and certificates is not common among consumers - only a few respondents claim that they could name a fashion-related certificate. Simultaneously, the majority believe that it is the unions of countries that should issue trusted circularity certificates. Most respondents believe that IT and technology could boost sustainability in the fashion industry. There is no single universal guideline in order to be certified and perceived as a circular brand. The paper provides insight into the need for awareness-raising activities and new legislation. The collected results show that the circular approach in the fashion industry is still in its early stages.

Keywords:

circular fashion, circular economy, fast fashion, fashion industry, sustainability, greenhouse gases

1. Introduction

The topic of the circular economy and circular fashion has been studied since the 1960s (Vanicore, 2020). According to Boulding (1966):

The closed economy of the future might similarly be called the “spaceman” economy, in which the earth has become a single spaceship, without unlimited reservoirs of anything, either for the extraction or for pollution, and in which, therefore, man must find his place in a cyclical ecological system which is capable of continuous reproduction of material form even though it cannot escape having inputs of energy (p. 1).

The term *sustainable development* was also widely discussed and defined by the World Commission on Environment and Development from the United Nations (Santillo, 2007). The core goal of this approach remains unchanged – to keep resources (materials, energy) in the cycle as long as possible. Today, the United Nations Framework Convention for Climate Change (2022) states that “accelerating the shift to a circular economy is essential to achieve the climate goals agreed upon by the international community”. The fashion industry can be seen as an impactful area of progress in terms of accelerating the shift toward achieving recognizable results.

Recently, the wide introduction of ESG criteria (environmental, social, and governance criteria) has become a part of a modern organization’s set of standards. Combining these rules with foreseeable resource limitations, the further and precise introduction of circularity seems inevitable also in the fashion industry, as has been done in other industry sectors which consume high volumes of resources and produce significant amounts of waste and GHG (greenhouse gases). According to Berg et al. (2020), “the fashion industry is responsible for 4% of the total emission of greenhouse gases globally” (p. 4). Retailers may need to adjust or even reinvent their strategy to incorporate ESG principles. Fast fashion brands report that their activities make them more sustainable, but independent assessments of these efforts show that the results of the declared actions are ambivalently perceived by the modern customer. Premium and luxury brands, however, appear to be ahead of the ESG principles’ enrollment compared to the fast fashion segment. Moreover, all the modern stakeholders might have to be considered by the fashion companies, i.e., financial institutions and institutionalized investors, who also have their own new policies that force implementation of the ESG agenda, i.e., There are various strategies regarding sustainability, including recycling, using organic materials, repurposing and increasing the item’s lifespan by designing clothes made from higher quality materials. The development of new technologies, especially in the field of AI, could also contribute to this possible transformation.

With the development of social awareness and new technologies, the possible circumstances of implementing circular fashion into fashion brands’ operations have to be verified.

The results of our international study could serve as valuable input to the existing literature and provide insights that can guide policy decisions on circular fashion worldwide. For instance, our study could lead to recommendations for regulatory frameworks, incentives, and collaborations to support the adoption of circular fashion practices and reduce barriers to implementation on a global scale.

2. Circular fashion overview

Sustainability is a wide term, useful in defining the circular economy. It is related to the ability to keep the process continuing over time. Sustainable development means meeting the needs of the present while ensuring future generations can meet their own needs. It is based on three pillars: economic, environmental, and social (European Commission, n.d.). Circularity contributes to a more sustainable world, but not all sustainability initiatives contribute to circularity – sustainability is a broader concept, while circularity is a part of it (How does circularity relate to sustainability?, 2021). The circular economy is a model of production and consumption involving sharing, reusing, leasing, repairing, refurbishing, and recycling existing materials and products for as long as possible. It is based on the establishment of closed production systems where resources continue to be used for a longer period. According to Dissanayake and Weerasinghe (2021), the three principles required for the transformation to a circular economy are: eliminating waste and pollution, circulating products and materials, and the regeneration of nature. This is a departure from the traditional, linear economic model, which is based on a take-make-consume-throw-away pattern.

One of the most frequently used definitions of circular economy was expressed by the Ellen MacArthur Foundation (n.d.), describing it as:

An industrial system that is restorative or regenerative by intention and design. It replaces the ‘end-of-life’ concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims for the elimination of waste through the superior design of materials, products, systems, and, within this, business models (p.1).

Circular fashion should be analyzed in relation to the definition of the circular economy since these two concepts are intertwined – circular fashion derives from the circular economy concept. Jacometti (2019) described circular fashion as a system that minimizes waste and keeps materials within the production and consumption loop for as long as possible. On the other hand, Niinimäki (2018) underlined that circular fashion focuses on the development of closed-loop systems, extends the use-time of garments, and maintains the value of the products and materials as long as possible. Additionally, for Dissanayake and Weerasinghe (2021), the circular fashion term can be defined as a fashion system that moves towards a regenerative model with improved use of sustainable and renewable resources, reduction of non-renewable inputs, pollution and waste generation while facilitating long product life and material circulation via sustainable fashion design strategies and effective reverse logistics processes. Economic growth has been faster than the growth of the prices of clothes, which has increased the consumption and supply of apparel goods. The trigger for that was the rapid fashion expansion – more people could afford more clothes. Also, the quality of clothes deteriorated. Consequently, consumers started to buy larger volumes, and now the average number of times a garment is worn before it is disposed of has decreased by 36% since 2001, which means frequent disposal of clothing that is still usable (before reaching end-of-life) has increased. At the same time, not much of the used clothing is recycled (Remy, Speelman, & Swartz, 2016).

The global apparel industry was valued at \$1.5 trillion in 2021 and was predicted to increase to approximately \$2 trillion by 2026 (Smith & Statista GmbH, 2022). Over the past fifteen years, the production of clothing has doubled due to the expansion of the fast-fashion model. The booming fashion industry is suspected to be one of the important and observable contributors to carbon emissions and environmental pollution, consuming vast resources for production and transportation, such as water, energy and is also associated with the broad and questionable use of chemicals. Today, the fashion industry is almost entirely based on non-renewable and exhaustible raw materials. More than \$500 billion each year is lost due to the lack of recycling and the misuse of clothes and garment waste. The apparel and footwear industry is responsible for more than 8% of the global climate impact. The total GHG emissions from textile production are 1.2 billion tons per year.

Textile production ranks fourth in the use of primary raw materials and water. Only food production, housing, and transportation are ranked higher. According to the World Bank, 20% of the world's water pollution is caused by textile processing (dyeing and treatment), making the fashion industry the second largest polluter of the world's freshwater resources.

Linear economy assumes that resources are infinite (Ki et al., 2020) and is based on the *make- take-waste* concept, which is the driver for overconsumption and leads to unnecessary waste production. Until recently, the approach toward the economy has not considered the effect that this would have on the environment. In recent years, the economy overall has witnessed a paradigm shift, ensuring sustainability and efficiency in company strategies and production conditions in supply chains. Governments in the European Union are putting a consistent focus on pushing companies, not only from the financial sector, to make the transition towards a more robust circular economy. An example is the adoption of regulations such as the Corporate Sustainability Reporting Directive (CSRD), and the EU Taxonomy, as well as already present international data standards, such as the Carbon Disclosure Project (CDP) or standards being developed by the International Financial Reporting Standards Foundation (IFRS) or by European Financial Reporting Advisory Group (EFRAG).

Moreover, consumers' consciousness and sensitivity to environmental matters seem to "have increased, which may be one of the main drivers for changing the industry's approach" (Su et al., 2013, p. 215-227). Existing reports on consumption and loyalty among younger consumers state that for people aged between 12-29, one of the three significant factors for brand loyalty is its conscious approach toward the environment (Wałęga & Kwapniewski, 2021). They also say that they may cease purchasing products from a particular brand if the brand does not resonate with their environmental consciousness.

The second-hand trend is visible among younger consumers, and it is becoming fashionable to disclose the ownership of second-hand items. In the US, the used-fashion market is set to skyrocket in value to \$64 billion by 2028, while fast fashion will only reach \$44 billion (Handley, 2019). So, the change is coming not only because of the price difference but also because of climate consciousness.

E-commerce changes the way we make purchases. The growth in e-commerce purchases has reached double-digits in the last two years, however, companies have started to recognise how

much resource is wasted in single-product delivery and how much paper is wasted with single-use boxes. The new upcoming European Green Deal directive will force us to use reusable or recyclable delivery boxes by 2030. Companies will have to consider if the cost of increased internet sales will not have to be optimized by a sustainable approach, for example in limiting single item door-to-door delivery in favor of delivery vending machines.

The world has just entered the next year of a critical decade – keeping in mind that in order to achieve climate neutrality in 2050, greenhouse gas emission reduction is a must, and it is inevitable, especially CO₂, by 55% by 2030. In 2021, more than ninety companies in the clothing industry declared their decarbonization goals under the Science Based Targets (SBTi) initiative, but unfortunately, there is no Polish clothing brand among them (Jia et al., 2020).

Despite multiple challenges, the fashion industry is trying to become more circular, and there are many different approaches to the issue. Considering the direction of the regulatory environment and governments' pro-eco attitude, the industry may have no other option than to transform into a circular industry, even though circularity results in lower sales volumes, which directly impacts profitability (Jia et al., 2020).

A report by Accenture (Reif et al., 2022) discloses the status of sustainable clothing and also sheds light on its future. The main findings of the report are the following:

- 2/3 of consumers discard clothes that are still fit for use.
- Almost half of Poles would be prepared to regularly exchange clothes to the store from which they bought them in exchange for funds or a gift card.
- 44% of consumers first look for second-hand items when they need to buy clothes, shoes, or accessories.
- More than half of consumers would buy both new and used clothes in the same store.
- Almost 2/3 of consumers declared that they never repair clothes and shoes.
- 2/3 of consumers believe that the brand from which they buy their clothes or shoes should offer to repair the product for an additional fee.

The consciousness of the importance of upcycling is quite low (66% would not repair any clothes), and this is where the responsible consumer has a real influence. A positive is that 44% of people start their purchase search in second-hand stores. However, Accenture conducted the research on a representative sample via an internet-based study, and this probably this sample is more conscious in general. Inhabitants of bigger cities are probably more conscious (the 10 biggest cities represent approx. 7 million people out of almost 38 million in Poland), and access to various recycling/upcycling possibilities is wider. In smaller urban agglomerations, the circumstances differ. Therefore, Accenture's report stresses that the process must start with clothing manufacturers, and methods of clothing production must be rethought.

According to Reif et al. (2022): "circularity starts with a sustainable design, that is, de facto designing clothes in such a way that they are functional, durable, repairable, extend their life, and are easy to recycle" (p. 3).

The producer would have to introduce digital certification explaining how the clothing was produced, the environmental impact, and how it can be used in its second life. The consumer will then have to adhere to the recommendations.

In terms of a timeframe, the fashion industry is not unanimous. It seems like the most probable horizon for change is more than a decade away, as the awareness of the main issues surrounding sustainability is still low. For 80% of people, price is still the main driver for making a purchase (only 34% declare environmental issues influence the choice) (Reif et al., 2022). The surprising fact is that there is no statistically significant difference between younger and older respondents. The younger generation is usually expected to be a driver of change, but it seems not so in this case.

According to research on sustainable clothing that was conducted in late 2021 (D'Arpizio et al., 2022), only 15% (out of 6000 respondents) of consumers are highly concerned by the sustainability of the fashion business. It identifies five groups of people, starting with the most concerned to the ones that are purely indifferent, emphasizes that sustainability is an opportunity for the fashion business, and draws three strategies for the companies to capitalize on future trends based on ESG. There are some similarities with the studies mentioned above, and this became a base for our discussion in the latter part of the paper.

The implementation of circular fashion is commonly equated with recycling. However, it is not as simple as that, and there are many different strategies, where recycling is only one and usually not a very significant aspect. Other aspects involve the design process, companies' strategies, consumers' way of buying and utilising clothes, and quality. Successful implementation of circular fashion needs a holistic, multi-dimensional approach.

As some authors indicated (Bocken et al., 2016) - the simple approach is to use as little of the fabric as possible. This aims at increasing efficiency and reducing pollution. It can be achieved via three main paths: (i) use of renewable and sustainable materials, (ii) reduction of resource consumption, and (iii) waste minimization (Dissanayake & Weerasinghe, 2021). These activities are apparent, and the fashion industry appears to be introducing them. The use of organic cotton is becoming more prevalent, as can be witnessed by tags on clothes. The use of chemicals in the production process is also being limited.

Expanding the products' life is directly related to their quality but not limited to it. This is a considerable challenge for the fast fashion industry. However, it can be observed that fashion products that have been used for a longer time are more likely to be repaired than throw away. A good example is footwear or high-end clothes categories, such as suits. For instance, the Eileen Fisher clothing company introduced a resale process for its clothes – their products can be bought-back and sold again (Fisher, n.d.). Zalando encourages its clients to be a part of circular fashion, too, by enabling the selling of pre-owned clothes to be very easy. The Vinted mobile application also plays a part in this trend as it provides an easy and popular way to sell second-hand clothes.

Consumer trends can also be observed relating to circular fashion and children's clothes. We observe a social trend where people who have children give the outgrown clothes to family

and friends. This contributes to reducing the waste and consumption of new clothes for children.

There is also Rent the Runway (RTR) service for renting designer fashion – the user gets access to the service by paying a monthly subscription fee (Rent the Runway, n.d.). However, a problem is also caused by pre-consumer waste. Approximately 15% of the fabric is lost in the production process, such as cutting waste. To avoid this, the designers have to embed the circular economy approach in their design practice (zero waste pattern cutting) (Moorhouse & Moorhouse, 2017). Transformation into circular fashion requires a significant reduction of resource consumption. This can be achieved by combining different strategies to reach a holistic effect. For instance, designers do not think about the circularity of the products they create, although 80% of the products' impact on the environment is determined by them – depending on their choice of materials, colors, and quality (Claxton & Kent, 2020). Potential environmental impact can be reduced by choosing fewer options for the product, which results in the production of fewer products (Patagonia, 2021).

Fast fashion offers a wide variety of products. It leads to the higher consumption of resources and increases the waste volume. P. Hendricks – Senior Manager of Environmental Responsibility and Strategy.

Patagonia underlined that lines of products should be narrowed down, which would result in less fabric liability (deadstock). Patagonia also shifted into recycled materials. They introduced the Responsibili-Tee®, which is a 100% recycled sewn T-shirt – each one is made from 4.8 plastic bottles and 0.3 pounds of cotton scrap and uses 96% less water and generates 45% less CO₂ than a conventional T-shirt. Patagonia achieved the level of 90% recycled fabrics in its production (Patagonia, 2021). The founder of Patagonia, Yvon Chouinard, together with his wife and two adult children, have recently transferred the company to a specially designed trust and non-profit organization in order to preserve the company's independence and assure that all of Patagonia's profit (ca. \$100 million a year) will be used to prevent climate change and protect the environment (Gelles, 2022).

According to Coppola and Statista GmbH (2017), currently, there are ca. 2.14 billion people who buy online, which is 27.6% of the world's population. Consumers buy clothes online, receive them and try them on. If expectations or matches are not met, the products are returned. The potential for using artificial intelligence in this process is enormous, especially in terms of increasing the efficiency of the consumer experience, reducing waste, and creating more sophisticated inventory systems that take consumers' bodies and preferences into account when choosing a product. For instance, Zalando launched the Algorithmic Fashion Companion (AFC) that leverages machine learning to inspire customers with individual outfit recommendations: an algorithm with styling expertise that suggests outfits matching the most recent items customers have bought (Zalando Corporate Website, 2018).

Another promising area is the customization and production of textiles on the run. This is where AI and new technologies reappear. Thanks to personalization and the possibility of 3D rendering, there is a virtual fitting room in the consumer's house. This type of approach will significantly increase the probability that the selected product will suit the consumer. Walmart

recently rolled out Zeekit technology with the Choose My Model experience. This feature offers customers the ability to select from 50 models between 5'2" – 6'0" in height and sizes XS – XXXL. Customers can determine the model that best represents their height, body shape, and skin tone, in order to assess how the item will look on them. The feature is currently available for selected brands only, but an expansion of the assortment is planned (Incandela & Walmart Inc., 2022).

Artificial intelligence and mass personalization can be a game changer not only in terms of inventory management, lowering transportation and emissions costs but also for the entire electronic retail system. Fast fashion does not necessarily have to be called *fast* anymore, as items can be crafted based on a person's needs.

Although artificial intelligence and mass personalization in the fashion industry is still in the early stages, it is evident that in the long run, issues such as data access, 3D rendering, and the availability of technology will be resolved, and the fashion industry will benefit from unlimited benefits as well as contribute to reducing carbon emissions (Ponce de Leon, 2019).

3. Sustainability strategies or mere declarations in fashion

In the past few years, fashion brands have started to prominently feature their sustainability strategies and how they put the "E" from ESG into their strategy. Many fast fashion players such as Inditex and Reserved report their sustainability targets and describe the actions taken in order to reach them.

Although most of the clothes available on the market are produced by fast fashion brands and mainstream apparel manufacturing, is home to brands considered to be premium and luxury—with the differentiator between them being the volume of sales. A premium brand is considered premium if it uses better quality materials and craftsmanship while still aiming to scale sales. Luxury fashion brands, on the other hand, have an even higher emphasis on exquisite craftsmanship but with a "cap" on sales to preserve the "luxury" criterion.

In the public view, premium and luxury brands design and manufacture durable goods made of high-quality materials, some even being passed from generation to generation. (Patek Philippe SA, 2019) Luxury brands can no longer overlook incorporating the "E", "S" and "G" into their strategies. In the midst of this, a different question also looms: does fast fashion influence premium and luxury brands, or do these brands serve as trendsetters for mainstream apparel manufacturers? Overall, the premium and luxury segments create the "must-haves" of each season, with a "copycat" trend waterfaling down to popular brands. Premium and luxury brands are seen as trendsetters, with our evolutionary need to be a member of the club—obtain an item that conveys a psychological feeling of belonging to an elite club. If this is not possible, there is an option that allows one to adapt and settle for the next best, a similar item from a more affordable brand, but people look to the premium and luxury sectors for inspiration. If this indeed is the case, premium and luxury brands should be seen as the leaders of the sustainable transformation, paving the way for fast-fashion brands to follow.

The presented cases of fast fashion players (see Table 1 and Table 2) – Inditex and Reserved - followed by premium and luxury players - Louis Vuitton and Stella McCartney - illustrate “in a nutshell” the pillars of sustainability initiatives.

Table 1. An overview of sustainable initiatives

Aspect \ Brand	Inditex ¹	Reserved	Louis Vuitton	Stella McCartney
Use of recycled fabrics	x	x	x ²	x
Sustainability strategy	x	x	x	x
Supply chain/retail initiatives	x	x	No information	x
Presence of CSO (Chief Sustainability Officer)	x	x	x	x

Source: own study on the basis of the portals: <https://www.inditex.com/itxcomweb/en/home>, <https://www.lpp.com/>, <https://www.lvmh.com/>, <https://www.stellamccartney.com/ie/en/sustainability/>

Table 2. Good on you and the Sustainability Assessment³

Area \ Brand	Inditex	Reserved	Louis Vuitton	Stella McCartney
Planet Impact	2	2	2	4
Animals	2	2	2	4
People	2	2	1	3

Source: own study on the basis of the portal: <https://goodonyou.eco/>

While much has been said in terms of circular fashion across the entire apparel and accessory space (fast, premium, and luxury fashion) in terms of appointing a Sustainability Officer, making use of recycled fabrics, or even steps in optimizing supply chains, the analysis reflects that although all presented companies have undertaken sustainability measures, they are at differing levels of development, with freshly launched initiatives set to show long-term results in later years.

¹ Inditex, Industrias de Diseño Textil, S.A., is the world’s leading fashion retailer. Formed by eight commercial brands — Zara, Massimo Dutti, Pull and Bear, Bershka, Stradivarius, Oysho, Zara Home and Uterquē — it has more than 4500 stores in 73 countries with headquarters in Spain.

² In Louis Vuitton, leather scraps used in manufacturing; <https://eu.louisvuitton.com/eng-e1/magazine/articles/committing-to-circular-creativity>

³ The portal https://directory.goodonyou.eco/_rates fashion brands on a 1-5 scale in three categories: planet impact, animals and people.

4. Methodology

The aim of this paper is to research the current state of recognition and implementation of the circular agenda by the fashion industry and to investigate what the key drivers for change are. The goal is also to predict in which direction circular fashion will evolve. The looming question that is addressed, is how fashion brands approach incorporating sustainability principles in their strategies, whether it is already expected by modern-day (2022) consumers, and how much more they are willing to pay for sustainability.

In order to achieve the aforementioned goal, it was necessary to answer the following research questions:

- Do customers consider where their clothes come from and how they were made?
- What is the most important factor driving the purchases of clothing?
- What does circular fashion mean to the customer?
- Are customers willing to pay more in exchange for sustainability?
- Are customers aware of any certification related to circular or eco-friendly fashion?
- Do you believe that technology can change the fashion industry and boost its sustainability?
- How should circularity in fashion be guaranteed?

The research presented in this article is based on desk analysis and a survey. Previous scientific publications on the topics related to circularity and sustainability as well as publicly available reports and data provided by government bodies and other organizations were analyzed. The application of sustainability principles in various brands has been viewed, both within the fast fashion industry and in the premium/luxury segment. A customer-awareness survey was conducted with 150 respondents (an International Survey on Circular Fashion hereinafter referred to as the “Survey”), regarding consumer attitudes - the data was collected online between 17.05-22.05.2022.

The Survey was constructed to meet the requirements of the DE&I (Diversity, Equality, and Inclusion) principle to obtain as many consumer approaches as possible; the only limitation was the simple ability to use a computer and a popular free-to-use web browser. The questions were designed by the authors to ensure the target group was set to cover a wide range of people and gain a sufficient diversity of research outcomes. The target group was chosen to represent modern fashion consumers from different geographies, primarily young, white-collar workers and students. It was assumed that within the sample group, the consciousness of ESG matters is significantly higher than in other groups. The target group included people between the age of 17-50 years old, at different stages of their careers (from junior to C level). The salary levels of the respondents was not collected so as to ensure the inclusive character of the Survey. The Survey was sent to ca. 600 people, and a response rate of 25% was achieved. The Survey was voluntary, anonymous, and run on Google Forms. It consisted of thirteen questions (twelve were closed, and one was open). The questions were designed based on the literature review, inspired by previously conducted studies and the authors’ knowledge and experience.

5. Research results and analysis

This chapter presents the results of thorough research and analysis of Circular Fashion. The findings of this research provide valuable insights into the importance of the circularity of clothing production and its awareness in the target group. The results are discussed in detail, highlighting the most significant findings and their implications.

- **Customers' awareness in relation to clothes' origin**

The study shows that there is still a place for improvements and further education in terms of sustainability and responsibility in fashion. The Survey showed (see Figure 1) that almost 30% of the respondents considered where their clothes were produced. This result is aligned with the results of the Accenture survey (Reif et al., 2022), which indicated that 28% of respondents considered fair trade principles in apparel manufacturing, whereas 23% focused on the garment being locally manufactured. A considerable fact is that almost 50% of the respondents know the source matters. They claim they check the traceability label when they remember. It seems that consciousness is there.

Do you consider where your clothes came from and how they were made?

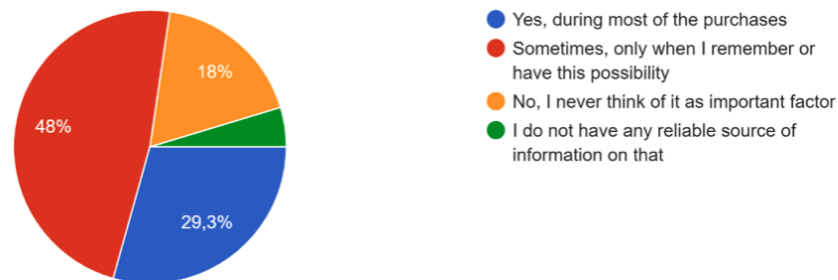


Figure 1. The Survey – Customers' awareness in relation to clothes origin

Source: own research

Almost 30% of the respondents considered where their clothes were made (during the majority of the purchases). More than 77% care to some extent.

- **The most important factor driving the purchases of clothing**

As in Figure 2, only 7.3 % of the respondents committed to circular fashion when making decisions about the purchase. 23.3% of respondents see the price as the main trigger driving the purchase. The authors' research shows that brand is still the most important element when deciding to buy clothes (69.3% of respondents).

What is the most important factor when you are deciding to purchase clothes? (the considered clothes fit you in size and look ok)

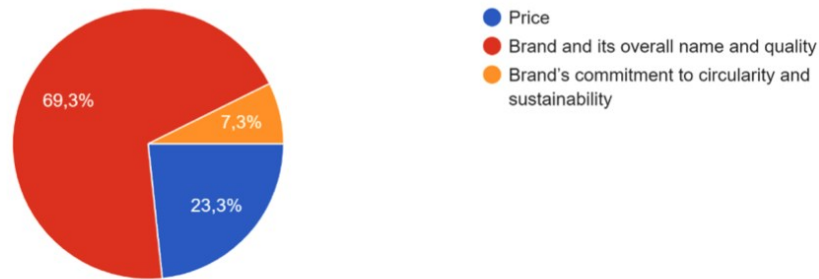


Figure 2. Factors of purchasing decisions

Source: own research

It was found that brand and quality factors can reach as much as 80%. In BAIN & COMPANY study (D’Arpizio et al., 2022), price is ranked as no. 2. while no. 1 is product quality. That confirms the findings of the Survey. It is seen that our respondents are less price sensitive. It seems like there is a high trust in the brand’s name and perceived quality.

The Survey also included a question on where the respondents buy clothes – there was a strong trend to buy online (Figure 3). Still, most of the respondents (53,3%) would go to a physical store to make a purchase. Due to the pandemic, the number of consumers who never purchased online decreased. As a McKinsey survey shows, as much as 43% of consumers who bought offline only switched to online (Granskog et al., 2020).

Where do you prefer to buy clothes?

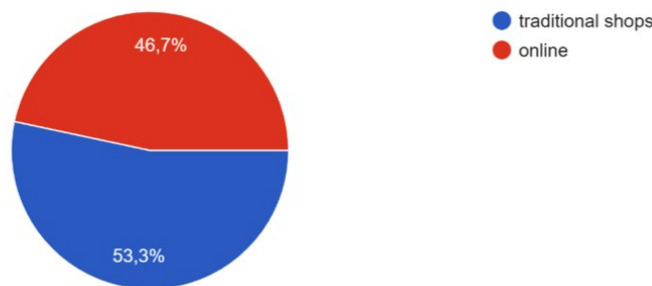


Figure 3. Purchasing channels for clothes

Source: own research, 2022

- ***How the circularity of fashion is perceived by customers***

The aim of the research was also to assess how consumers are educated. The main understanding of Circular fashion is centered around Recycling and upcycling (second-hand).

There is a lot of space for circularity education as the topic really starts with the design, goes through the production process with all its features, and may conclude with the creation of a new design. Figure 4 presents the main understanding of Circular Fashion according to the surveyed people.

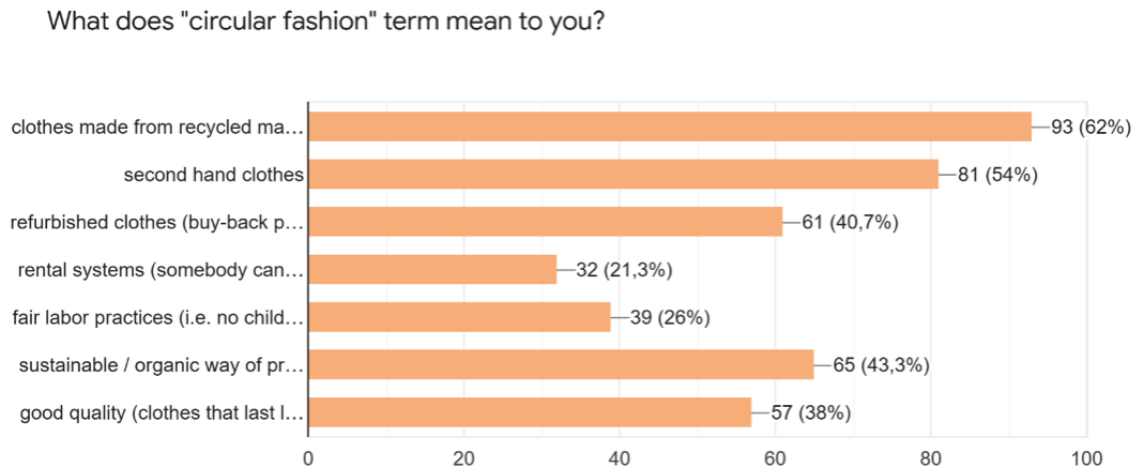


Figure 4. The main understanding of Circular Fashion

Source: own research

These factors are not so important for most of the consumers, as only 30% of respondents stated that circularity is a factor in purchasing clothes. Still, there are some other factors that decide whether they make their purchases. According to the McKinsey research, 67% of respondents answered that sustainable material is an important factor when buying clothes, while 63% of respondents consider producer’s promotion of sustainability as a relevant factor for purchasing (Granskog et al., 2020). According to the BAIN & COMPANY (D’Arpizio et al., 2022) study, the sustainability factor in purchasing clothing was important to 65% of respondents. We can see that our results are lower than the ones from the two other studies.

The Survey measures how much clothing is disposed of and what are the ways people get rid of the clothing. 50% of respondents dispose of less than 5 kg of clothing a year, 36% from 5 to 10 kg. The most popular way of doing it is by donating to charity and sharing with friends and families – this trend is visible, especially in relation to children’s clothes. Almost 33% try to sell the goods online. However, the Accenture’s surveys showed that 29% of their respondents indicated that they are throwing used clothes away and only 17% give them to family and friends, and 9% donate them to charity.

- ***Who should bear the costs of implementing sustainability in the fashion industry***

One of the aims of the research was to measure the premium that a consumer is willing to pay for a product that was an eco-feature. It turned out that more than 54% said they might pay 15% more. Still, 27% said they would not pay more. This result is aligned with Accenture’s Survey. Moreover, in the multiple choices question that asked what is the most crucial when

buying clothes, 80% still indicated price as the main factor. BAIN & COMPANY (D'Arpizio et al., 2022) divides consumers into five groups where the premium amount of money for sustainable products differs from 17% extra in the group called INDIFFERENT to 32% extra in the group called SUSTAINABILITY CHAMPIONS. It's interesting to see that these values are higher in this particular study.

How much higher price would you consider ok for paying for the sustainable, eco-friendly line of your favourite brand's clothes?



Figure 5. Willingness to pay more for sustainable clothing

Source: own research

If your favourite brand sold a new line of ok-looking but also certified sustainable and eco-friendly apparel, would you buy it because of that fact?

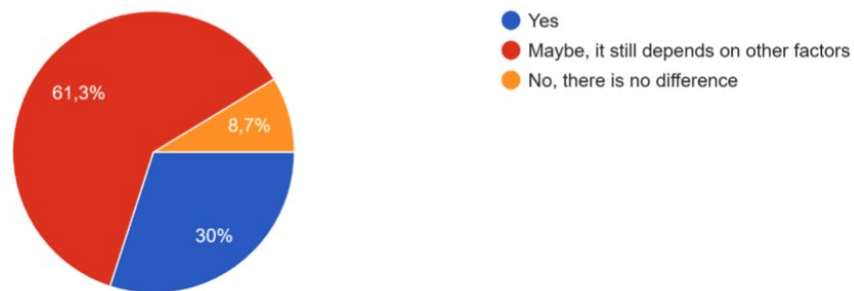


Figure 6. Is sustainability a factor influencing customers' decisions?

Source: own research

For only 30% of respondents, the eco-friendly factor is enough to buy clothing. Still, there are some other factors that decide whether s/he will make a purchase. The most probable price that respondents would pay for something that has an eco-friendly label is +15%. Around a quarter believe that the price should stay the same.

- **Awareness of certifications related to circular or eco-friendly fashion**

As we can see in Figure 7, more than 50% of the respondents did not know any fashion-related certificate of sustainability. 40,7% answered that they may know of them but do not remember. When compared to other sectors, there is a lot to do in that field.

Do you know any reliable certificates for clothes that stand for sustainability, eco-friendliness or good production practices?

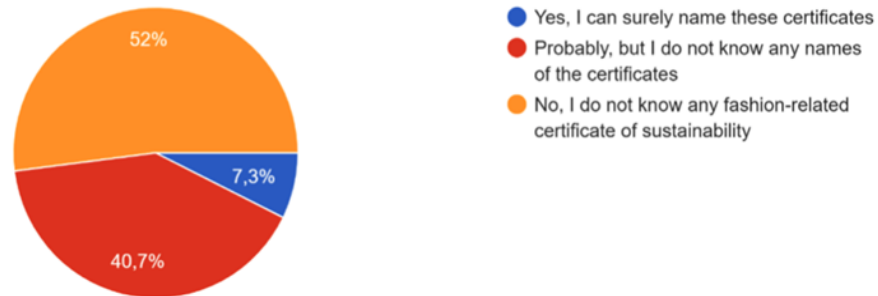


Figure 7. Sustainability certificates recognition

Source: own research

- **The role of technology in the transformation to circularity in the fashion**

The impact of technology on the shift towards circularity in the fashion industry was also examined. Participants were questioned on their perspectives regarding the matter. The data in Figure 8 shows that the majority (61.3%) of respondents believe that information technology can be advantageous to the fashion business.

Do you believe that technology and IT can benefit the fashion industry in boosting sustainability?

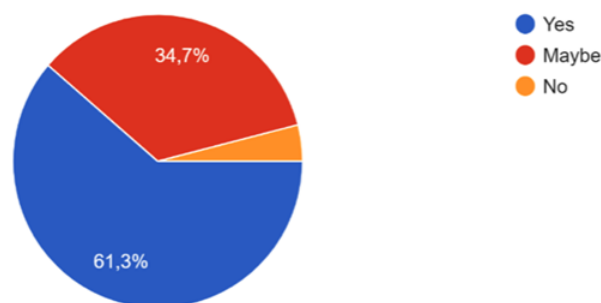


Figure 8. Technology's Impact on circularity

Source: own research

Most of the respondents in the Survey (more than 61%) think that IT can boost the development of sustainability in fashion. This finding is in line with Lancaster University

scientists' observations, where IT is perceived as a game changer that will boost the transformation in this area (Freitag et al., 2022).

- ***Setting circular policies across the fashion industry***

The study raises the topic that there is a lot of responsibility in the hands of the big producers. On the other hand, when respondents were asked who should guarantee the most trusted fashion certificate and who should issue such a document, they answered that international organizations (unions of countries i.e., EU, CUSMA/USMCA/TMEC, EAU, UN/WHO) should be responsible for the introduction of such certificates. Brands themselves were in fourth place with a result not higher than 17%. This may indicate that although sustainability is at the heart of consumers when they think about it, they do not consider it as an important part of the quality of the brand they follow and intend to purchase from.

The conclusion is that awareness that leads to the execution of sustainable and circular fashion production needs some time and further education of consumers and producers because they are trusted and have the power to accelerate the change together with well-educated consumers. As a confirmation of our observations, the BAIN & COMPANY (D'Arpizio et al., 2022) report concludes that it takes too much effort for the consumer to understand and determine if the clothing is or is not sustainable. They call it an information gap into which the consumer falls. They underline the importance of educational actions. All the reports, including our Survey, emphasize the fact that there is still a lot that consumers, producers, and legislators can do.

6. Conclusions

People are becoming increasingly aware of the impact they have on our planet, not only by performing mundane tasks such as waste segregation but first and foremost by becoming more aware as consumers. This is a vital shift from the mass-consumption culture of the last 40 years, where the invention of plastic and synthetic fabrics, coupled with the availability of cheap labor, resulted in massive consumption without consideration for the actual quality and impact on production. Having in mind the trends in the economy that go towards the sustainability and ESG agenda, the transformation of the fashion industry seems to be inevitable. As for now, the initiatives related to circularity in fashion are relatively rare, but their number is growing. The whole industry is impacted by new regulations which require a limitation on the environmental footprint by each sector of the economy; therefore, the fashion industry may witness increasing operational difficulties. There is a visible generation shift; it would seem that societies witness more application of the principle of "less is more" also when it comes to fashion. However, are fashion brands sailing towards a more sustainable industry, or have they manufactured pink glasses for us to perceive them as such?

A significant factor in Circular Fashion development is the financing of the fashion industry. Banks implemented credit policies imposing several ESG requirements that have to be met in order to receive financing, based on e.g., mandatory requirements laid forth by the EU

Taxonomy (Classification of sustainable and green-friendly activities) or CSRD (Corporate Sustainability Reporting Directive). Many banks are now focused on diverting from sectors like mining, energy, or the timber industry – the ones that impact the environment and natural resources the most - but the scope of industrial activities under scrutiny will definitely extend. The other side of the coin is the investors' perspective. Global companies need to consider investors' choices – the investment funds also use their ESG policies to force the companies they own to follow a sustainable path. The number of stakeholders involved in the process increases and it will have an impact on the direction in which the fashion industry will be heading.

Brands apply different principles in order to appear sustainable, such as in the case of e.g., Reserved. However, the use of recycled fabrics does not mean that a business can be classified as sustainable.

There are a number of unknowns, but several predictions can already be made. Firstly, the universal set of circular criteria will continue to be enforced by legislation, not only at the EU level, but also through the adoption of financing international standards elsewhere.

Secondly, consumer awareness will definitely act as the core driver of the “standardized” approach. As indicated by the results of the Survey conducted for the purposes of this paper, most respondents indicated that they are not aware of any sustainability certification. This visibly shows that a grassroots approach needs to be adopted first.

As for now, there is not one applicable standard by which to measure the commitment toward circularity in the fashion industry, which is also reflected in question 9 of the Survey, with respondents indicating a variety of certificates, both relevant and inapplicable.

The outcome of the conducted Survey showed also that for consumers, there is no “*one size fits all*” approach either (see results on *what is circular fashion to you?*). Without a standardized reporting system, it will be impossible to measure the level of circularity of each brand. Hence consumers are not able to make conscious choices based on facts. The conclusion is also that requirements that have to be met should be imposed by a regulator since it is the only way that the whole industry will follow comparable rules. This approach seems also to be the most appreciated by consumers, as shown by the answers received during the research presented in the paper.

In the future, it is probable that the disparity between fast fashion and luxury brands will continue to widen. This is due to several factors, the strongest of which is the need to meet consumer demand in fast fashion for street trends to be readily available in traditional and online stores, fast delivery, and garment price. As indicated by the Survey, most consumers are ready to pay up to only 15% more for eco-friendly clothing. Can fashion brands meet the “eco objective”, given the low consumer drive to pay more? Likewise, fast fashion brands will struggle to incorporate not only the “eco” objective but also fair labor practices – all the more challenging with locating factories in regions and countries that do not enforce labor laws to cut on production costs. On the other hand, luxury fashion brands will focus on the durability of their products, driving sustainability through fewer products with top-notch quality. This will likely continue to drive the price up, however, in the luxury sector, it's about

being “*part of a club*” (even if it’s a small item), and the price is not a first- level consideration for consumers. Moreover, luxury brands will be much more able to focus on ensuring fair labor practices, continuing to allocate their manufacturing to highly-skilled craftsmen – such is the case of Bottega Veneta.

The last issue to be highlighted is how exactly consumers will affect industry development. The future, younger consumers will have a different approach to shopping and loyalty with absolutely new habits and beliefs.

Circularity enrollment also requires that *second-hand* and *hand-me-down* trends will be used more and will change the way fashion brands plan their seasonal collections. New clothes can be substituted by good quality items that have a second life.

All this will be impacted by a solid push to start thinking about the environment from the moment an item is designed up until the moment it is ready to become responsibly utilized.

The research showed that the fashion industry recognizes the need to switch to circularity to a certain degree, but at this stage, the initiatives are more like pilots rather than a target operating model in the circular economy. Given this perspective, it may seem that apparel companies may need a stronger incentive from investors or legislation to pursue a more robust implementation of circularity into their brand strategies.

There are potential directions that the circularity of the fashion industry may take: (i) increased utilization of sustainable materials; (ii) adoption of circular business models – a growing number of brands are implementing circular business models, such as renting and reselling, which incentivize customers to use clothing for extended periods and minimize waste; (iii) Collaboration and transparency - collaborative efforts among stakeholders in the fashion industry, including brands, consumers, and policymakers, can cultivate increased transparency and accountability, resulting in more sustainable practices; (iv) technological innovations - progress in technology, such as 3D printing and blockchain, could introduce new solutions for the circularity of the fashion industry, enabling greater traceability and accountability across the supply chain. In conclusion, the circularity of the fashion industry is expected to continue its evolution in response to changes in consumer preferences, technological advancements, and environmental concern.

7. Limitations of the research

The research and Survey do not include any particular brand’s data that considers the brand’s image versus this brand’s consumers’ opinions. This could show some differences caused by the overall clientele of the brand.

Also, the luxury goods market could also behave in an unpredictable manner, as many of the success stories in the luxury market are related to having unique qualities and not relying on the mainstream.

The next stage of research could involve an analysis of how Artificial Intelligence together with new technologies, can contribute to the limitation of the fashion industry’s impact on the

environment. As the Survey showed, the percentage of consumers who buy clothes online and those who prefer to shop in a traditional way is respectively 53.3% and 46.7%. From one perspective, traditional shopping involves a lot of resources (a logistic system to deliver products to the shops, the shops use energy, etc.). On the other hand, AI helps to order a product that is not likely to be returned (it helps to answer the consumer's demand in terms of size, color, style, etc.), but it also consumes a huge amount of resources, including energy and fuel. Future research in circularity in the fashion industry may focus on circular business models, consumer behavior and circularity, sustainable materials and circular design principles, collaboration and governance, and circularity in luxury fashion. These research areas include evaluating the effectiveness and feasibility of circular business models, identifying factors that influence consumer attitudes and behaviors towards circular fashion, developing new sustainable materials and circular design principles, examining the role of collaboration and governance in facilitating the transition towards a circular fashion industry and investigating the unique challenges and opportunities of achieving circularity in the luxury fashion sector.

Despite the Survey being sent to consumers worldwide, the majority of responses were obtained from individuals residing in Poland. Therefore, the obtained results are primarily relevant to the Polish market.

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