THE ITALIAN FASHION INDUSTRY AND ITS QUEST FOR THE GREEN TRANSITION

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Abstract

The fashion industry makes a sizeable contribution to climate change. This paper investigates the end-of life circular practices implemented by "born-circular" Italian fashion companies. The paper focuses on upcycling and remanufacturing, that have been neglected by the literature and whose widespread implementation has been deemed suitable to reduce the overall carbon footprint of the industry. The analysis of several in-depth interviews with companies and industry key experts results in a process model that is apt to provide granular insights on the implementation of end-of-life circular practices. From the findings it emerges that in the quest to reduce the carbon footprint, the implementation of upcycling and remanufacturing needs to rely on the assessment of the multiple barriers that attain circularity, that the latter can be boosted by adequate marketing positioning strategies, and that companies need to spend considerable effort in filling the cultural gap, by also implementing other end-of-life circularity practices.

Keywords: *Grand Challenge; Circular Economy; Upcycling; Remanufacturing; Fashion Industry.*

INTRODUCTION

The fashion industry, representing about 2% of the world's gross domestic product, is undoubtedly one of the largest and most important consumer industries of the global economy (Global Fashion Agenda & The Boston Consulting Group, 2017).

As the press and the academic literature keep reminding us, the fashion industry is destroying the planet. The industry is characterized by an intrinsic asymmetry generated by the increasing over-consumption and by a production system that has become unsustainable especially from the environmental point of view. This industry relies on a linear production system that mainly uses non-renewable resources and that requires intensive use of water. Furthermore, the industry, is responsible for about 2.1 billion tons of Green House Gas (GHG) emissions, a share of 4% of the global total emissions - a figure that is comparable to the combined emissions for France, Germany, and the United Kingdom. Around 70% of the industry's emissions came from upstream activities such as materials production, preparation and processing. The remaining 30% were associated with downstream retail operations, the use-phase and end-of-use activities. As a significant contributor to climate change, the industry needs to act now to reduce its GHG emissions (McKinsey & Company, 2020).

Should growth continue as expected, total clothing sales would reach 160 million tonnes in 2050 – more than three times today's amount (EMF, 2017). On current trend, by 2050, the industry could use more than 26% of the carbon budget associated with a 2°C pathway as defined by the 2016 Paris Agreement (UN, 2016).

In order to tackle climate change, moving away from the current linear system is crucial to keeping within reach the 2°C average global warming limit. In the attempt to address this challenge, recently the concept of Circular Economy (CE) has gained considerable traction amongst academics, intending to facilitate the transition into *circular fashion* (Dissanayake & Weerasinghe, 2021). This paper draws on this literature by investigating some exemplary practices implemented by the so-called "born-circular" Italian fashion companies (Colucci & Vecchi, 2021).

Because the industry is so resource-intensive, a transition to a circularity is desirable, yet systematic research on the opportunities and the challenges of its implementation is still fragmented. The literature has mostly focused on product life extension through "slow fashion" (e.g., Jung & Jin, 2014) and on recycling (e.g., Niinimäki & Karell, 2020; Harmsen et al., 2021), significantly less attention has been devoted to "*end-of life circular practices*" and, to less extent to upcycling (e.g., Cassidy & Han, 2017) and remanufacturing (Dissanayake & Sinha, 2015; Pal et al., 2021).

Given that greatest share of GHG emissions caused by the industry comes from the abovementioned upstream activities, the aim of the paper is to focus on upcycling and remanufacturing, that have been neglected by the literature and whose widespread implementation has been deemed suitable to reduce the carbon footprint of the industry (EMF, 2020). In particular, in an explorative ethos, in-depth interviews with 7 companies and 4 industry key experts will provide unique research material for developing a process model that is apt to provide granular insights of end-of-life circular practices as they have been implemented by Italian "born-circular" fashion companies aimed at tackling climate change. The findings provide significant implications for the fashion industry at large on how a paradigm shift could be implemented.

THEORETICAL APPROACH

Climate Change as a Grand Challenge

According to George et al. (2016), grand challenges require the coordinated effort from multiple stakeholders toward a clearly articulated problem or goal. Solutions involve changes in individual and societal behaviours, changes to how actions are organized and implemented, and progress in technologies and tools to solve these problems. Thus, tackling of grand challenges could be characterized as an organizational problem. To this end, the authors identify two broad themes: (1) studies that provide management insights on how global problems can be tackled; and (2) studies that identify mechanisms and contexts by which grand challenges affect organizations and institutions such as business environments. Given the focus of the paper on end-of-life circular practices, the current research falls into the former category.

An environmental shock, such as climate change, has a disruptive impact that extends beyond the boundaries of a single organization or a community (Ferraro, 2015). Climate change can be clearly classified as a grand challenge, whose complexity and uncertainty have plagued government and business globally and whose proposed solutions have spurred political and social unrest worldwide. As stated by Rashidi-Sabet and Madhavaram (2021, p. 1) "*climate change mitigation is arguably the most significant challenge of the twenty-first century*".

Okereke et al. (2012) claim that climate change challenges contemporary management practices and ways of organizing. First, to assess the risks and opportunities associated with climate change and evaluate an adequate response, an organization must possess specific *capabilities*. Furtheremore, effective response to climate change demands fundamental changes in behavior and therefore a *culture shift* that entails an internal cultural transformation coupled by a shift in the broader community. In addition, important *structural challenges* may also arise, such as the need to restructure the organizational model to keep pace with technology. Finally, the design and implementation of carbon management strategy into the strategic priority requires important *process-based changes* in production processes based on new technology, alteration of raw materials and even changes in products.

Several studies have sought to highlight how firms from a variety of sectors respond to climate change (Levy & Colk 2002; Furrer et al. 2012; Clark & Crowford 2012; Whitmarsh & Köhler 2010; Toft & Rüdiger 2020). Clearly, how business addresses such a grand challenge greatly enhances or reduces societal well-being as well as society at large (Crane et al., 2015). While the majority of existing studies has mostly looked at how incumbent firms have tried to address climate change (Frishammar & Parida, 2019), little attention has been devoted to the new players.

The Impact of the Fashion Industry on Climate Change

The fashion industry is acknowledged as one of the largest polluters worldwide given its high carbon emissions, use of chemicals, wastewater production, and large amounts of landfill waste (UNECE, 2017). Over the past 15 years, the fashion-textile production has more than doubled its volumes (EMF, 2017) especially favoured by the rise of fast-fashion. According to the Ellen McArthur Foundation (2020) this linear system leaves economic opportunities untapped, puts pressure on resources, pollutes

and degrades the natural environment and its ecosystems, and creates significant negative societal impacts at local, regional, and global scales.

The conservation and recycling of raw materials and resources is particularly meaningful and effective in this industry as the largest share of GHG emissions come from raw materials and production. For example, 71% of carbon emissions occur in the production phase, while around 20% of emissions are caused during product use, especially by washing (DHL, 2022). Since fashion production is the overwhelming driver of emissions, extending the lifetime of the products and putting their residual value back into the production phase are crucial for reducing production's footprint.

As such, the fashion industry, contributing significant GHG emissions, has a key role in curbing global warming (Rashidi-Sabet & Madhavaram, 2021). Therefore a paradigm shift from a linear model to a closed production system is not only desirable, it is also urgent and rather necessary to preserve societal wellbeing at large.

End-of-Life Circularity and Remanufacturing in the Fashion Industry

The notion of CE is based on the establishment of closed production systems, where resources are reused and kept in a loop of production and usage, by generating more value and for a longer period, and where the generation of waste is minimized (Urbinati et al., 2017).

CE is normally represented by the mean of four loops of recovery, that is the 4R framework - reduction, repairing, remanufacturing and recycling (Barreiro-Gen & Lozano, 2020). These loops are in turn related to the four key-principles of the CE, namely 1) product-life extension: products are designed to be durable and to have a long lifetime; 2) reuse: preservation of all of the added value within the product; 3) remanufacturing: return a product to like-new condition or better performance at the end of its life, with a warranty to match, and 4) recycling: used materials are treated to make them suitable for reuse (Urbinati et al., 2017; Vecchi, 2020).

Scholars have attributed the limited progress in CE implementation to a variety of barriers (e.g., De Jesus & Mendonça, 2018). Kircherr et al. (2018) distinguish four barriers, that are interrelated: cultural, technological, market and regulatory. Cultural barriers emerge as the main impediment regarding a transition towards CE, these are lacking consumer awareness and/or willingness to engage with the circular economy. Market barriers concern the lacking economic viability of circular economy business models. Regulatory barriers comprise the lack of policies that support a circular economy transition. Technological barriers concern the lack of technologies to implement CE that comprises the circular design and the ability to deliver high quality remanufactured products.

According to Dissanayake and Weerasinghe (2021), the implementation of specific circular practices in fashion can embrace four strategies throughout the product lifecycle that are namely - *resource efficiency*, *circular design*, *product life extension* and *end-of-life circularity*. *Resource efficiency* focuses on the narrowing of the material cycles through a less intensive use of inputs (Bocken et al., 2016) as well as on the choice of safe and chemical-free materials (EMF, 2017). *Circular design* comprises design for longevity, design for customization, design for disassembly, design for recycling and design for composting (Niinimäki, 2018). *Product life extension* aims to extend the garment functionality and utilization through a series of practices that minimize the need for raw materials and the consequent use of energy (Geissdoerfer et al., 2020); these are repairing services and sharing platforms for collaborative fashion consumption for leasing, sharing or renting products (Iran & Schrader, 2017). *End-of-life circularity* aims to capture the value of materials by closing the resource loops, to divert garments from landfills (Bocken et al., 2016). At the end of the first cycle of product use, this strategy allows implementing some circular practices that belong to the 4R framework. These are *reuse*, *recycling and remanufacturing*.

Reuse extends the useful life of textile products through their transfer to new owners. The extent to which consumers reuse fashion product depends on the quality of the product itself (Degenstein et al., 2020) and on the availability of second-hand clothing retailing (Ludeke et al., 2019) or rental platforms (Belk, 2014). *Recycling* is a strategy that uses discarded materials - pre- or post-consumer waste - that are collected, sorted and processed for the production of new products (Sandin & Peters, 2018). The uncertain quality or standard of supply make many designers reluctant to use recycled materials (King et al., 2006). In fashion, only the 1% of garments is actually recycled into new clothing, as the majority of recycling consists of downcycling that is creating a lower-value product than the original one (Dissanayake & Weerasinghe, 2021). On the other hand, *upcycling* clothing gives new and higher value to discarded materials, stimulating an interest for old fashion products that can be

redesigned (Cassidy & Han, 2017). Differently, the practice of *remanufacturing* can lead to lower waste levels and require less energy than recycling. Remanufacturing involves the disassembly, restoring, and assembly as a fixed sequence of activities to restore the performance of a product. In particular, King et al. (2006) suggest that remanufacturing may be a superior strategy as it preserves both the embodied energy of virgin production and the intrinsic added value of the product. Furthermore, remanufacturing allows products to be sold "as new" (p. 257) and is then considered "the ultimate form of recycling" (Giuntini & Gaudette, 2003, p.41). Clothes could be upgraded to a certain extent by replacing few pieces of a dress with new fabrics which may provide a new look and quality (Dissanayake & Sinha, 2015). The quality of the remanufactured clothing is equal or even better than brand new clothing, while upcycled clothing should have just a higher value at retail than the original product would, and can have a different end use from original use (Cassidy & Han, 2017).

For the fashion industry, the investigation of the implementation strategies for end-of-life circular practices, and in particular of upcycling and remanufacturing, still yields scant and fragmented results, even though it has been recognized as a new business opportunity and a major business model for fashion companies (Dissanayake & Sinha, 2021). Extant studies are mainly limited to technical assessments of the CE strategy, especially in relation to remanufacturing, which has been mostly focused on automotive and electronics. Exceptions in fashion studies are Dissanayake and Sinha (2015) that have provided evidence on five fashion companies about their remanufacturing reverse logistics process; Sinha et al. (2016) that, through the analysis of five cases, suggest how the process of fashion remanufacturing challenges the typical fashion design process; and recently, Pal et al. (2021) that use a single case study to assess the challenges related to scalability of fashion remanufacturing. Finally, Han et al. (2017) identify differences between upcycled and standard fashion and design, production and research processes using seven UK niche brands.

There is evidence that international fashion brands such as H&M, Zara and Muji have started developing collections made by recycled and remanufactured materials, or from scraps from their own manufacturing processes (Choi, 2017). Though, currently, circular fashion, and in particular upcycled and remanufactured fashion, plays only a marginal role within the fashion industry. Furthermore, previous research has found, that out of the four CE key principles described in the literature practices associated with remanufacturing are not widespread among fashion companies (Colucci & Vecchi, 2021).

METHODS

Data Collection

What has been lacking in extant research is an in-depth study that explores how companies tackle climate change thorugh upcycling, remanufacturing, and other end-of-life circularity practices. By relying on a qualitative inductive approach, our primary aim is to gain a better understanding of these practices through the experience of those who implemented them and therefore that can provide fresh insights and their unique viewpoints. This approach to empirical research provides a richer and deeper understanding of the meaning that people (i.e., informants) place on actions, events and relationships (Yin, 2011).

With the aim of structuring an analysis characterized by a high degree of significance and theoretical value, we collected data from two different samples -companies and field experts. The first sample comes from the selection, through a purposive sampling approach (Patton, 1990), of "born-circular" Italian fashion companies, that are currently implementing end-of-life circular practices such as upcycling and remanufacturing. A thorough review of the literature suggests that an indepth exploration of the implementation of such practices by "born-circular" companies (Colucci & Vecchi, 2021) might significantly benefit the field. "Born-circular" fashion companies are those companies that are not attempting to implement CE related practices into an already existing business model, as their business models are "born-circular" from their very outset as it can be clearly evinced from their mission statements.

Out of 11 companies contacted and willing to participate in the study, only 7 provided complete and useful information. The sample is diversified and displays considerable variety of industry sectors comprising 5 clothing companies. These companies mainly operate in the premium market segment. The topics discussed in the semi-structured interviews with the companies followed the main research questions addressed by the CE literature, from which general topics were extrapolated. The interviews

took place between January and March 2021 and on average they lasted 65 minutes. The key-informants interviewed within each company were mainly the founders and other executives who were knowledgeable about the upcycling and remanufacturing practices implemented by the firms.

Subsequently, 4 key-experts provided their opinions on upcycling and remanufacturing and were also prompted to discuss the main results obtained from the companies. They, in their own different capacity, were all very knowledgeable of the phenomenon of interest for the study and agreed to provide their angle. The interviews took place between March and May 2021, and lasted on average 40 minutes.

Both the interviews with the companies and with the key-experts were conducted independently by the researchers in Italian, digitally recorded, fully transcribed and translated into English, for a total of 135 pages.

Data Analysis

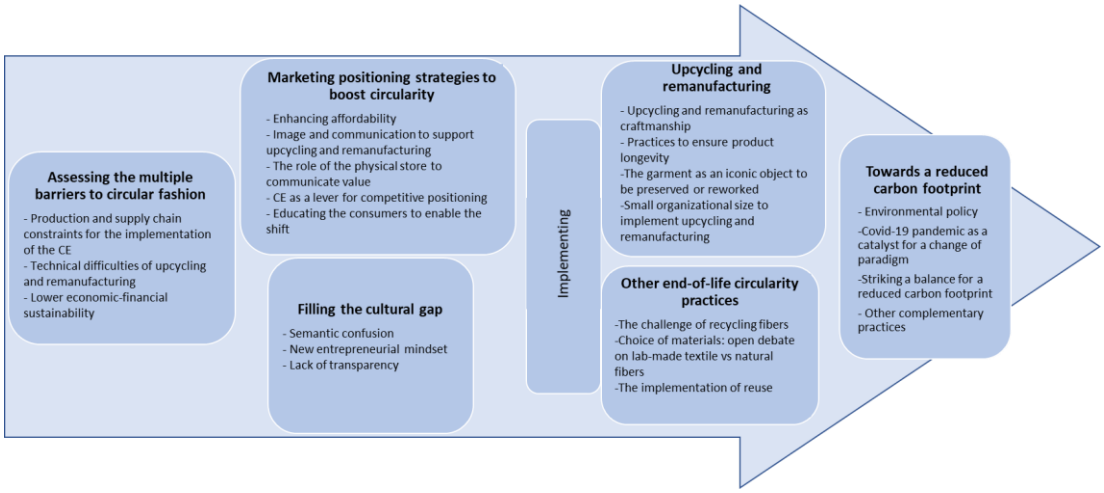
We adopted a coding process, by creating meaningful groupings from the data through the identification of themes or concepts that have some connection with each other, and that are grouped into overarching categories (Corbin & Strauss, 1990). Through a three-step coding procedure, we developed a selected set of categories that provides a coherent synthesis of the large data corpus. This process allowed meanings to emerge from the data, through a constant iteration between emerging themes and concepts and the relevant literature (Gioia et al., 2013) toward theoretical progression (Locke et al., 2020).

We independently coded the interview transcripts, with the software Atlas.ti, using *in vivo* codes to generate first-order codes; these were grouped into 22 second-order-themes, and finally clustered into 6 aggregate dimensions. These are namely assessing the multiple barriers to circular fashion, marketing positioning strategies to boost circularity, filling the cultural gap, implementing upcycling and remanufacturing practices, implementing other end-of-life circularity practices, and towards a reduced carbon footprint.

FINDINGS

Stemming from analysis, a process model was developed as depicted in Figure 1, in which the interrelationships among the aggregate dimensions and the the second-order themes are shown.

Figure 1: The process model



This process model represents a novel framework for understanding end-of-life circular practices - and to a greater extent for upcycling and remanufacturing - implemented by the companies in the study that are deliberately designed to reduce their carbon footprint. The next subsections present the findings, organized by our aggregate dimensions. For each of them, we will display the evidence as organized by second-order themes.

Assessing the Multiple Barriers to Circular Fashion

Production and supply chain constraints for the implementation of the CE in fashion

Concerning production, as mentioned by the various interviewees and underlined by the key-experts, the actual implementation of the CE requires significant investments and a large amount of time, in

order to readjust all the production phases, including logistics and distribution "*especially for consolidated companies, moving from what they have been doing for decades to a sustainable model is virtually impossible because all machinery, all supply chains, etc. would have to change*. "

In particular, as a major obstacle that was mentioned by one of the key experts was the circular practices' "*focus on unconventional fabrics and higher quality, which the fashion industry no longer takes into consideration"* and that would ultimately lead to "*a type of production that is largely incompatible with the low prices to which the fast-fashion market is used to"*.

Furthermore, several limitations were envisaged in relation to the technology, namely "*the impossibility of the current state of the art for the recovery and recyclability of garments or materials"*. The same argument was emphasized mentioning the limitations associated with *"the technological availability and the logistic infrastructure for the implementation of some circular strategies such as remanufacturing, upcycling and rental"*. Another interviewee highlighted the difficulties linked to *"the recovery of inventories for upcycling and remanufacturing strategies which is often more expensive than any other solutions such as for example incineration or sending scraps and overproduction to developing countries"*. This aspect was summed up by one of the key experts who said that "*the truth is that there is a problem, both at the level of knowledge of the production system and the theme of eco-design, and also of the impossibility of the state of the art, which prevents us from doing what circularity should be within the fashion sector* ".

As for the constraints posed by the supply chain, these were identified by some typical features such complexity and opacity since nowadays the industry relies on "*very complex supply chain, long and difficult to trace, often deliberately geared up towards hiding the exploitation of low-cost labour in the textile sector"*.

Technical difficulties of upcycling and remanufacturing

According to one of the interviewee "*the golden rule is to possibly use materials that are 100% mono-materials made, for example, of 100% cotton, 100% linen, 100% polyester or nylon, etc. This is because, at the end of the life cycle, depending on their nature, if they are natural they can be reinserted into the soil and it takes little to decompose and become nutritious again*". However, nowadays "*the majority of garments such as shoes and jeans and the types of materials used are not designed with a view of remanufacturing or upcycling"* this would lead to the challenge of "*finding suitable suppliers of materials for upcycling"* which would in turn entail *"search for suppliers on site and or through word of mouth along with lengthy price-quantity negotiation"*. Additionally, the production of remanufactured fashion items would also suffer from the *"constraints in design for remanufacturing for disassembly"* as opposed to *"the fewer constraints in design for upcycling which concerns only the choice of a suitable fabrics"*. Although both upcycling and remanufacturing are characterized by a high degree of technical complexity, upcycling has absolutely less stringent constraints on the issue of product design *"I am adopting the upcycling process I have no problems with product design as I only buy leather and I don't have to disassemble objects and finished products in order to recover the material "*.

The design phase would also come inevitably with a "*very high degree of unpredictability about the outcome that would require significant attention during the design and the construction of the garment"*.

Lower economic and financial sustainability

Amongst the interviewees there was a consensus concerning the lower economic and financial sustainability associated with remanufacturing, which would *"need for more time to create profitability for the business"* and would require a more systematic approach that would pay off in a longer timeframe. One of the interviewees pointed out how "*many emerging brands spend a lot of money to have the initial boom in communication, but they will never have a constant path. They will have an initial boom, with an investment of 50,000 euros in communication, so to speak, they send the t-shirt to some celebrities, but after 6 months you are back to square one* ".

It was envisaged that ultimately, "*the longer the production chain, the more it would cost"* as it would be necessary to engage in "*outsourcing of more labor-intensive phases such as the disassembly of the existing fashion item and the fabric cutting"* to recoup the suitable material. Furthermore, the production of remanufactured fashion items would require *"longer times and more skilled labour"* by ultimately leading to "*higher production costs"*, stemming from the "*higher quality of fabrics and the*

materials and the more intensive nature of the required labour which would inevitably be located in a developed country because of the high skills involved".

In order to find a solution to the issue of reduced revenue margins, the interviewees recall how the length of the production chain, from the procurement of materials to the sale of the garment, plays a fundamental role. From the point of view of distribution: "*the more important margin is obtained by direct sales, the more we go to mediate with a shop, the more it becomes truly marginal*". As widely emerged, entering the circular and sustainable fashion sector consists in getting used to a world that is more expensive, especially today, where the consumer is used to products that must be cheap. Given this widespread trend, the tendency to lower the price levels, although an immediate and simple solution may be for these companies, is not aligned with the principles of sustainability and preventing over-consumption.

Marketing Positioning Strategies to Boost Circularity

Enhancing affordability

One of the key experts stated that there is a widespread misconception associated with circular fashion *"the idea that perhaps is given is that sustainable fashion is only that which is produced with recycled materials, super luxury, with silks artificially made in laboratories and so on ... but in reality you are sustainable simply by repairing the things that they broke out of your closet, rather than going to buy second-hand things or trade with friends "*

By contrast the majority of the interviewees feel that there is the need to establish a "*virtuous industrial process would guarantee greater accessibility",* whereby "*to increase accessibility preference* there is the need *to raise margins in B2B relationships rather than B2C",* because "*sustainable fashion must be democratic",* thus brands need to undertake a significant *"revision of their profit margins, the high price"* paid by the consumers should act as a safeguard measure, a sort of *"warranty of value not as an hindering factor"* that undermines circular fashion products' accessibility. According to one of the interviewees, this barrier could be overcome by establishing "*deferred payment strategies to increase accessibility"* for the consumers. One of the companies is currently studying an alternative payment strategy, which allows those who wish to defer the purchase cost according to their economic possibilities. This service was not designed to encourage the customer to make an "easy" purchase, but rather to encourage them to make more informed and intelligent choices, capable of supporting greater product quality and durability.

Image and communication to support upcycling and remanufacturing

The empirical evidence highlights how a strong brand image can be a fundamental lever to incentivize consumers to approach a remanufactured or upclycled products. This consideration is particularly relevant ad timely especially today "*where the boundaries between fashion and communication are increasingly blurred, causing cataloging in the minds of consumers based on what they see worn by people*". For example, one of the companies is aiming more and more at a marketing that is no longer aimed at the promotion of a product, but at the promotion of the company values "*for me the fact of being able to dictate a way to say:" becomes one of us if you believe in what we believe it is a way to create a brand in a post-modern perspective*". According to the interviewee, fashion has always existed from the perspective of a consumption strongly dependent on the ideals expressed by a certain group of people to whom you want to belong. The creation of this sort of brand equity, that is the recognition by consumers of what is the vision of the brand or the designer, also translates into activities aimed at creating a lifestyle and a community around the brand.

Many initiatives in terms of image and communication could be implemented in the attempt to raise the profile of upcycled and remanufactured products. These would mostly entail "*collaboration with various celebrities and artists whose image is highly consistent with the brand image to reach the mass audience",* using "*the corporate blog as a tool to bring more awareness and sensitivity"* amongst the consumers, adding "*statements on the label such as* "*this garment has been made ..." gives value to what you wear".* According to a key expert it is responsibility of the industry to bring a significant shift to consumer consumption patterns. Circularity could be therefore leveraged to lead to the "*creation of a brand equity through the recognition by consumers of what is the vision of the brand or the designer".* The consumer, in fact, will be led to give greater value to what he wears.

The role of the physical store to communicate value

There is a wide consensus that the retail strategy plays a key role in promoting circularity amongst the consumers. According to one of the interviewees "*e-commerce limits for the purchase of "circular"*

garments since it does not provide any explanation of the product or of the fabric used in the garment". It is therefore of paramount importance "*to start immediately by giving an example to the consumer that the evolution of e-commerce will be a mixed form between digital and physical*". The brand's shop, evoking the idea of a prestigious tailoring workshop, lends itself to being a major communication channel for customer information and education. Interviewees argue that the consumer is currently inclined to embrace a more sustainable or artisanal philosophy, however she/he needs places and expert people able to illustrate these new options.

According to an expert, "*retail as an indispensable showcase for the product and its image and its heritage".* Another interviewee highlighted how it is down to the "*retail attitude to sell a specific collection of garments to the expenses of other products that come from remanufacturing or upcycling".*

CE as a lever for competitive positioning

The empirical evidence shows how, for the same final price offered to consumers, the circular product brings a visible competitive advantage "*from the moment in which two companies are on the same level as regards product prices but one is sustainable, there is a competitive advantage*". For others, however, the choice of a circular approach is more responsible for an advantage mainly in terms of communication of values and brand equity "*In this sense I define the advantage, not so much in attracting people, but in build loyalty and maintain them once they discover what's behind it and once they perceive the underlying values of our brand*".

At the moment, according to one of the interviewees there is a clear "*trend towards a premium/ luxury positioning",* however it is *"difficult to position oneself because sustainability is a chariot on which many are climbing".*

Educating the consumers to enable the shift

Everyone agreed that this is a time of seismic change, that is characterised by many unprecedented trends. From the one hand, interviewees highlighted how consumers are increasingly "*getting used to always new trends and extremely low prices typical of the fast-fashion business model",* as well as they are currently very focused on brands. Additionally, "*we have lost this idea of trust, there is no longer a relationship, we don't know who makes the clothes for us, we don't know how they have been made* ". The cause of this unawareness would consist in the widespread presence of stores and online content in reference to fast-fashion products "*we can buy online, 24 hours a day, so much so that everything is so easy to buy that there is no we don't even have to ask what we are buying .. we have lost the pleasure of knowing what one has bought and knowing how it was made".* They need to "*learn to distinguish true environmental sustainability from greenwashing, from false claims which are made by big brands, especially fast fashion for marketing purposes*".

On the other hand, fashion manufacturers are responsible for this unethical consumption as "*the fashion industry no longer thinks about fabric and quality".* Companies are "*trying to grow the market of more mature consumers, the children of a consumerism of the 80-90s"* as added by another key expert, there is a great deal of *"commitment and responsibility on the part of the consumer both in terms of purchasing decisions and product care to ensure its longevity".* According to one interviewee the current establishment of take-back systems by manufacturers and retailers can be somehow counterproductive as it might diminish the consumers' responsibilities as "*take-back systems tend to 'absolve' the consumer of his/her sense of responsibility".*

Filling the Cultural Gap

Semantic confusion

According to the interviewees there is a great deal of semantic confusion when discussing sustainability and circularity. As pointed out, "*we talk about sustainability and circular strategies with a very superficial understanding about what they entail and often by using the incorrect terms".* One interviewee argued that *"'upcycling' and 'remanufacturing' are often used interchangeably by the same companies".* Another interviewee claimed that, consumers tends to attributed a negative connotation to circularity by using "*terms that commonly refer to fashion items of 'poor' quality"*. Another interviewee on this issue is very clear *"the message to be offered to potential customers must absolutely not concern the idea of recovering materials, as the term 'recovery' is intrinsically negative and capable of associating the act of collection in the mind of objects and materials almost from rubbish, thus not representing what we actually do through upcycling processes"*. It was pointed out that is becoming an imperative *"unhinging the sustainability-renunciation binomial in the perception of the consumers. The consumer perhaps thinks that sustainability means renunciation (of quality). In reality, this is a*

paradigm that we need to unhinge in order to try to transform it into something different". Similarly, another interviewee argues the need to "usurp" these circular definitions from negative connotations to which they are always inappropriately, and perhaps irrationally, associated by the collective imagination.

New entrepreneurial mindset

According to the interviewees the industry requires a profound transformation in terms of entrepreneurial mindsets. As stated by one of the interviewees "*starting a bit as a joke, we thought that the product that already exists is the one that pollutes the least*". Similarly, another interviewee stated that "*the process when it comes to upcycling is a process of rupture not of construction, that is, you must really break the rules, pre-established criteria that, on the contrary, are used for the canonical process of creation. In fact, the designer, instead of starting from the idea, starts from the materials and therefore it is he who has to mentally adapt, trying to combine what he has found in order to make it become something else* ". A similar point was put forward by another interviewee who emphasized the importance of *"the principle of working with the existing, reinventing what is the aesthetics of the product"*. The ultimate goal is to make good "*use of pre and post-use of vintage garments and industrial remnants of discarded fabrics, end of series, etc. also from large fashion houses".* Fashion design should be developed in parallel in "*constant comparison with style and production given the constraints and the limitations of what is feasible".*

The design phase is particularly crucial to ensure the feasibility of both upcycling and remanufacturing, and companies adopted "Zero Waste Design" or "Zero Waste Pattern Making" approaches during the development phases to minimize, or even eliminate the generation of any production waste. One of the interviewees explained the importance during the cutting phase of the garments, to minimize any loss of fabric waste, since *"fabric, a 'by-product' that is created and that usually we don't know what to do with it - it is thrown away, incinerated, etc. ".*

Lack of transparency

Amongst the interviewees there is a strong consensus that the consumers suffer from the lack of transparency in the industry. This is mostly caused by 'greenwashing' and 'information dumping' practices that tend to rather widespread in the industry.

'Greenwashing' is further confirmed in the event that the brand concerned does not have or decides not to publicly disseminate any type of certification or demonstration to guarantee its claims "*you are a fast-fashion brand and if you want me, as a consumer, believe your claims then enable me to know what you are doing otherwise it is greenwashing*". This is what happens in the case of 'information dumping', a widespread phenomenon that consists of an excessive supply of information on policies and virtuous intentions that in reality do not find a translation into concrete actions or actual data. One of the key experts stated "*so, what we find very difficult to deduce, even from the brands' sites, is exactly what they are really doing and there is no data, alas, because there is still no correct legislation for make sure that brands have to put this information. Only brands listed on the stock exchange must submit a mandatory Sustainability Report every year.*".

Concerning 'information dumping' one of the interviewees further stated that "*at the beginning we had to work hard to be understood because in fact sustainability is an issue seen in a rather imprecise and little considered way. I hope it will be more and more, the signs are encouraging* ". In addition, according to the interviewee the widespread shallow discussion of the topic could in turn cause a further danger, namely the debasement of the intrinsic meaning of sustainability and its relative implications in the fashion world "*talking about sustainability in a banal and imprecise way tends to making sustainability lose value when instead this is an absolute necessity that we as human beings have at this moment*".

One of the key experts further highlighted how recently, through the main social networks, a form of '*social network mediated activism*' has emerged, in which influencers exploit - and at the same time they feed - their notoriety to 'point the finger' at large companies without communicating alternative options, practical suggestions of real communicative value and that might be concretely applicable by their followers.

Furthermore, according to one of the interviewees this lack of transparency mostly depends on the "*dubious position on certifications whereby companies have to pay very high costs for assessments that in turn have very little communicative value",* but also on the relative inaccessibility of tools such as Life Cycle Assessment and certifications to measure procedural aspects related to sustainability.

Another interviewee pointed out the "*data sharing problem that stems from the amount of data that is not uniformly required from all brands in the fashion system"*. Another culprit was identified by one key experts in the presence on the market of companies having a "*Fashion Transparency Index 2020 equal to 23%".* As pointed out by the interviewee *"in theory, a score of 100% would mean that a brand is publicly disclosing details of every supplier in their supply chain and every policy, procedure, performance and impact reviewed in the Index across a broad range of human rights, environmental and governance issues".*

A possible solution to this lack of transparency is provided by technology, as pointed out by one of the interviewees who claimed how "*blockchain technology needs to be used for the traceability of the entire supply chain"*.

Implementing Upcycling and Remanufacturing

Upcycling and remanufacturing as craftmanship

Amongst the interviewees there was a consensus that both upcycling and remanufacturing work well for designers' experiments or in the artisan sector, but it is rather difficult to apply them on a large scale for industrial production. One interviewee pointed out that "*some companies are trying to do the vintage of themselves, the upcycling of themselves, MiuMiu did it, they are doing it in Gucci with The RealReal, but guys we are talking about designers' experiments! And we know very well that they impact more on communication than on actual trade, so it is certainly not easy".*

In order to promote remanufactured or upcycled products there is the need to emphasise the importance of the unstandardized process leading to their originality, as designers need to adapt their creative process to what is available. Standardization should be contextualised within remanufacturing and upcycling that are *"essentially artistic and non-linear processes where it is important breaking of all the mental rules typical of serial production such as economies of scale, large volumes and collection planning".* According to an interviewee the " *you have to adapt your creativity to what is currently available*". Therefore the "*process at the beginning would be more empirical, then creation of a standard basic architecture whereby the same item can be declined in different versions".* The same point was iterated by all the interviewees who stressed the importance of releasing "*limited editions or capsule collections of unique fashion items"*. Or like another interviewee claimed there was the need to emphasise the importance of selling "*products with a high value content mostly conveying concepts of rarity, originality and value at an artisanal level".* The interviewee also provides examples of brands born with a purely artisan ethos *"all the embroideries and all the prints we make are completely handmade, so we do not rely on companies that make industrial embroideries or prints. This cycle of craftsmanship is always maintained and then, obviously, sustainability is one of our core value "*.

Practices to ensure product longevity

In-depth research into product durability is a key aspect according to the interviewees who stressed the importance of implementing a circular design from the very outset "*a strategy to make a product that can be dismantled, recycled or even compostable"* by also using more resistant and quality materials. They stressed the importance of thinking of the circular methods able to ensure andto favor a better conservation of the garment, both with a view to simple prolonged use and for a possible future recycling or remanufacturing activity. To support this point, the interviewee states "*basically we have two phases to try to extend the life of the product: the first is to offer the possibility of free repair to the garment, in order to try to extend its useful life as much as possible. Alternatively, we can work in order to to make it circular, that is to try to ensure that a pair of jeans can be easily dismantled or, at the very least, made compostable*".

The garment as an iconic object to be preserved or reworked

According to the interviewees it is of paramount importance to "*offer of precise indications on the use of the garments to encourage their correct conservation"* where the *"concept of inheritance and intrinsic emotional value of an object"* should be emphasised as well as the "*enhancement of second-hand and vintage"* so to create *"reimagined collections"* whereby *" 'Reimagined' dedicated to the recovery and change of use of a fashion item".* One of the interviewees clarified that this interest stems from her personal experience "*I started by going to recover objects inside my grandmother's closet where I was fascinated by her pins and her bags full of trinkets. For me, objects have a soul and are made to be handed down* ".

Small organizational size to implement upcycling and remanufacturing

According to the interviews small firms enjoy a privileged position when deciding to implement remanufacturing and upcycling. This allows them to occupy a niche which is currently unoccupied by the large players as there is a "*lack of implementation for large players who prefer to focus more on conveying circularity as a message but often they do not practice what they preach".*

Additionally, the advantages associated with remanufacturing and upcycling are better suited to small firms as these practices tend to "*enhance local craftsmanship and productions"* as well as *"smaller dimensions favour better working conditions".* As pointed out by one of the interviewees "*the advantage I got, shifting from standardization to upcycling, was more on an intangible and personal level and mainly consists in an improvement in the quality of work*".

Small firms' ethos seem more aligned with the implementation of circular practices since we are increasingly witnessing the "*birth of designers and small brands born with a sustainable imprinting".* This was further reiterated by one of the interviewees who said *"if a company has been established, that is, we are talking about companies that have already been on the market for some time, recreating an infrastructure is complicated, whether it is upcycling, whether it is remanufacturing or any other strategy. If a company starts from scratch obviously has carte blanche, so it can decide what to do"*.

Overall, the interviewees feel that implementing circular practices could foster novel forms of collaboration as *"small-medium enterprises have the ability to rearrange themselves towards new sustainable approaches. Larger players might see that there is an incentive to outsource their circular production to Italian tailoring laboratories".* In particular, one key expert pointed out the opportunity to establish "*B2B partnership between established brands and small players for the development of sustainable projects".* One interviewee told in detail how complicated it was to be credible among the market players and above all for the suppliers of textile inventories *"now we are better placed because from the beginning we have had the moral support from a commercial point of view from the Calzedonia group, which has always believed in us. So, just introducing ourselves to other companies with this name helps us and today we have some really important suppliers, let's think for example of Marzotto".*

Implementing Other End-of-Life Circularity Practices

The challenge of recycling fibres

The challenge of recycling some types of fibres was acknowledged as one of the main issues when implementing circular practices. According to some interviewees recycling was relatively unattainable as the interviewees felt that "*some materials and types of products (e.g., footwear) cannot be recycled due to the presence of different fibres"* and that often *"companies are unprepared for the recycling of fabrics".* Some interviewees pointed out that "*recycling does not guarantee the quality of the product"* or that the "*recycling strategy in itself is not a guarantee of sustainability as it produces considerable waste, pollution and it is energy-intensive".* By contrast, others felt that recycling vis-a-vis other circular practices would be more attainable since "*the recycling strategy would appear to be the simplest one because it has historically been applied to other sectors as well".* For some interviewees it would have been a matter of making a trade-off between "*chemical recycling vs. mechanical recycling"* and that surely "*some powder obtained from post-consumer cotton garments could be used as a dye for the jeans".*

Choice of materials: open debate on artificial vs natural fibres

Amongst the interviewees there was a division between those who were really open and in favour of artificial fibres, against those who would be very much against them and a third category of interviewees who offered a moderate perspective. According to the formers, the future lays on the use of "*innovative artificial materials such as eco-viscose generated from tree bark or Tencel Modal which is extracted from beech wood"*. In particular one of the interviewees pointed out that *"natural prints, unlike chemical ones, fade in beachwear".* They would be in favour of *"possibly using textiles that are 100% mono-fibre, a fabric produced by many different fibres becomes difficult to untangle".* Another interviewee pointed out that *"Econyl is a yarn that can be regenerated and recyclable n-times that is obtained from a plastic transformation process".*

According to the latters, conversely "*100% natural fibers (organic cotton, wool, leather, etc.) are preferable because they are compostable".* Another interviewee pointed out how *"eco-leather for vegan lines still contains polyurethane",* that artificial fibres cause the *"problem of plastic microfibers released in washing"* and that *"Econyl, despite being a regenerated and recyclable yarn n-times, is obtained from a plastic transformation process which very polluting and expensive".*

Those who offered a moderate perspective felt that it was more appropriate to rely on a "*selection of materials that are consistent with the value of sustainability, guaranteeing quality and aesthetics"* as well as on "*certified fabrics".*

The implementation of reuse

In order to encourage the conservation and reuse of existing products, the companies have decided to implement some particular company policies in line with their circular and responsible brand image. These are namely reviewing the number and timing of any collections, and reviewing the promotional policy. One of the interviewees said: " *it no longer makes much sense to work strictly at the level of collections, so this allows us to have a basic line that is always valid with practically the usual garments, sometimes renewed slightly in design. It is precisely with a view to thinking that there are some items that you buy almost once in your life that can potentially last you forever*". A further stance against the phenomenon of over-consumption, concerns the choice of whether implementing promotional policies. For example, this year one of the companies has decided not to participate in the promotional initiatives of Black Friday, an occasion defined by our interviewee as "*a very evident situation of consumerism for its own sake*". The entrepreneur illustrated how his brand has donated 25% of the proceeds collected that weekend for the purchase of trees in the area of California devastated by the summer fires by stating " *we have given a fairly precise signal, namely that you shouldn't buy if you don't need it just because someone gives you a discount in such a planned way* ".

Towards a reduced carbon footprint

Environmental policy

According to the interviewees there is the need at policy level to foster a business vision that no longer aims only at profit maximization but that also at pursueing a sustainable growth. Initiatives listed by the interviewees to facilitate the shift toward reducing the carbon footprint of the industry would entail the following - financial contributions as part of the Recovery Plan to help companies to achieve sustainable goals and to reduce companies' carbon footprint; due diligence and reporting obligations for all companies and not only for those that are listed; the need to establish objective criteria to measure sustainability; the establishment of EU regulations for supply chain outsourcing concerning the use of chemicals, the requirement of ensuring traceability with the aid of blockchain technology, triangulation, obligations for the suppliers to have their own ethical code.

With specific reference to the Italian context, the interviewees feel that "*it is becoming an imperative to deliver at policy level a firmer protection to the "Made in Italy" fashion, by also offering enhanced support to the dying industrial districts*". The interviewees believe that such local initiatives will in turn boost the added value that the image of Italian craftsmanship can convey globally. In particular, the interviewees would welcome any policy initiatives that would support the back-reshoring of those companies that are now manufacturing abroad and that are responsible for an unecessary large share of carbon footprint of the entire Italian fashion industry.

Covid-19 pandemic as a catalyst for a paradigm shift

Amongst the interviewees there is a strong consensus that the Covid-19 pandemic has been a very powerful catalyst for a paradigm shift in the industry. The pandemic has exacerbated the issue of climate change, which is now uncontrolled, therefore also the issue of GHG reduction has been brought under closer scrutiny of the public eye. This has been clearly visible with the massive participation of Generation Z in Fridays For Future[1]. According to the interviewees, "*the pandemic has brought an awakening of consciences regarding sustainability issues that has pushed fashion companies to become more pragmatic about their objectives and projects*". It has brought opportunities for fashion brands to dispose of their unsold items.

Striking a balance for a reduced carbon footprint

According to the interviewees tackling climate change mostly requires striking a balance. This notion permeates all the quotes that were collected. In the words of one of the interviewees "*we are aware that we still generate an impact on the environment, but we implement all those actions that attempt to reduce it. Our design department is always looking for alternative options and new solutions that can lower our impact on the environment and our negative impact on society*. " A similar argument was raised by another interviewee who remarked that "*sustainability means trying to do business without damaging*

[1] For comprehensive statistics about the number of strikes by country, please see https://fridaysforfuture.org/what-we-do/strike-statistics/list-of-countries/

the environment and possibly trying to distribute as much as possible the benefits that are generated, in the forms of wealth, among all the people involved".

In particular, according to one of the interviewees it is becoming an imperative "*finding a real balance, because for example, using econyl-type fabrics has a high environmental impact – on the one hand we have a considerable environmental impact for its manufacturing process, but on the other hand we use waste materials and say that in the end there is a balance. The same thing for fake fur or fake leather which are made of plastic..so there is no real balance!"*.

A similar point was raised by another interviewees who explained that econyl mostly comes from polyester and from recycled nylon therefore "*despite the hype (for econyl) it is not a super sustainable material, because in any case you can only continue to recycle it, because once the whole round of recycling is really over, econyl will end up being dumped in the environment, however these fibers take up to five hundred years to deteriorate, ok? And if you burn them, they still create unhealthy gases*. " Conversely, it was emphasised how by contrast, the leather, if dyed correctly, without relying on heavy metals and by using only vegetable tanning, is absorbed by the soil. Furthermore, it was stressed that "*there are industrial processes, even very complex ones, that are completely sustainable, for example if you think about the Futurecraft project by Adidas, they produce a shoe that is made 100% mono-material*".

Other interviewees highlighted other types of tensions that the industry has to overcome to strike a balance such as "*maintaining quality and aesthetics, while reducing the impact on the environment*" or " *relying on combination of various approaches to form an efficient circular strategy*" which is closely aligned with the definition of innovation. For example, one interviewee felt that it was alright to use water, however significant effort should have been devoted to water filtering to guarantee its widespread reuse. Others suggested extending the range of products to be designed in a circular way, fully capitalising on the advantages brought by the increasing market trends towards differentiation and personalization or availing of new laser technologies and other techniques to avoid wasting water in the production of jeans.

One of the interviewees added *" Consumers must understand that even if a brand has not killed an animal to produce its products, it has still used liters of water and highly harmful materials to produce a type of clothing defined and promoted as sustainable when, in reality, it has very little or nothing ecological. My philosophy is to have a conscious approach to the consumption of products and the consumer must not automatically deprive himself of certain objects, in order to be sustainable, with a Nazi perspective ".*

In relation to the specific issue of reducing the GHG emissions, another interviewee raised the issue of how he thought it was "*offensive to talk about degrowth*" and raised the rather paradoxical question of whether "*is it wrong to go back in order to go forward?*". A similar contraddiction was also highlighted by another interviewees that suggested how the industry to reduce its carbon footprint should really minimize recycling as *"recycling is often seen as an easier strategy, but which has a high impact on the environment"* and how established brands should choose to manufacture only in those Italian companies that engage in sound environmental practices.

Complementary practices

The interviewees further identified a set of complementary practices to reduce the companies carbon footprint. These entailed a vast array of initiatives such as a donation of 25% of Black Friday proceeds to purchase trees in fire-ravaged California; a more active engagement with Ellen McArthur Foundation; a more intensive use of renewable energy sources and better waste management practices (e.g., synthetic leather uppers made with apple and cotton scraps to produce a vegan shoe line, the soles of the shoes could be recycled to make the flooring of playgrounds for children, avoiding using water when upcycling denim, relying on recycled cotton to make linings, because this would entail avoiding using soil, water and fertilizers).

Others also mentioned the discontinuation of the seasonal production and promotional sales to more effectively discourage over-consumption; the attempt to embrace more widely principles of recyclability or compostable garments, the pursue of social inclusion by offering employment to people with a path of fragility.

DISCUSSION AND CONCLUSIONS

The aim of this study was to investigate the process of the implementation of end-of-life circularity practices and, in particular, upcycling and remanufacturing by Italian fashion companies to tackle climate change. The study provides evidence of the underlying dynamics of the implementation of such practices, by thus unpacking the mechanisms through which companies firstly assess the multi-level barriers, then boost circularity through marketing positioning strategies while at the same time trying to fill the cultural gap, as depicted in the process model.

While extant research has identified barriers to the implementation of circular economy without specifying the practices or the sectors (e.g. Kircherr et al., 2017), our study provides an exhaustive taxonomy of those hindering factors that are specifically associated with end-of-life circular practices in the fashion industry. From the findings it emerges that companies in order to deliver circular fashion products by means of upcycling and remanufacturing have to assess the multiple barriers. These arenamely production and supply chain constraints, the technical difficulties of upcycling and remanufacturing and the lower economic and financial sustainability. This result is aligned with Okereke et al. (2012) that emphasise possessing specific capabilities, in particular our study stresses the importance of having adequate sensing capabilities to be able to assess the multiple barriers to circular fashion.

Differently from research on the drivers to circular economy based on secondary data and unspecific about the type of practice implemented or the sector analysed (de Jesus and Mendonça, 2018), our model highlights the pivotal role played by marketing as several marketing positioning strategies were adopted to effectively boost circularity. Amongst these enhancing the affordability of circular products, the key-roles of image and communication to support up-cycling and remanufacturing, the importance of the physical store to communicate value, how circularity can be used as a lever for competitive positioning, and the need to educating the consumer to enable the shift towards circular fashion. While confirming the central role played by marketing (Rashidi-Sabet & Madhavaram, 2021), this finding raises the interesting question of whether is possible to preach the value of sustainability while promoting consumption. The evidence presented seems to be in favour of supporting this paradox.

The findings also highlight the importance of filling the cultural gap. In particular, there is the need to dissipate the semantic confusion that permeates the industry with companies using upcycling and remanufacturing interchangeably. This confusion has a detrimental effect on the consumers' perceptions of circular fashion. In order to fill the cultural gap a new entrepreneurial mindset is required and a set of deliberate actions are needed to address the existing lack of transparency. This result further adds depth to the importance of a cultural shift emphasised by Okereke et al. (2012). More precisely, within the context of the fashion industry a cultural shift involves fashion firms and consumers but it must entail a proactive approach by the former in order to achieve the desired cultural shift by the latter.

As for the stage of implementing upcycling and remanufacturing, our results provide additional nounces to the necessity of the implementing both structural and processual changes, as it highlighted by Okereke et al (2012). Both upcycling and manufacturing have been envisaged as expressions of craftmanship. The companies also implement a set of practices to ensure product longevity as they all see the garment as an iconic object to be preserved or reworked and believe that their small organizational size is better suited to implement upcycling and remanufacturing. Despite their ethos towards circular fashion, they all acknowledge that recycling fibres is a challenge. Beside upcycling and remanufacturing, companies implement other end-of-life circular practices for which a major concern relates to the choice of materials where there is an open debate on experimenting lab-made vs. natural fibres. They also find it necessary to couple upcycling and remanufacturing with the implementation of reuse.

The achievement of a shift towards a reduced carbon footprint also requires environmental policy initiatives that provide incentives and a legal framework to enable the shift. Conversely, there is a widespread acknowledgment that the Covid-19 pandemic as been a powerful catalyst for a change of paradigm. However, in order to pursue a reduction of GHG emissions it becomes necessary to strike a balance between competing interests for a reduced carbon footprint and there is the need to engage in other complementary practices.

The article makes several contributions to the literature. First, the paper contributes to literature on grand challenges. As it can be evinced by the evidence, and as posited by George et al. (2016) tackling climate change by thus delivering a societal gain requires the sustained effort from a vast array of

stakeholders. There are the fashion companies that have to implement the end-of-life circular practices; there are the consumers that need to be educated to make informed choices; there are the policy makers that need to support this paradigm shift by supporting it with suitable policy initiatives. The solutions that have been identified by the evidence involve changes in individual behaviours (i.e., both for the entrepreneurs and the consumers), changes to how actions are organized and implemented (i.e., upcycling and remanufacturing along with the other end-of-life circular practices), and progress in technologies (i.e., recycling technologies) and tools to solve these problems (i.e., policy initiatives).

Second, through an indepth qualitative analysis of semi-structured interviews, the study reveals a theoretical process consisting of key phases for the implementation of end-of-life circular strategies. In building the process model, the circular practices were grouped into two categories -1) upcycling and remanufacturing and 2) other end-of-life circular practices. Although Dissanayake and Weerasinghe (2021), consider upcycling and remanufacturing as one of the possible variations (including reuse and recycling) of the broader "end-of-life circular practices" category, our model highlights how, despite some degree of semantic confusion, upcycling and remanufacturing are considered distinctive practices by practitioners. Not surprisingly, the literature regards the "remanufactured fashion" (Sinha et al., 2016) as an absolutely embryonic practice. The process model ultimately highlights that, by trying to pursue such practices, companies deliberately seek to address climate change and to reduce their carbon footprint.

Third, anothertheoretical contribution is the focus on remanufacturing in a very labour-intensive context, which is still purely artisanal and that requires a set of specific high skills. By contrast, the practice of remanufacturing is commonly investigated in studies with a high technical connotation, as a topic strictly inherent to the field of engineering (e.g., Ijomah, 2009). Indeed, the interviewees tend to underplay the technical aspects of upcycling and remanufacturing, they rather emphasized the more artistic and creative skills that these practices require, as today the production scale is limited. From the findings it emerges that the scalability of these practices driven by a gradually soaring demand and by a growing consumers' sensitivity, will be a rather critical issue that mass production will inevitably have to face.

Fourth, another distinctive factor of our study is its focus on the Italian fashion industry, that is a context that is still largely unexplored in relation to CE practices. The Italian fashion industry is characterized by the prevalence of a socio-economic fabric made by micro and SMEs that are renowned worldwide for their high-quality craftmanship, sharp tailoring, exclusive design and innovation . CE is an innovative practice that requires considerable creative efforts both in terms of product and production process. The evolution of the Italian fashion industry is characterized by an industrial tradition thathas led to the establishment of industrial clusters in which the fashion "Made in Italy" is manufactured. As these clusters have led to the establishment of internationally recognized fashion houses, they can provide incentives for the development of new circular skills, by thus relying on traditional craftsmanship and high skilled labour and by ultimately reconciling heritage with modernity.

This research analyzed the strategic directions adopted by seven Italian fashion companies, recently established, born with corporate missions to pursue greater economic, social and environmental responsibility. While studies of how incumbent firms seek to address climate change abound (Frishammar & Parida, 2019), limited attention has been devoted to the response of emerging players and to less extent to those in the fashion industry. As such, given the peculiar nature of these companies, they were deemed better placed to provide valuable insights over the implementation of exemplary end-of-life circular strategies amongst fashion firms and to a greater extent into upcycling and remanufacturing.

As for the managerial implications, it emerges that one of the most effective incentives for the industry's circular development is the establishment of B2B collaborations between the born-circular firms and incumbent companies. The latters, despite having substantial financial and reputational resources, are not adequately equipped with the necessary know-how to effectively implement a radical shift to embrace circularity. By contrast, the born-circular firms often suffer from reduced availability of resources to be able to fully capitalize on these initiatives. As such, a potential collaboration could lead to a win-win scenario for both parties.

From the findings it also emerges that technology is one of the levers on which companies need to invest. Technology is crucial for introducing "Circular Design" or "Zero Waste Design" practices. There is the urgency to invest in advanced technologies that are capable of enhancing the technical feasibility of

mechanical recycling to ensure compliance with the highest quality standards required by the consumers. An improvement in recycling technology could eventually lead to overcoming the use of the most harmful chemical recycling. Technology can also enable the implementation of new systems for rationalizing the more labour-intensive phases (e.g., sorting and disassembly), by alsosupporting more efficient flows of reverse logistics.. The deployment of blockchain technology can also improve the traceability of fashion products.

Overall, end-of-life circular strategies such as upcycling and remanufacturing if widely adopted by the industry at large might hold significant potential to radically reshape the industry by establishing an alternative industry paradigm whose benefits might yield far-reaching implications for societal well being at large.

We hope that this paper may further stimulate future research. A greater understanding and development of CE in the fashion industry will undoubltedly be of great importance for society, companies and scolars.

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