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Close the loop: Evidence on the implementation of the circular economy from the Italian fashion industry

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**“Close the Loop”: Evidence on the implementation of the Circular Economy from the Italian Fashion Industry**

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**“Close the Loop”: Evidence on the implementation of the Circular Economy from the Italian Fashion Industry**

**Keywords:** Circular Economy; Fashion Industry; Product Lifecycle; Sustainable Development; Environmental Impact; Business Model; Fashion Circular Economy.

For Peer Review

## “Close the Loop”: Evidence on the implementation of the Circular Economy from the Italian Fashion Industry

**Abstract:** Fashion is widely considered one of the most polluting and destructive industries to the environment and is a resource-intensive industry in which opportunities to reduce environmental impacts abound. By relying on an exploratory approach, this paper features an investigation into the Circular Economy (CE) practices of four purposefully selected Italian fashion companies. The study endorses the overlooked perspective of the product lifecycle (*vis-à-vis* the business model perspective), consistent with the key principles of the CE, to provide a comprehensive picture of CE practices implemented. This study engages with the current debate on the relationship between the concepts of sustainability and CE, supporting the idea that there is a beneficial relation between the two. The analysis shows the emergence of categories of CE-related practices as well as CE implementation challenges. The study also provides granular insights into the nature of these challenges that hinder the implementation of CE and demonstrates how they can be turned into sources of competitive advantage. Drawing on this emblematic evidence, we develop a set of theoretical and managerial implications.

### 1. Introduction

Accenture Strategy recently surveyed more than 500 manufacturing companies with revenues over \$1 billion and found that over 90% claimed to be implementing circular business models (Ghosh et al., 2017). However, while recycling waste materials across a company's operations is certainly a practice in the right direction, it is a modest one that only scratches the surface when it comes to fully capturing the value of the Circular Economy (hereafter CE). Accenture Strategy provides evidence that when it comes to the adoption of CE practices, there is significant room for improvement (Ghosh et al., 2017).

Within this context, the fashion industry is paving the way towards a new industrial paradigm where the CE can be more fully embraced. The efforts of the global fashion industry in terms of environmental sustainability and transparency have become increasingly important, as demonstrated by the ever-growing body of research. Indeed, the fashion industry is one of the largest polluters in the world, given its high carbon emissions, wastewater production, and large amounts of landfill waste, and it is also known for its poor working conditions (United Nations, 2019). Having been an engine for global development for decades and one of the world's largest consumer industries, the fashion industry now needs to address its environmental and social footprint (Karaosman et al., 2017; Kerr & Landry, 2017). This will be particularly challenging as fashion companies have traditionally focused on supply-chain management that achieves technology-driven efficiencies in order to maintain lower costs, lower prices, and higher production volumes that, in turn, facilitate the emergence of so-called throwaway fashion, or low-cost fast fashion (Kozlowski et al., 2015). The fashion industry, indeed, has a primary role in driving a culture of consumption – that, is stimulating the constant consumption of the “new” and disposal of the “old” (Joy et al., 2012; Kozlowski et al., 2015) – so that “*over 90 million items of clothing end up in landfills globally each year*” (Pedersen et al., 2018 p. 272). Only around 20% of clothing is recycled or reused (Global Footprint Network, 2017; Pal & Gander, 2018). The reuse and recycling value of materials and products could be captured and reintroduced in the market if companies adopted CE principles such as product take-back, reuse, upcycling and recycling (Hawley, 2008; Kant Hvass & Pedersen, 2019).

Because the fashion industry is so resource-intensive, a transition to a circular fashion industry is desirable, yet systematic research on the opportunities and the challenges of its

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3 implementation is still fragmented. The literature has started exploring the commitment of  
4 fashion companies toward sustainability using the business model perspective, suggesting  
5 different approaches and limitations to the adoption of sustainable practices (Beh et al., 2016;  
6 Kant Hvass & Pedersen, 2019; Pal & Gander, 2018; Pedersen et al., 2018; Todeschini et al.,  
7 2017). However, mainstream business model thinking is centered on the creation and capture  
8 of value by a company through the satisfaction of consumer needs and the maximization of  
9 economic return, disregarding core concepts of the CE such as take-back, reuse, resell,  
10 upcycle and recycle (Bocken et al., 2015; Pedersen et al., 2018). Kant Hvass and Pedersen  
11 (2019) explore one aspect of circularity, namely, product take-back, through a single case  
12 study of a fashion brand, yet adopting the business model perspective.  
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15 This paper, differently, is focused on the CE and aims to provide a finer-grained picture  
16 of circularity through a qualitative analysis of four purposefully selected Italian fashion  
17 companies. In particular, we empirically examine emblematic case studies of practices  
18 through which circularity can be improved throughout different stages of the fashion value  
19 chain. To this end, we adopt the Close the Loop framework, (Flanders DC, 2020; Vecchi,  
20 2020) that was developed to guide companies and other stakeholders in the fashion industry  
21 (i.e. designers, producers, retailers and consumers) to embrace a circular approach by  
22 considering the whole lifecycle of a fashion product. Accordingly, our study takes the  
23 overlooked perspective of the product lifecycle, which is highly consistent with CE principles  
24 that refer to products (Urbinati et al., 2017), to provide in-depth insights over the extent to  
25 which Italian fashion companies embrace CE practices along the stages of their products  
26 lifecycle.  
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## 2. Background: The Implementation of the Circular Economy in the Fashion Industry

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32 Economic performance, social inclusiveness, and environmental resilience are sustainability  
33 goals that have spurred the introduction of the concept of CE - *“a regenerative system in  
34 which resource input and waste, emission, and energy leakage are minimised by slowing,  
35 closing, and narrowing material and energy loops”* (Geissdoerfer et al., 2017 p. 766). The  
36 concepts of CE and sustainability indeed share similarities, but are not interchangeable with  
37 each other (Geissdoerfer et al., 2017): while “sustainability” provides a broader framing,  
38 which can be adapted to different contexts and goals (Brundtland, 1987), “CE” emphasizes  
39 environmental benefits and gains for the economic actors that implement the system.  
40

41 In particular, CE is a new industrial paradigm that aims at overcoming the dominant,  
42 open-ended linear economy model based on “take-make-dispose” and has become a vibrant  
43 area of research in Strategic Management, as well as a hot topic in practitioners’ debates  
44 about new and sustainable economic production models (The Ellen MacArthur Foundation,  
45 2013). The shift from a linear model of resource consumption to a closed production system  
46 that replaces the “end-of-life” concept with restoration, where resources are kept in loops to  
47 achieve longer use and reuse (i.e. more value for a longer period) (Ellen MacArthur  
48 Foundation, 2013; Urbinati et al., 2017), can radically transform the way companies use  
49 resources to achieve sustainable development (Murray et al., 2017). The “closing logic” is at  
50 the core of the CE (i.e., closed loops or circular processes that allow the cycling of resources  
51 to make efficient use of them) and is aimed at reducing damage to the environment (Morlet,  
52 2017; Pal & Gander, 2018). In addition, higher and more volatile resource prices expose  
53 companies to higher risks, and increasing signs of resource depletion call for a new economic  
54 model (Ellen MacArthur Foundation, 2013). Consequently, CE implementation is an  
55 economic strategy rather than just an environmental strategy (Yuan et al., 2006).  
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58 The rescue of resources from disposal and their reintroduction into the production or  
59 consumption processes is associated with four main “loops” that represent the four key  
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3 principles of the CE. These are: 1) *product-life extension*: products are designed to be durable  
4 and to have a long lifetime; 2) *reuse*: preservation of all of the added value within the product;  
5 3) *remanufacturing*: return a product to like-new condition or better performance at the end  
6 of its life, with a warranty to match, and 4) *recycling*: used materials are treated to make them  
7 suitable for reuse (Choi, 2017; Geissdoerfer et al., 2017; Hazen et al., 2017; The Ellen  
8 MacArthur Foundation, 2013; Urbinati et al., 2017). These principles affect the way  
9 companies make profits, so the transition to the CE often entails adaptations of companies'  
10 existing business models or the creation of new ones (Ferasso et al., 2020). Companies  
11 therefore design their business models around new activities to achieve a sustainable  
12 development aimed at preserving resources (Centobelli et al., 2020).

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15 With the highly significant environmental impact and the very substantial scale of the  
16 existing fashion industry, the opportunities for creating more sustainable and circular fashion  
17 abound (Şener et al., 2019). The idea of replacing the planned obsolescence strategy with the  
18 concept of “longevity by intention” has begun to gain popularity among companies (The  
19 Ellen MacArthur Foundation, 2013). Extending the use of clothes can be the cornerstone of  
20 sustainable clothing consumption, where consumers are key stakeholders in determining this  
21 longevity through their habits and actions (Cocquyt et al., 2020). From the company  
22 perspective, product longevity refers to the possibility of keeping in the loop garments and  
23 textile, since biodegradability, or biological cycles, often are not a realistic option (Niinimäki,  
24 2017). The literature has increasingly started investigating how fashion companies adapt or  
25 innovate their business models in order to adopt the circular approach (Kant Hvass &  
26 Pedersen, 2019). Since business models have both positive and negative consequences on the  
27 environment in which they are implemented, the development of sustainable business models  
28 has begun to address a plurality of values by adopting the so-called “triple bottom line”  
29 perspective – economic, environmental and social (Evans et al., 2017).

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32 To help move towards a more sustainable fashion industry, scaling up alternative  
33 business models is deemed a desirable scenario: The whole fashion industry “*needs to*  
34 *embrace a deeper, more systemic change and scale low-carbon solutions*” (UNFCCC, 2018,  
35 p. 2). In this context, some companies have started implementing systemic interventions  
36 throughout the lifecycle of garments, which are essential for the transition to a sustainable  
37 and circular fashion industry (Fletcher & Tham, 2014; Stewart & Niero, 2018). New business  
38 models based on rental, resale, and refurbishment can stretch the product lifecycle and still  
39 keep offering newness to consumers (McKinsey & Company, 2019). Furthermore, exploring  
40 the journeys of circular innovations, the literature suggests a set of factors along all the textile  
41 value chain, from product design to take-back and reprocessing, that are crucial in expediting  
42 or delaying a firm's aspirations to develop a circular product (Franco, 2017). Todeschini and  
43 colleagues identify the main trends and drivers of sustainable business model innovation in  
44 the fashion industry, one of which is the implementation of the CE, and suggest that the  
45 implications for entrepreneurship are different for incumbent and start-up companies  
46 (Todeschini et al., 2017). Mishra and colleagues found that key drivers for the closed-loop  
47 fashion value chain are collaboration with partners, innovation, waste management system,  
48 customer connect and changing utilization patterns. They suggest that to incorporate CE  
49 principles, namely, reduce, repair, reuse and recycle into current business models, redefining  
50 existing value propositions and transforming various business model elements is essential  
51 (Mishra et al., 2020). Research also stresses that the implementation of sustainable business  
52 models based on the CE in the fashion industry may be hindered by factors such as the lack  
53 of scalability, incompatibility with fashion customers’ value propositions, changing  
54 consumer needs, lack of relevant technological expertise and difficulties related to changing  
55 the supply chain (Crainer, 2013; Ethirajan et al., 2020; Linder, M., & Willander, 2017; Pal  
56 & Gander, 2018; Urbinati et al., 2017).

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3 Table 1 below provides an overview of the relevant literature on sustainability and CE  
4 in the fashion industry by highlighting their relevant focus (i.e. business model vs. product  
5 lifecycle), showing that extant research has mainly framed the CE within the business model  
6 perspective. Our paper, differently, endorses the view that firms adopting the CE should  
7 embrace a more systematic approach to identify where superior value is created in their value  
8 chain, as well as whether there are viable opportunities to close loops along the lifecycle of  
9 their products<sup>1</sup>. Within this context, the implementation of the CE would indeed imply a  
10 higher number of relationships along the value chain compared with a more traditional linear  
11 model (Centobelli et al., 2020). In a similar ethos, our paper relies on a framework developed  
12 by practitioners - "Close the Loop" (Flanders DC, 2020), only recently proposed in the  
13 literature (Vecchi, 2020) but never tested empirically in a study to date.  
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17 {Table 1 here}  
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19 This framework considers the entire lifecycle of the fashion product according to six  
20 stages – from resources, design, production, retail and consumption to end-of-life – to provide  
21 a more comprehensive picture of practices that need to be implemented to achieve a circular  
22 fashion business. The six stages are all aimed at rescuing of resources from disposal and their  
23 reintroduction into the production or consumption according to the four key principles/loops  
24 of the CE (i.e., *product-life extension*, *reuse*, *recycle* and *remanufacturing*). The description  
25 of the stages and the CE key principles involved for each stage are summarized in Table 2  
26 below.  
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29  
30 {Table 2 here}  
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32 The paper draws on this framework to investigate the extent to which CE practices are  
33 implemented by four purposefully selected companies. This paper endorses the view that this  
34 approach is particularly suitable since it focuses on the lifecycle stages of a fashion product,  
35 which is consistent (*vis-à-vis* the business model perspective) with the CE and its principles  
36 that refer to products rather than businesses.  
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### 39 3. Methodology

40 The methodology of this paper is informed by the above-mentioned Close the Loop  
41 framework and its six stages (Flanders DC, 2020; Vecchi, 2020) to take the whole lifecycle  
42 of a fashion product into account from a CE standpoint. We settled on an explorative  
43 approach because the CE implementation is still in its infancy and calls for a more granular  
44 understanding involving qualitative research (Eisenhardt, 1989). In particular, we explore the  
45 company practices implemented in each of the six stages, using multiple case studies. These  
46 cases were selected with a purposive sampling technique (Yin, 2013), namely a deliberate  
47 choice of cases that are information-rich, given the purpose of the study, as well as being  
48 available and willing to participate (Etikan, 2016). This technique has been employed  
49 previously in similar research (Pal & Gander, 2018; Teh & Corbitt, 2015).  
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52 Case study results can be very persuasive when multiple cases are used to confirm  
53 theorized differences across two or more cases (Johnston et al., 1999). To obtain a  
54 comprehensive and exhaustive overview of the CE implementation issues that attains the  
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59 <sup>1</sup> Urbinati and colleagues (2017), as an instance, suggest that Life Cycle Assessment (LCA) and Product  
60 Lifecycle Management (PLM) practices play a pivotal role for those firms adopting the CE.

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3 Italian fashion industry, four case studies were selected: Candiani Denim, WRÅD, Dress You  
4 Can and Gucci. The companies, described in the sub-section below, are highly diverse and  
5 are representative of the breath of the innovative wave of unconventional stakeholders that  
6 increasingly is shaking up the more conventional Italian fashion industry (De Chiara &  
7 Iannone, 2020).  
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### 10 **3.1 Description of the Selected Cases**

11 Candiani Denim is a rather large manufacturer. The company was established in 1938 near  
12 Milan and has grown to become the world's oldest and most sustainable denim mill, creating  
13 the fabrics that gave birth to the premium denim industry. The manufacturer seeks to stand  
14 out from the mass of denim suppliers by producing sustainable denim and become "*the*  
15 *greenest textile company in the Blue World*". It is a large company, with 600 employees, and  
16 in 2018 its turnover was approximately €90 million (Candiani's Production Book).  
17 Candiani's main assets are the high quality of its product, the high rate of innovation on  
18 product quality and its environmentally responsive sourcing.  
19

20  
21 WRÅD is a small but very dynamic design company. The company was born in 2015 as  
22 an educational movement to raise public awareness about the environmental and social  
23 impact of the fashion industry. The Rana Plaza event in Pakistan in 2013, when hundreds of  
24 workers were killed in a garment factory collapse, represented the starting point for the co-  
25 founders. Matteo Ward, WRÅD co-founder, at the time was working as CSR Manager at  
26 Abercrombie, decided to resign and to embark on a trip around Europe to document the  
27 environmental and societal impact of the fashion industry. Originally, WRÅD started off as  
28 an Instagram page with the aim of deeply sensitize its followers. The first design partnership  
29 was launched shortly afterwards with the company Alisea Recycled and Reused Objects  
30 Design. By 2017 WRÅD has become a real design company with a clear brand identity,  
31 whose product development and style are handled by Silvia Giovanardi (WRÅD co-founder  
32 and formerly working at Etro). The company launches its signature product, the Graphi-tee  
33 t-shirt, dyed with recycled graphite powder from industrial waste by Tecno EDM, a Turin-  
34 based company that produces electrodes. Since then WRÅD has established itself as an  
35 innovative and unconventional player in the Italian fashion industry and has won many  
36 international awards, amongst which the very prestigious Red Dot Design Award.  
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39  
40 Dress You Can is a pioneer of the Italian fashion rental market. It is the first Italian  
41 fashion rental retailer based in Milan and it was established at the end of 2014 by Caterina  
42 Maestro, current CEO and founder of the company. The company was created to address the  
43 need, in particular of women, to rent (both online and offline) an outfit – dresses, shoes and  
44 accessories - especially for special occasions, promoting reuse and recycling. Dress You Can  
45 gives customers the chance to access an extensive wardrobe at an affordable price, with  
46 sustainability and the CE at the heart of the company strategy. The initial idea was to create  
47 a physical place and a website to share one's wardrobe, expanding the classic "sharing"  
48 between friends to a much wider audience, where individuals could make their own wardrobe  
49 available. At the same time everyone could rent designer clothes from emerging or  
50 established designers, obviously at low prices. All other players, such as the American Rent  
51 the Runway, offer either a peer-to-peer exchange platform service without logistic support  
52 or rent their own dresses from famous fashion designers and take care of logistic end-to-end.  
53 Differently, Dress You Can introduces a unique business model supported by a best of breed  
54 logistic service and powered by three different groups of suppliers: 1) the clients themselves,  
55 supplying unused personal items and clothes; 2) well-known fashion brands that supply  
56 vintage or seasonal clothes; 3) young and emerging designers who can distribute their  
57 collections with lower fixed costs. In Italy the concept of "renting" is still not very widespread  
58 as everything concerning e-commerce. Whereas in the United States the online rental of  
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women's fashion clothes and accessories has become a consolidated reality, in Italy the market is still at its infancy and the presence of competitors is still very limited. To overcome this challenge Dress You Can has worked to increase the client's awareness of the advantages of fashion renting and retain an ever-growing base of customers through communication, direct involvement of the diversified supplier base, word of mouth and, above all, the presence of the physical store. In addition, the integration with other providers of sharing services such as tourism and transport to couple the already active partnership with car2go in Milan, the expansion of the range of products offered (maternity clothing, extra-size clothing, clothing accessories, linen) and the "physical" diffusion in the rest of Italy with the expansion of the flagship stores have been used to further enhance brand awareness.

Gucci is a large and well-established luxury fashion house that has now branched into many different products within the fashion sector, producing leather bags, shoes, jewelry, eyewear and fragrances as well as clothing. Gucci is one the most renowned and influential luxury brands in the world today, a genuine global reference for fashion and accessories, and a benchmark for a modern, innovative business. Founded in Florence in 1921, the House is renowned for eclectic and contemporary creations that represent the pinnacle of Italian craftsmanship and are unsurpassed in quality, attention to detail and imaginative design. Today, Gucci is striving to redefine luxury for the 21st century, an ambition that has been further empowered in 2017, with Kering's (the conglomerate that owns the brand) commitment to responsible business practices. To this purpose, Gucci unveiled 'Culture of Purpose', a 10-year sustainability plan that focuses on creating a positive environmental and social impact, which is outlined in the Gucci Equilibrium platform. Gucci Equilibrium embodies the fashion house commitment to generate positive change for people and the planet. Powered by creativity and collaboration, the aim is to reduce its environmental impact and protecting nature, while also prioritizing inclusivity and respect, so that everyone in the global #GucciCommunity is free to express their authentic, diverse selves. As the fashion house approaches its 100th anniversary, it is moving forward into the coming decades with an ongoing commitment to reinforce its culture of purpose, demonstrating its values through innovative pathways towards social and environmental sustainability. Gucci Equilibrium unifies the principles upheld by the fashion house, its vision and the actions it pursues.

### 3.2 Interview Protocol and Method of Analysis

To increase the comparability and the confidence of the findings, the four case studies followed a structured interview protocol as illustrated in Table 3 below.

{Table 3 here}

This protocol is informed by the Close the Loop framework (Flanders DC, 2020) and was also tested in preliminary explorative stage of the research. Data collection mainly comes from in-depth, semi-structured interviews that were conducted with five top executives who were deemed very knowledgeable about the companies' relevant CE activities. These were the Sustainability Manager for B2C (at Candiani Denim), two Business Developers (at WRÅD), the CEO and Founder (at Dress You Can), and LG Time & Method Analyst (at Gucci). The interviews were conducted in December 2019, and on average they lasted for 45 minutes and all took place at the companies' premises. They were all combined with company visits, where the researchers visited the factories and observed the CE practices discussed during the interviews.

The topics discussed during the interviews, listed in Table 3 in the form of our protocol, reflect the taxonomy of practices that have been identified by the Close the Loop framework. The interviews were conducted independently by the researchers in Italian, digitally

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3 recorded, and fully transcribed. The interview transcripts were then translated from Italian  
4 into English, devoting particular attention to issues of linguistic equivalence (Douglas &  
5 Craig, 2007). This primary data was then triangulated and complemented with secondary  
6 data, in the form of media reports and company documentation. The interviewees were also  
7 prompted to provide additional material, such as financial reports, production books,  
8 marketing brochures and other documents. Other secondary data, such as newspaper  
9 clippings, official press releases, company bulletins, company websites, and other online  
10 articles, were useful to both contextualize and corroborate the findings. These additional  
11 materials were necessary to overcome the limitations that conducting four purposefully  
12 chosen case studies entail (Yin, 2013), and also to increase the robustness of the findings by  
13 means of triangulation (Jick, 1979).

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16 We independently coded the interview transcripts and the secondary data collected using  
17 *in vivo* codes to generate first-order codes. We then scoured the relationships between first-  
18 order codes and grouped them into categories with a higher level of abstraction (i.e. second-  
19 order themes). We followed a qualitative approach and adopted a coding process whereby  
20 we developed first-order codes and second-order themes in a process of iteration between  
21 data and theory on CE (Gioia et al., 2013). Figure 1 depicts the data structure stemming from  
22 this coding process. We found six second-order themes that are the “patterns” according to  
23 which the companies approach the implementation of CE. These are *product-life extension*,  
24 *reuse*, *recycle*, *resource preservation*, *sustainability practices* and *CE implementation*  
25 *challenges*.  
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28 {Figure 1 here}  
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#### 32 **4. Empirical Evidence**

33 Figure 1 depicts the CE practices (corresponding to six second-order themes) that emerged  
34 from our study. Table 4 is based on the analysis for each company respectively, showing the  
35 relationship between the CE practices and every stage of the Close the Loop framework. In  
36 particular, our analysis shows the emergence of a set of practices that fit with three key  
37 principles of CE, namely *reuse*, *recycle*, *product-life extension*. We have also found a fourth  
38 category of practices that we labelled *resource preservation* that stems from the  
39 implementation of the previous CE practices and entails a more efficient use of resources.  
40 *Resource preservation* is the direct consequence of the implementation of the CE practices  
41 (i.e. *product-life extension*, *reuse*, and *recycle*) and can be aligned with the company’s  
42 broader sustainability strategy in reducing its environmental impact (i.e. practices that are  
43 good for the environment). In addition to these four categories, our coding results suggest the  
44 emergence of further practices that we have categorized as *sustainability practices*, because  
45 they imply goals that are related to the broader concept of sustainability such as practices that  
46 are good for society at large. We have also identified a sixth category that falls under the  
47 label of *CE implementation challenges*, which comprises a series of factors highlighted by  
48 the interviewees that seem to hinder the implementation of CE.  
49  
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51 The following sub-sections present the findings by second-order themes, namely  
52 *product-life extension*, *reuse*, *recycle*, *resource preservation*, *sustainability practices* and *CE*  
53 *implementation challenges*.  
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#### 56 **4.1 Product-Life Extension**

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3 Product-life extension practices are tackled differently by the selected firms. While Candiani  
4 Denim and WRÅD tend to approach the issue in terms of resources, production and design,  
5 Dress You Can and Gucci highlight consumer-facing practices where the companies mostly  
6 attempt to engage their consumers to make them more inclined in retaining their fashion  
7 products for longer.  
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10 Candiani Denim for example tackle product-life extension from the textile design angle  
11 by producing a premium denim that is made to last, that could be recycled, by thus  
12 minimizing waste and reducing the need for rapid consumption. The company is a passionate  
13 advocate of the slow fashion movement, which sees “*jeans as iconic pieces that people can*  
14 *easily love until they fall apart*” (interview with D.A.). Similarly, WRÅD products are  
15 designed to last, by making use of one single fiber, that can be reused and recycled. Even  
16 their packaging is designed to be reused and recycled.  
17  
18

19 At Dress You Can an important source is represented by private members who supply  
20 dresses and accessories: this practice considerably extends the lifecycle of fashion products  
21 that otherwise might have been discarded. The sharing wardrobe gives the clients the  
22 opportunity to contribute themselves with personal items that are unused, or second-hand, so  
23 that they can be suppliers and clients at the same time. Selected clients who also share iconic  
24 pieces from their wardrobe, turning “impulsive” purchases from the past into investments  
25 that can be monetized in the present, contribute to extend the clothes lifecycle and, therefore,  
26 reducing energy and materials waste.  
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29 Conversely, any initiative that may offer consumer engagement, such as personalization,  
30 which could strengthen the emotional attachment between the consumer and the product by  
31 therefore granting product-life extension, finds limited implementation at Gucci. As stated  
32 by the interviewee, “*On this, we have only small initiatives, on some articles you can insert*  
33 *the initial for example. You can't let the customer do things the way they want, especially in*  
34 *high-fashion houses; for example, you can't allow a customer to insert pink GGs on a wallet*  
35 *because she likes it that way, because this doesn't respond to Gucci's stylistic vision, which*  
36 *always comes first*” (Interview with D.S.).  
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## 43 4.2 Reuse

44  
45 The selected firms engage in a wide variety of reuse practices. Reuse mostly occurs in relation  
46 to resources, production and end-of-life stages.  
47

48 At Candiani Denim, for example, the production process relies on circular systems that  
49 include the following measures: recovery of water to be used later for cleaning, heat exchange  
50 systems using waste heat, using emitted CO<sub>2</sub> to pre-treat water for production and thereby  
51 reduce the use of acids, and recovery and recycling of 100% of cotton waste.  
52

53 WRÅD, in 2019, launched the collection “What is real?”, a collection of garments made  
54 from recycled and certified organic cotton and reused military fabrics. Beside trying to reuse  
55 fabrics, the company through its social media as well as other channels educates people about  
56 responsible consumption and is a strong advocate of the “Fashion Revolution” movement.  
57 This worldwide movement calls for a global fashion industry that conserves and restores the  
58 environment and values people over growth and profit.  
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3 At Dress You Can, reuse of the final products plays a pivotal role in the business model  
4 of the company. *“The idea, as often happens, was born by chance, during a trip with friends.*  
5 *We were undecided on the purchase of a garment, which we would have worn just once. So*  
6 *I started thinking about a sort of ‘infinite’ shared wardrobe, where you can take what you*  
7 *want, when you want. In short, 365 outfits for 365 days. The goal was to allow unlimited*  
8 *access to a new wardrobe every day, thanks to the application of the sharing economy logic*  
9 *to the world of fashion.”* (Interview with C.M.). Today the founder defines her company as  
10 *“the wardrobe Airbnb”*, and strongly believes that fashion renting is the new frontier of  
11 shopping, given that in 2023 the market will be worth \$2.5 billion. The numbers, at the  
12 moment, support the vision of the founder: *“Almost half of the consumers have repeated the*  
13 *service purchase, and 38% of Dress You Can members have already reported buying less*  
14 *clothes.”* (Interview with C.M.). In a similar ethos, at the end-of-life, Dress You Can only  
15 uses wooden hangers, and clothing covers – for both in-store and online purchases – are  
16 reused every time.

17  
18 Gucci implements reusing practices in a very extensive manner. In 2018, as a result of  
19 partnering and cooperating with several non-profit organizations, Gucci was able to reuse  
20 around 11 tons of leather scraps. The initiative also partners with social cooperatives in Italy  
21 working with marginalized groups, to train and re-integrate people back into their  
22 communities. The company worked with Green Line, located in Recanati, Italy, which  
23 specializes in the recycling of textile scraps. In 2018, around 92 tons of scraps were collected  
24 from Gucci’s suppliers and regenerated for further use. Additionally, the “Re-verso” project  
25 is an emblematic example of how the company reuses scraps of fine wool to avoid the use of  
26 cashmere, which has an economic footprint that has turned *“parts of Mongolia that once*  
27 *sustained cashmere goats into a dustbowl”* (Gucci Equilibrium (a), 2019). Gucci has also set  
28 up a project called “I was a Sari”, founded in 2013 by Stefano Funari in Mumbai, India,  
29 where he discovered that thousands of saris, a traditional Indian garment, were discarded  
30 every year. He came up with the idea of (re)using them as an inexpensive and versatile raw  
31 material with which he could create new and original fashion items and accessories. He hired  
32 disadvantaged women from the Mumbai area as workers, seeing a powerful potential in the  
33 creativity and skills these women have. In 2013 the first group of women artisans began their  
34 training in reconditioning and upcycling saris. After considerable early success, Funari  
35 started asking himself if the project could scale and if his products could ever compete with  
36 high-end fashion ones in the global market. For this reason, in 2017 he entered a partnership  
37 with Gucci – *“the Gucci team realized that by applying high-level embroidery techniques*  
38 *and working with Gucci’s major embroidery houses, the sari could be given new value in the*  
39 *global fashion market”* (Gucci Equilibrium (f), 2019).

### 4.3 Recycle

40  
41 The selected companies tend to engage in recycling practices across the different stages of  
42 resources, design and end-of-life.

43  
44 In terms of resources, Candiani Denim has undertaken a pioneering initiative that can be  
45 traced back to 1976, when the company installed a closed-loop system of dye baths for  
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3 continuous regeneration and began recycling cotton waste from its own production. WRÅD  
4 also uses upcycled resources – graphite powder and chitosan – and low-impact ones such as  
5 hemp and beeswax. The Graphi-Tee, the signature company’s product for example is made  
6 of 100% organic cotton that has been dyed with upcycled graphite. *“I had tons and tons of*  
7 *graphite powder that I was trying to dispose from a Turin landfill. I wondered if we could*  
8 *find an application for this waste in the textile industry. And from there, the first WRÅD*  
9 *product was born, the Graphi-Tee”* (interview with A.F.).

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13 As for design, Candiani Denim designs textiles that will last well, to reduce the need for  
14 rapid consumption and minimize waste, and that include regenerated and recycled materials  
15 - *“ReGen is the first example of our Project Denim 2.0 initiative. It is made of 100%*  
16 *regenerated fibers – 50% recycled cotton recovered from our own production and 50%*  
17 *recycled lyocell, made using Lenzing’s patented Refibra technology, in both the warp and*  
18 *the weft”* (interview with D.A.). Similarly, when designing the products, WRÅD avoids  
19 short-lived materials such as elastane, to create clothes that will be durable and thus reusable  
20 and 100% recyclable at the end of their lifecycle. At Gucci, differently design does not seem  
21 to be driven by circularity as the interviewee noted that prototypes cannot be recycled as they  
22 need to be destroyed. As they pointed out – *“I don’t know exactly, all prototypes are only*  
23 *stored and destroyed after a certain time because they do not match the stylistic vision or the*  
24 *standards of the brand ... and they are already finished products, so it’s difficult to recycle*  
25 *them”* (Interview with D.S.). However, Gucci is also working on projects involving every  
26 type of raw material used in production. The company is increasing the amount of recycled  
27 and plant-based synthetic fiber used in production. It has started using the new “Newlife  
28 polyester”, which is 100% made from post-consumer bottles, as well as ECONYL  
29 regenerated nylon. Similarly, with plastic, Gucci is no longer using PVC in its products and  
30 instead is switching from virgin to recycled plastic.

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37 Concerning end-of-life, at Candiani Denim, all production waste is separated and given  
38 to certified waste managers, significantly reducing the waste going to landfill. Waste from  
39 jute bags, fibers and semi-finished products is recycled by external companies, giving it  
40 another use. WRÅD is also working on the implementation of take-back programs, so that  
41 consumers can return the items at the end of their useful life and fabrics can be recycled into  
42 new clothes. Dress You Can is also planning to introduce packaging made of materials  
43 recycled from old clothes.

#### 48 **4.4 Resource Preservation**

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50 Practices aimed at preserving resources emerged from our analysis as they are widely  
51 implemented by all the selected firms. Within this context, technology tends to play a very  
52 pivotal role as not only it enables resource preservation at the production stage (i.e. Candiani,  
53 WRÅD and Gucci) but it is also instrumental to establish a new consumption paradigm as in  
54 the case of Dress You Can that ultimately also leads to resource preservation.

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56  
57 Candiani Denim is a strong advocate of the implementation of the CE – *“The focus was*  
58 *largely on social responsibility in the beginning, and has now largely moved to the innovation*  
59 *of alternative more sustainable materials, and textile recycling technologies”* (interview with  
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3 D.A.). The company relies heavily on a fabric produced using 100% recycled fibers and  
4 thereby saving approximately 2.600 liters of water per pair of jeans. In terms of resources,  
5 the production of denim is traditionally associated with a very high and detrimental  
6 environmental impact. Growing cotton in particular requires a vast amount of resources. The  
7 raw material also tends to come mostly from overseas, often from developing countries that  
8 provide very precarious working conditions for the workers. In the production process of  
9 denim Candiani has started using Kitotex, a sizing agent needed for weaving the yarns  
10 without breaking them, which is chitin-based and therefore more environmentally friendly  
11 than the conventional sizing agents made from plastic. Using indigo juice and Kitotex in  
12 combination has the potential to reduce water use by 75% and chemical use by 65%  
13 compared with the normal denim production process. The company is also monitoring the  
14 hazardous waste generated on a weekly basis. When considering the end-of-life of their  
15 products, denim producers aim at producing a fiber that is durable, but can be also disposed  
16 of sustainably. Candiani Denim launched the “ReLast” program in 2018, producing  
17 innovative fabrics made of Global Organic Textile Standard (GOTS) certified cotton and  
18 certified recycled elastic fiber. “ReLast” also involves clean-tech dyes and new sustainable  
19 fibers and finishing technologies. Some of Candiani’s fabrics are also biodegradable - they  
20 are currently working on producing fabrics that will be fully absorbed by the soil.

21  
22 WRÅD also seeks to reduce its environmental impact by optimizing and rationalizing  
23 the use of resources by making extensive use of low-impact resources (i.e. hemp, beeswax,  
24 organic cotton). Thanks to this, the production of the Graphi-Tee uses 90% less water and  
25 emits 60% less CO<sub>2</sub> into the atmosphere than any ordinary t-shirts. The production of t-shirts  
26 usually involves an enormous amount of water. The dyeing process for the Graphi-Tee uses  
27 90% less water and emits 60% less CO<sub>2</sub> into the atmosphere than with ordinary t-shirts. They  
28 decided to introduce an original material in the fashion industry – the industrial waste  
29 graphite powder - revamping an old dyeing technique that dates back to Ancient Rome.  
30 Thanks to the use of organic materials and innovative technologies, such as the *G\_pwdr*  
31 technology and *Kitotex*, water consumption and carbon emissions are drastically reduced.  
32 New technologies, such as the smart-indigo dyeing process typically used in denim  
33 production, will use 80% less water than for comparable fabrics.

34  
35 Dress You Can, indirectly is also contributing to resource preservation by significantly  
36 extending the life-cycle of fashion products through the rental service. This does not imply  
37 only resource preservation stemming from curbing over-production and over-consumption  
38 but the rental service also provides monetary gains to its clients as they can monetize over  
39 their unused fashion items.

40  
41 Alongside the CE practices implemented, Gucci also seeks to reduce its environmental  
42 impact by optimizing and rationalizing the use of resources. According to the interviewee,  
43 substantial effort has been made to reduce the use of leather by establishing the “Scrap-Less”  
44 project whereby only the useful part of leather goes through the tanning process. In turn,  
45 Gucci can reduce the use of chemicals in the tanning phase without compromising quality.  
46 The company is now experimenting with a new kind of metal-free leather treatment, less  
47 polluting than the traditional one. 3D printers are used for prototypes of metal accessories to  
48 make the process more efficient. The benefits from the “Re-verso” program are also

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3 significant as they have brought an 82% reduction in the consumption of energy, a 92%  
4 reduction in the consumption of water and a 97% reduction in CO2 production.  
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#### 7 8 **4.5 Sustainability Practices**

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10 The coding process also highlighted further practices that were categorized as *sustainability*  
11 *practices* that mostly entail the selection of local suppliers, the implantation of a retail model  
12 that tends to preserve the environment by minimizing its negative environmental footprint,  
13 and the pursue of broader socially and economically sustainable goals.  
14

15 In particular, the sustainability approach of Candiani Denim has a long history – “*We*  
16 *started innovating for sustainability back in the late 1970s; however, it was seen as efficiency,*  
17 *not sustainability at that time. Since we are vertically integrated our approach must be a*  
18 *360° approach*” (interview with D.A.). The selection of suppliers is a key sustainable  
19 initiative for them: the company sources raw material locally from environmentally friendly  
20 sources – “*Cotton is often recognized as a crop with a significant environmental impact, and*  
21 *for this reason we make it a priority to obtain it from sustainable sources*” (interview with  
22 D.A.). All suppliers are screened with regard to sustainability. The vast majority of suppliers  
23 are in Italy, just a few from elsewhere in Europe and currently only one from outside Europe  
24 – “*One aspect of this effort is maintaining full transparency over our chemicals supply chain*  
25 *and promoting Italian suppliers as often as possible*” (interview with D.A.). The company  
26 chooses suppliers that are part of the Better Cotton Initiative (BCI), which tries to incentivize  
27 farmers to produce in a sustainable manner.  
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32 At WRÅD, sales are made mostly online, both on the company’s own website and on  
33 retailers’ platforms such as Yoox. In order to be more visible WRÅD also features some  
34 offline touchpoints such as boutiques in Milan and Starbucks Reserves Roasteries, where  
35 they showcase and sell custom collections. This distribution strategy is aligned with the  
36 company’s sustainability ethos since its environmental impact tends to be rather limited.  
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39 By involving users both as client and supplier, Dress You Can works to “convert” every  
40 woman to use and not to possess fashion, in line with the ethos of the CE. From this point of  
41 view Dress You Can acts as a trend collector that optimizes consumption by making it  
42 sustainable (rental), transports the concept of sharing economy to the fashion world, thus  
43 contributing to the elimination of waste (sharing), analyzes and tries to prevent client requests  
44 in order to support the sustainable production of fashion products, with particular attention  
45 to emerging designers increasingly attentive to the ecological aspect of their work (i.e.  
46 sustainable and customized production).  
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50 As for the engagement of Gucci with sustainability practices, “*nowadays the company is*  
51 *insisting a lot on sustainability. They are testing methods to reduce the chemicals used for*  
52 *tanning. In addition, a contest was launched among employees to come up with ideas to*  
53 *reduce the environmental impact of the company. The company is also doing a lot of internal*  
54 *communication on the initiatives in progress*” (Interview with D.S.). In the last four years,  
55 Gucci has been sourcing gold responsibly using a financial mechanism that supports artisans  
56 and small-scale mining. Since November 2015, all the gold and the precious stones purchased  
57 by Gucci have been certified under the Responsible Jewelry Council Chain of Custody  
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3 certification scheme. The company also partners with social cooperatives in Italy, working  
4 with marginalized groups, to train and re-integrate people back into their communities.  
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#### 7 **4.6 CE Implementation Challenges**

8  
9 Several CE implementation challenges also emerged from the analysis.

10 At Candiani Denim, for instance, the interviewee claims that - *“effective textile recycling*  
11 *is seen as necessary to achieve a circular economy in the fashion industry. However, our*  
12 *personal opinion is that post-consumer recycling technologies still are not able to deliver the*  
13 *level of quality we are after”* (interview with D.A.), and innovation tends to be a lengthy  
14 process so that R&D takes a long time. Additionally, when considering the end-of-life of  
15 their products, one of the main challenges faced by denim producers is to provide durability  
16 to the fabric while aiming for a low environmental impact. Certifications can also be  
17 problematic, as stated by the interviewee - *“The [main] benefit of certifications is for the*  
18 *final consumer who can have a better idea about how or by who a product was made, or*  
19 *what materials it’s made of. We now believe in going beyond certifications. This means it*  
20 *will become a matter of communicating, essentially proving that what we are doing is better*  
21 *than the requirements or the positive impact we are having is greater than what happens*  
22 *under certain certificates”* (interview with D.A.).  
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28 At WRÅD, the interviewee claims that CE emerges only if there is collaboration - *“If*  
29 *there is no collaboration between the different business realities, it is quite difficult. The*  
30 *dynamics are very complex.”* Price is also an issue so that they are trying to make their  
31 products as affordable as possible, even though producing in Italy using high-quality  
32 materials makes it difficult to keep the price of the Graphi-Tee less than €60. However, *“Now*  
33 *we are trying to get more and more at a lower price because we do not want to make a*  
34 *sustainable fashion brand that is not accessible to most people.”* Another issue is consumers’  
35 widespread attitude to fashion, as outlined by the interviewee - *“because of the fast-fashion*  
36 *system, we are almost used to wearing clothes as if they were disposable. So, we are trying*  
37 *to carry out awareness-raising through technology to encourage people to take care of their*  
38 *clothes and use them for as long as possible. The technology is there, but if we were to insert*  
39 *an NFC tag [to pass on information to the consumer], they could read it only from the iPhone*  
40 *8 upwards. There is still that technological limit to overcome”* (interview with A.F.). Mixed  
41 material fabrics make recycling more complex - *“A problem we have encountered is that*  
42 *there are many suppliers who sell you cotton as if it were GOTS when, in reality, it is not.*  
43 *You buy the GOTS licenses and make it pass for GOTS when it is actually grown like any*  
44 *other cotton. So, you always have to go to the bottom”* (interview with A.F.).  
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51 According to Dress You Can’s CEO, the biggest challenge is to make consumers  
52 understand that their offering is more advantageous and convenient than any other  
53 comparable peer-to-peer initiative. As for end-of-life, take-back model initiatives are still not  
54 in place.  
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56 At Gucci, the interviewee identifies two distinctive aspects that hinder the  
57 implementation of the CE by a luxury company. In particular, one relates to prototypes and  
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3 the other one to personalization. As described above, prototypes are still destroyed, and  
4 customers have limited opportunity to personalize products.  
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6 Overall, the empirical evidence allows us to classify these challenges into three sub-  
7 categories. The first is *technical issues*, which include post-consumer recycling technologies  
8 not able to deliver the level of quality desired; difficulty recycling mixed fabrics; R&D long  
9 to develop; unreliable certifications; and durable denim fabric difficult to produce with a low  
10 environmental impact. The second, *operational issues*, includes the need to efficiently  
11 integrate take-back systems; the difficulty in establishing collaborations due to the complex  
12 dynamics among different businesses; and the need for innovations to be scalable at the  
13 industrial level, so that they are not too costly to implement. Finally, *consumer-related issues*  
14 comprise the widespread fast-fashion attitude; the difficulty of understanding the rental  
15 model; and high pricing of sustainable products. Further operational challenges, that tend to  
16 be specific to the luxury industry and might prevent firms from implementing relevant CE  
17 practices, as the Gucci case suggests, are the limited opportunities to reuse prototypes and  
18 the fact that full personalization cannot be allowed.  
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## 26 5. Discussion

27 A thorough understanding of the empirical evidence presented above requires a discussion  
28 along several dimensions. First, as Table 4 below shows, it is interesting to see that not all  
29 companies implement the CE to the same extent across the same stages of the product  
30 lifecycle. We believe this outcome is mainly due to the type of business run by the companies  
31 (e.g. design vs. manufacturing vs. retail) but it also reflects the approach to CE adopted by  
32 the companies (e.g. circular-born company vs. traditional company).  
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36 {Table 4 here}  
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39 Secondly, it should be noted that out of the four CE key principles described in the  
40 literature, we did not find evidence that suggests the presence of any practice associated with  
41 *remanufacturing*. For the CE to be attainable, consumers not only need to return products  
42 after use but also to purchase products that are remanufactured. While remanufacturing is a  
43 widespread practice in manufacturing industry (Abbey et al., 2015), it does not seem to be  
44 commonly adopted in the fashion industry. This is quite understandable as research confirms  
45 that consumers, in general, tend to have a poor opinion of remanufactured products and are  
46 typically not prepared to adopt them (Hazen et al., 2017). This applies particularly to fashion,  
47 as consumers are unlikely to be willing to wear second-hand clothes that have been altered.  
48 Furthermore, the boundaries between remanufacturing and recycling/upcycling tend to be  
49 blurred as producing fashion garments with recycled fabrics can be seen as a very radical  
50 form of remanufacturing (Abbey et al., 2015; Choi, 2017; Dissanayake & Sinha, 2015).  
51 Therefore, if we endorse the view of recycling/upcycling as a radical form of  
52 remanufacturing, the recycle columns of Table 4 (coupled by the practices listed in section  
53 4.3) could provide some evidence of remanufacturing practices in this respect.  
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3 A third finding is the discovery of an unanticipated category, classified as *resource*  
4 *preservation*. This category is related to all those saving practices that stem as direct  
5 consequences of implementing the former three CE practices. *Resource preservation*  
6 practices can indeed overlap with those sustainability practices that are “good for the  
7 environment” whose primary goal is of economic nature.  
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10 Fourth, given that the attainment of specific economic benefits drives the  
11 implementation of CE, the four case studies also highlight how the companies were able to  
12 be proactive by turning some of the existing *CE implementation challenges* into valuable  
13 opportunities, which often yield competitive advantages. In particular, Table 5 summarizes  
14 the main challenges and opportunities that emerged from the findings.  
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18 {Table 5 here}  
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21 The advantages stem from the opportunities ensuing from the challenges - classified as  
22 *technical, operational and consumer-related* - that companies had to face in their businesses.  
23 These can be traced, respectively, to the adoption of a new process technology as in the case  
24 of Candiani Denim, the implementation of a holistic approach as for WRÅD, the embrace of  
25 a new business model as in the case of Dress You Can, the implementation of a set of  
26 dedicated projects that can yield to highly bespoke and personalised luxury products as in the  
27 case of Gucci. Our analysis also reveals that these approaches are organically embedded in  
28 the business models of the companies (i.e. Candiani Denim, WRÅD, Dress You Can), or in  
29 a set of initiatives that are aligned with the current company vision, market positioning, value  
30 proposition, and existing consumer base (i.e. Gucci). All of these companies have found some  
31 original solutions that are instrumental in translating their CE approach into value generation  
32 for their consumers while allowing them to capture the economic value from their  
33 competitive positioning.  
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39 Overall our analysis has allowed a further distinction between *sustainability practices*  
40 that are mainly associated with sourcing (e.g. selecting BCI suppliers; sourcing locally from  
41 environmentally friendly suppliers; sourcing gold in a responsible manner; local sourcing  
42 and partnering with social cooperatives), practices that are aimed at reducing pollution  
43 without seeking any efficiency from doing so (e.g. less polluting metal-free leather treatment)  
44 and sustainability practices that are ultimately driven by social goals (sometimes coming  
45 from environmental improvements): these practices, in line with the triple bottom line view  
46 of sustainability, can be classified as “good for society”.  
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50 Finally, we can advance a comparison between the traditional implementation of the  
51 CE and the implementation of the fashion CE (Vecchi, 2020). While the former is mostly  
52 driven by a reactive approach, whereby companies seek to comply with the CE  
53 implementation as they would for any other market requirements (Brennan & Vecchi, 2020),  
54 the Italian fashion companies analysed seem in fact to endorse a much more proactive  
55 approach, which ultimately yields many benefits that are beyond mere cost savings stemming  
56 from recycling and reuse. Although none of the companies can close the loop entirely on  
57 their “final product”, there is evidence that they try to do so for many stages of the framework.  
58 They do this according to two main patterns. On the one hand, we have companies such as  
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3 Candiani Denim, WRÅD and Dress You Can that can be defined as “circular-born  
4 companies”, where the implementation of CE practices is very much part of their DNA.  
5 Candiani, for example, began implementing the CE in 1976, when they installed a closed-  
6 loop system of dye baths for continuous regeneration, and they began recycling cotton waste  
7 from their production. Similarly, WRÅD’s first signature product was the Graphi-Tee, which  
8 relied on the reuse of the industrial waste graphite. By borrowing the main idea from other  
9 industries, Dress You Can has applied concepts such as sharing and renting to fashion  
10 products, to reduce waste and foster reuse. In doing so, they are not attempting to implement  
11 CE into an already existing business model, as their business models are “born circular” from  
12 their very outset of the business. On the other hand, the case study of Gucci, as an incumbent  
13 firm, suggests that CE practices can be implemented as a series of organic, well-integrated  
14 initiatives that are driven by a clear vision and aligned with the company values, yet without  
15 changing their “traditional” approach to the business. Gucci’s CE approach is aimed at  
16 significantly reducing its environmental impact (e.g. the “Scrap-Less” project) and providing  
17 social value (e.g. the “I was a Sari” project), to ultimately find an “equilibrium”<sup>2</sup> – a balance  
18 of the aesthetic of what they do, with the ethics which the company believes in.  
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## 28 **6. Conclusion**

29 This study provides granular insights into the emerging CE practices implemented by four  
30 Italian fashion companies. In doing so, our research makes several theoretical contributions.  
31

32 Firstly, the existing research has typically framed the topic of CE from the business  
33 model perspective, whereas this study contributes to the literature at the product-level of  
34 analysis by adopting a different analytical lens – the lifecycle of the fashion product (starting  
35 from the resources, design, production, retail, consumption, to the end-of-life) – to provide  
36 an encompassing overview of the challenges and opportunities faced by companies. This  
37 angle is more suited to the principles of the CE, which assumes the final product as the key  
38 unit of analysis. The findings can be further generalised at the business-level as companies  
39 were the units of observation of the study, suggesting implications for their business models.  
40 Within this context, the evidence supports Todeschini and colleagues’ arguments by  
41 confirming differences in the innovation of business model toward sustainability between  
42 incumbents and start-up fashion companies (Todeschini et al., 2017). Younger companies  
43 tend to emerge as sustainable from the outset, where their engagement in environmental and  
44 social sustainability is typically the leading value of their founders. Companies such as  
45 Candiani, WRÅD, and Dress You Can are all flexible and willing to design innovative  
46 approaches or business models that deliberately embed many of the values and principles of  
47 the CE. Gucci, the only incumbent company in our sample, shows a significantly different  
48 approach, which is more closely aligned with the existing “traditional” paradigm even though  
49 it is experimenting with small-scale sustainable initiatives that address specific issues. This  
50 evidence also addresses the question raised by Pal and Gander (2018) on the realistic  
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59 <sup>2</sup> “Equilibrium” is the actual name of the website that features all the environmental and social initiatives  
60 implemented by the company (see: <http://equilibrium.gucci.com/>).

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3 possibility that emerging sustainable business models in fashion will replace the dominant  
4 unsustainable ones. Our study shows, albeit through the evidence provided by a single case,  
5 that the CE can be tackled, yet partially with dedicated approaches. In a similar vein, further  
6 research can investigate the possibility of creating hybrid business models or projects that  
7 can complement the existing ones, without undermining their effectiveness in achieving the  
8 CE goals.  
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10  
11 The study further contributes to the debate over the differences and similarities  
12 between CE and sustainability by providing additional insights on how the two concepts are  
13 related. In particular, our evidence supports the idea that there is a beneficial relation between  
14 the two (Geissdoerfer et al., 2017). More precisely, we show that companies' practices mostly  
15 fit with the CE key principles and we identify an additional category that involves all those  
16 resource preservation practices that stem from the implementation of the CE practices  
17 entailing a more efficient use of resources. We also outline those practices that emerged from  
18 the analysis that are aligned with the companies' broader sustainability strategies, involving  
19 the attainment of society benefits. Companies, indeed, while seeking to close the relevant  
20 loops, tend to concomitantly pursue more open-ended and varied goals, such as fostering  
21 economic, environmental and social sustainability. This ultimately highlights that circularity  
22 fosters sustainability providing synergies and potentially add-up gains.  
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26 Finally, the view that the primary beneficiaries of CE practices are the economic  
27 actors that implement the system is further corroborated by the identification of specific  
28 challenges that the companies were strategically able to turn into competitive advantages  
29 (Crainer, 2013; Franco, 2017; Linder & Williander, 2017; Pal & Gander, 2018; Urbinati et  
30 al., 2017; Vermeulen, 2015). We provide finer insights into the nature of the challenges that  
31 hinder the implementation of CE, classified into technical issues, operational issues, and  
32 consumer-related issues. These are the lengthy nature of R&D activities, the questionable  
33 reliability of certifications, the difficulties in establishing supply-chain collaborations and  
34 integrating take-back systems, and the tension between fabric durability and low  
35 environmental impact, between sustainability and affordability; and we also identify some  
36 new ones that are distinctive of the luxury sector (i.e. prototypes cannot be reused or recycled  
37 and full personalization cannot be allowed).  
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41 These considerations inform the managerial contribution of the paper which shows  
42 that, regardless of the approach pursued (i.e. CE principles embedded in the business models  
43 or via dedicated initiatives), the implementation of the CE should be a strategic priority for  
44 companies and, as such, should not be ignored. Our analysis reveals that all the companies  
45 have developed organizational capabilities that have produced significant cost savings as well  
46 as unleashing creativity and innovation. The insights provided by this context suggest  
47 valuable lessons that can have broader applicability to companies in other industries; in  
48 particular, to those that, like the fashion industry, have reached a degree of maturity (e.g. the  
49 furniture or the toy industries), rely heavily on innovation (as in the case of the other creative  
50 industries) and that are exposed to fierce competition (as in most of the knowledge-intensive  
51 industries).  
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55 In line with the exploratory ethos of our study, which relied on purely qualitative  
56 research and is based on purposefully chosen case studies, our results should be put into  
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perspective. While this research does not provide generalizable results, we believe it offers in-depth and fresh insights into a relatively unexplored topic that has considerable potential. In this line, the findings allow us to inform a research agenda for academics interested in delving into issues related to the implementation of the CE approach. First, the role of consumers has been overlooked in our results, even though they are crucial actors in the shift toward a CE for companies especially for what concerns the reuse and recycle (Planing, 2014). Future research should further investigate the attitude of consumers towards sustainable clothing, since the lack of consumer interest and awareness is one of the main CE barriers for business (Kant Hvass & Pedersen, 2019; Kirchherr et al., 2018; Sarigöllü et al., 2020). Second, besides the role of consumers, it is crucial to consider the supply-chain perspective by studying all the actors that need to be involved in the implementation of CE, taking a more systemic perspective on fashion that includes designers, manufacturers, suppliers, managers, and consumers (Niinimäki, 2017). Third, for each stage of the Close the Loop framework future studies can formulate and test research hypotheses based on our results. Fourth, it would also be interesting to test the broader applicability of our framework by narrowing the investigation over a specific market segment such as rental clothing or the luxury market. Fifth, given the classification of the challenges suggested by this study, future research should delve more into them, shedding further light on the obstacles to CE implementation, and testing whether the same classification may apply to different industries. Finally, the topic would benefit from international comparison to critically assess whether our results are contingent on the specific case of the Italian fashion industry, in terms of factors related to the supply chain, or may be similar to those of companies in other countries.

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*First-order codes*

*Second-order themes*

