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Ph.D. Thesis

From emerging consumption practices to the development of dynamic capabilities in the era of the circular transition: evidence from the Italian context

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Overview of the research

Urgency and motivation of the research

Traditional linear model of resource consumption, following a take-make-dispose pattern, is encountering its limits in the availability of resources. Indeed, "companies harvest and extract materials, use them to manufacture a product, and sell the product to a consumer - who then discards it when it no longer serves its purpose." (Ellen MacArthur Foundation, 2013, 6). Further, systems based on consumption entails negative effects and, that is, resource losses: waste in the production chain, end of life waste, energy use, erosion of ecosystem services. This brings to higher level of resource price and its volatility. The prices of natural resources have risen, since 2000, after a century of decline. Moreover, "the exhaustion of easy-to-access reserves has increased the technological requirements for extracting many commodities—from oil and gas to zinc and gold—making resource access more vulnerable to malfunctions and hence disruptions in the supply chain" (Ellen MacArthur Foundation, 2013, 18). The growth in input costs has had a negative impact on companies' profits. Indeed, competition between firms prevents the increase in input costs from being offset by the sale price (Ellen MacArthur Foundation, 2013, 18).

Some factors suggest a difficulty in meeting resource needs in the future. The demographic trends indicate an increase in the world population in the coming decades, accompanied by an economic growth of emerging countries such as China and India,

which is already leading to the emergence of a mass of new consumers with an impact on the demand for resources (Ellen MacArthur Foundation, 2013, 19). Further, political decisions, with cartels, subsidies, trade barriers, can impact the scarcity of resources as well as the globalised markets, characterized by an ease in transporting resources globally, but also by greater exposure to the consequences of a regional price shock, reverberating beyond the local borders (Ellen MacArthur Foundation, 2013, 19-20). Finally, changes in climate could cause problems for resource industries (Ellen MacArthur Foundation, 2013, 20). For example, the resulting scarcity of water would lead to disruptions in energy production, which is water-intensive.

Hence, the linear 'take-make-dispose' model relies on large quantities of easily accessible resources, but this does not correspond to reality. Esposito *et al.* summarized the difference between linearity and circularity, underlining that "The industrial revolution that took place between the eighteenth and early nineteenth centuries created what we now call a linear economy, organized according to a model of 'take, make and dispose'". On the contrary, "the circular economy is by its nature a recovery economy. It is not a question of 'doing more with less', but rather of doing more with what we already have" (2015, 94). Greater efficiency in the direction of a reduction in the consumption of resources is not enough; thus, the need for a more "circular" (closed) model has been argued, in which many more products are reused, refurbished, and redistributed (Ellen MacArthur Foundation, 2013, 22). The circular economy is based on the concept of intentionally restorative system, by doing so it focuses on the use and not on the consumption of resources, in particular it relies on renewable energy; minimises the use of toxic chemicals; and eliminates waste through design (Ellen MacArthur Foundation, 2013, 22).

Actually, the Brundtland definition of sustainable development as “development which meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development (WCED), 1987, 43) implicitly focuses on the issue of limited availability of resources and their management over time. This aligns with the concept of restoration (and regeneration) underpinning the circular economy. Basically, the circular economy can be defined a way to harmonizing economic development and protection of the environment and resources (United Nation Environment Program (UNEP), 2006). In these terms, it deals with the three pillars (economic, environmental and social) of sustainable development (Murray *et al.*, 2017). On the other hand, the concept of “restorative” makes the circular economy not only a preventive approach, reducing pollution and the consumption of resources. Furthermore, it represents an approach that goes beyond the traditional notion of sustainability linked to the concept of recycling, focusing on obtaining value by redesigning manufacturing systems (Pitt and Heinemeyer, 2015) as well as improving the use of the resource.

Moving in the direction of circular economy can mitigate the negative effects of a linear model and bring economic benefits. It is not a case that three perspectives have been highlighted regarding circular economy: resource scarcity, environmental impacts (pollution and solid waste) and economic benefits (Lieder and Rashid, 2016). Indeed, circular economy offers sources of economic value creation (Ellen MacArthur Foundation, 2013). Firstly, “the costs of collecting, reprocessing, and returning the product component or material into the economy is lower than the linear alternative (including the avoidance of end-of-life treatment costs)” (Ellen MacArthur Foundation, 2013, 30), with increasing resource prices and higher end-of-life treatment costs, this

opportunity becomes more attractive. Moreover, the savings in terms of material, labour, energy, capital as well as greenhouse gas emissions, water, or toxic substances will be greater the tighter the "circle". A second economic value creation source comes from keeping products, components, and materials in use as long as possible either through more cycles (for example, not only refurbishing an engine core once, but more than ones) or extending one cycle (for example extending the use of a washing machine from 1000 to 10000 cycles). This prolongated usage will avoid virgin material inflows (and their higher cost) at least until the degradation of the product. Another source refers to products, components or materials used across different product categories as substitutes (for example, transforming cotton-based clothing into fibrefill for furniture and, later, into insulation material). In this case, the economic benefit consists of lower marginal costs of reusing material (bringing it back into a repurposed way) rather than using virgin material inflows. Finally, a source of value creation refers to purity of material or quality of product because this consents to achieve the maximum value. Usually, post-consumption materials are mixed. Improvements in the design of products (disassembly, better identification of embedded components) promote greater efficiency of reverse processes. These improvements mean, moreover, lower costs of reverse processes while maintaining quality of nutrients at the highest level, thus extending longevity of the material.

The long-term effects of circularity consist of a decrease in the needs for virgin material extraction and growth of landfills, whereas resource prices and costs of disposal are increasing.

The transition from a linear to a circular economy is, hence, identified as a solution for unavailability of resources, environmental negative impacts, harmonizing with the

economic dimension. Identified this solution, the question that arises is how to implement the circular transition? (Lieder and Rashid, 2016).

Problem identification and statement

The question of how to transit from linear to circular can be investigated from a top-down or a bottom-up approach (Lieder and Rashid, 2016).

Top-down approach refers to the public institutions efforts aimed at creating a collective consciousness about environmental issues, encouraging the move towards the circular economy, emphasizing the area of taxation: to transit toward a tax system of not taxing renewable resources but taxing non-renewable resources, incentives to increase employment rates in a circular economy, tax benefits for "circular products" as well as a permanently reduced value-added tax rate for recovery activities such as maintenance, repair, recycling of products (Stahel, 2013).

On the other hand, a concurrent bottom-up approach must be investigated. Social awareness is crucial for a successful transition from a linear economy to a circular economy as consumers are integral part of a circular economy. After the industrial revolution, disposable products with the explicit purpose of being discarded after use (planned obsolesce) created a throw-away culture, but environmental responsibility is become a key concern for consumers, so much so that we talk about consumer environmentalism (Wilson, 2016). Not only purchase intentions were found to be positively influenced by green product strategies (Borin *et al*., 2013), bottom-up social actions are increasing, which demonstrates that some consumers recognize their

responsibilities in terms of innovation to develop more sustainable consumption behavior (Jaeger-Erben *et al*., 2015), also applying reuse practices as emerging consumption practices. However, end-stages of consumption have often been under-theorized (Anderson *et al*., 2018; De Coverley *et al*., 2008) and have received even less attention in empirical research (Bhatt *et al*., 2019). Neverthless, alongside the more traditional reuse practices (for example, second-hand purchasing), new forms of reuse are spreading, such as consumer 'upcycling' (declared by Cambridge Dictionary as the 2019 Word of the Year).

Along with consumption domain, firm domain is the other aspect of a bottom-up approach to implement the circular economy. It is no coincidence that the circular economy has been recognized as a framework for achieving the Sustainable Development Goal (SDG) n. 12 of the United Nation's 2030 Agenda for Sustainable Development, namely, ensuring sustainable consumption and production patterns (UNEP, 2018). Two market players are leading industries towards the transition, growing-circular firms and born-circular firms. The former are long established and large ones, and the latter are, generally, start-ups, hence, small and young firms (Zucchella and Urban, 2019). Approaching circular economy principles requires the transformation of the established firm's business model (Lewandowski, 2016), even though in the strategic management domain it has been found that the transformation of business models in the different kinds of firms and industry is still an open question (Urbinati *et al*., 2017; Centobelli *et al*., 2020). Also, studies at the micro level are desirable as the transformation of the individual firms is a requisite for a circular economy transition of a whole industry (Franco, 2017). Moreover, although ideals are a key aspect for born-sustainable firms, scarce attention has been given to competences

even if they play a key role (Santini, 2017). In general, the implementation of the circular economy by firms requires the development of various capabilities both for new and established firms (Lacy *et al.*, 2014; Zucchella and Urban, 2019).

Thus, the work focuses on the bottom-up approach to the circular transition and concerns the two domains described, that is consumption and firm (figure 1). It will be explored an emerging consumption practice, consumer upcycling as an individual practice and collective one, identifying motivations and upcycler types and then an overlapping between individual and collective dimension of the practice that consent to this behavior to evolve and develop, encouraging further circular implementation. On the other hand, it is explored the strategic capabilities that (born- and growing-circular) firms are developing to address circular transition and sustain their competitive advantage balancing both environmental and economic dimension. In particular, the dynamic capabilities that consent firms to face a rapidly changing environment, such as the circular economy is considered (Khan *et al*., 2020), are investigated.

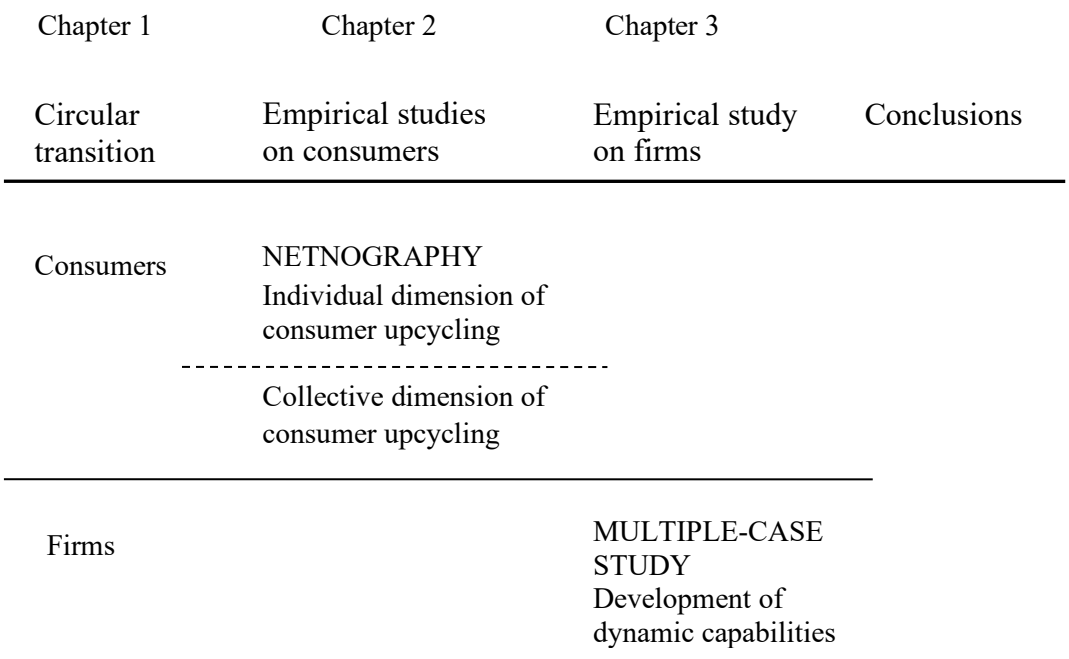

Figure 1 - Overview of the research

CHAPTER 1
Towards the circular transition

1.1. Overview of the chapter

This chapter is dedicated to the discussion of the transition towards the circular economy through a review of the literature.

After having deepened the close relationship between circular economy and sustainability, a definition of circular economy is investigated by examining both institutional and practical and academic sources along with the underlying principles. Following a bottom-up approach to the study of the implementation of the circular economy, subsequently, the chapter is divided into two parts, one dedicated to the domain of consumption, the other to that of the firm.

In one part, an examination is made of sustainable consumption practices, from those that require greater firm control to those that imply a progressive greater assumption of responsibility on the part of consumers.

In the other part, the circular economy is framed from the firm perspective, examining the main lines of studies that have dealt with sustainability and in which the reflections on circular business models and circular entrepreneurship have matured.

1.2. Circular economy: relationships, definitions, principles

Circular economy has been indicated as a framework to achieve sustainable consumption and production patterns, as seen in the previous chapter. On the other hand, sustainability and circular economy are terms often used in similar contexts, but the relationships between the two concepts are not explicitly addressed in the academic literature. The review by Geissdoerfer *et al.* (2017) revealed eight types of relationships grouped into three macro-types. Firstly, the circular economy is seen as a condition for sustainability, in particular, (i) as one of the conditions, (ii) the main solution or (iii) a necessary but not sufficient condition. Secondly, it is seen as a beneficial relationship, in particular, (i) without reference to conditionality, (ii) one of the many solutions to promote a sustainable system or (iii) a hierarchical relationship in which circular systems are considered more sustainable than others. Thirdly, the circular economy is seen as a trade-off, i.e. placed (i) in a cost-benefit relationship, in other words, it is considered to have benefits but also costs that can lead to negative results for sustainability or (ii) in a selective relationship, i.e. promoting only certain aspects of sustainability and not others, such as social ones.

Various definitions and sets of circular economy principles have been proposed.

Institutional sources, such as the European Environment Agency (EEA, 2015), point out that circular economy focuses on material resources efficiency, which contemplates waste management and waste prevention, and is integrated into wider green economy approach, which encompasses not only waste and optimization of resources but also the management of water, energy, land and biodiversity usage ensuring ecosystem resilience and human well-being. A wider and popular definition comes from a

practitioner source, such as Ellen MacArthur Foundation (2013), which conceives circular economy as an "industrial system restorative or regenerative by intention and design" (7). This includes careful management of material flows. In the circular economy they are of two types: biological nutrients (biodegradable materials), designed to safely re-enter the biosphere, and technical nutrients, which are designed to continue to circulate without entering the biosphere while remaining of high quality.

In particular, three principles are identified: designing out waste and pollution, keeping products and materials in use, regenerating natural system (Ellen MacArthur Foundation, 2017b). The first principle states that when the biological and technical components of a product are designed to constitute a cycle of materials, the production of waste and pollution is avoided upstream. In fact, the biological nutrients would not be toxic, therefore compostable and the technical nutrients (i.e. the man-made materials, for example, the polymers) would be made in such a way as to be used again and again without this entailing a high consumption of energy and loss of the quality level. The second principle states that, once the products designed in this way are used, the materials come back and restart further cycles, avoiding ending up in landfills. The third principle is to limit damage but also to strengthen natural resources by restoring nutrients.

In the academic field, Geissdoerfer *et al.* (2017) summarize the different contributions in their review, defining the circular economy as "a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling" (759).

Ghisellini and Ulgiati (2019) by tracing the evolution of the principles of the circular economy, highlight that starting from the so-called 3R (reduce, reuse, recycle), other principles have been added (for example, recover, redesign, remanufacturing), expanding the practical framework, but generating partial overlaps between concepts and confusion in the literature.

1.3. Sustainable consumption practices towards the circular economy: from the purchase of green products to product reuse

The growing public attention to the state of the environment has made environmental responsibility a key concern for consumers, so much so that we talk about consumer environmentalism (Wilson, 2016).

Globally, 63 percent of people say that climate change is a “very serious” issue while the depletion of natural resources (64%) and water pollution (65%) are the top two “very serious” issues (GlobeScan, 2021).

People say they, to make a change, are reducing their use of plastics, avoiding waste from packaging and disposable products by recycling and reusing more, and using ‘environmentally friendly’ products (GlobeScan, 2020).

According to the report of GlobeScan/GreenBiz (2019), consumers are starting to gravitate toward more sustainable consumption patterns that, if properly supported by multiple stakeholders and infrastructure, may be able to help accelerate the circularity transition.

On the other hand, people are unlikely to embrace change if they think it is difficult. They need proof that embracing change does not have to be complicated – providing opportunities for organizations to engage and enable (GlobeScan, 2020).

For instance, in the circular fashion, consumers are asking for more information about circular clothing, about how their behavior has an impact on environment (how the garment is made, or what the environmental consequences of artificial fibres or intensive cotton production are) and communication can encourage to buy sustainable items (Vehmas *et al*., 2018). Morgan and Birtwistle (2009) found that engagement makes able consumers to involve themselves in take-back programs, but more information is necessary about how and where to dispose items.

Consumer environmentalism can affect purchasing behavior. Consumers show a willingness to purchase sustainability-oriented products/services. In fact, according to the National Geographic/GlobeScan Consumer Greendex[1] of 2016, consumer behaviors oriented towards sustainability remained stable (or increasing) in all the countries examined, when compared to the values of 2008, despite the economic crisis. In addition, purchase intentions were found to be positively influenced by green product strategies compared to non-green ones (Borin *et al*., 2013).

In particular, motivations to purchase remanufactured products have been found (Gan and Chen, 2020) as well as purchase intentions, also in a cross-cultural perspective (Gaur *et al*., 2019), with intention to switch from purchasing new products to remanufactured products moderated by consumers' attitude toward the latter (Hazen *et al*., 2017). However, closing the gap between attitude and behavior depends on different

[1] Consumer Greendex is a 'sustainable consumption' index based on a study on a panel of 17.000 consumers in 18 countries. In this index, different types of 'responsible' behaviors are weighted such as, for example, energy consumption, preference for public transport and the relative use of 'sustainable' products compared to conventional ones.

factors, such as reasonably available green products, time for research and decision-making, financial costs, purchase experience, strong green value (Young *et al*., 2010). Moreover, bottom-up social actions, such as grassroots creative movements, are increasing, which demonstrates that some consumers recognize their responsibilities in terms of innovation to develop more sustainable consumption behavior (Jaeger-Erben *et al*., 2015) by extending product longevity, applying reuse practices.

In the 3R waste hierarchy (reduce, reuse, recycle), after reduction, reuse is considered the most virtuous recovery cycles and an alternative model of consumption (Edbring *et al*., 2016), as confirmed by recent European Union norms on the circular economy (EU directive 2018/851) which encourage such practices. These consist of the recovery of materials without reintroducing them into the production cycle. Reuse requires less energy, material, emissions and water expenditure than recycling and it can be conducted multiple times, thus avoiding the degradation of the material into raw materials of lower value (downcycling), which occurs in most recycling activities (Wilson 2016). Reuse is therefore considered capable of fully satisfying the 'keep products and materials in use' principle of the circular economy by preserving or increasing their value (Ellen MacArthur Foundation, 2017b).

The forms of product reuse practiced by the consumer have been distinguished on the basis of two criteria, ownership and function (Nalewajek and Mącik, 2013). The reuse can consist of product exchange that takes place with a change of owner, as in the case of the purchase of second-hand products (Nalewajek and Mącik, 2013). Edbring *et al.* (2016) identify three alternative consumption models to achieve the circular economy, all referable to the aspect of ownership. In addition to the consumption of second-hand products, ideal for categories with the highest environmental impact in the extraction of

raw materials or production, a second model is recognized in access-based consumption (for example, renting) and a third in the collaborative consumption. The second marks the transition from a perspective based on the purchase of ownership of a product to the purchase of use (Mont, 2008). Access-based consumption has been considered from a product-service system perspective and considered environmentally friendly because it encourages manufacturing companies' investments in durability (Mont and Tukker, 2006). The third is indicated as an emerging phenomenon that is characterized by a variety of practices, such as sharing, swapping or renting, which can include the previous ones, but in a consumer-to-consumer way. Collaborative consumption helps to minimize the environmental effects of products by maximizing their usefulness during their life cycle (Perren and Grauerholz, 2015).

Another practice consists in reuse by restoring the function of the product, ie repair (Viale, 2011). The product reuse that involves a change in the function of the product or material (product component) is identified, on the other hand, as consumer upcycling (Nalewajek and Mącik, 2013). It has been defined the "reuse (of discarded objects or material) in such a way as to create a product of higher quality or value than the original" (Oxford Dictionary, 2019) and 'a green technology' (Wilson, 2016, p. 396), because through upcycling we add additional value to what would otherwise be considered waste.

Some studies have highlighted the collective dimension of these models. For example, collaborative consumption has been studied in the value co-creation perspective, as a process of co-creation through the exchange of resources between consumers (Cai *et al*., 2017). Repair is spreading thanks to grassroots creative movements, such as the repair Cafè (Charter and Keiller, 2014). In general, bottom-up social actions and sharing are

elements that characterize the development of sustainable consumption models (Jaeger-Erben *et al*., 2015).

Of these, the motivational determinants were mainly explored. Galvagno and Giaccone (2015) explore the reasons for buying second-hand products, Sung *et al.* (2014) some determinants for upcycling, while Charter and Keiller (2014) identify the drivers for engagement in various innovation activities within repair cafes. Edbring *et al.* (2016) explored motivations and barriers for consumption models such as second-hand, access-based and collaborative consumption.

Understanding the way by which consumers approach these practices to create self-made alternatives of existing products is very challenging for companies that are required to rapidly rethink today their approach to ever-changing market.

1.3.1. Product reuse on the value creation continuum

A review of the basic literature reveals a plurality of alternative consumption models which have been attributed positive effects on the longevity of the products and, therefore, capable of encouraging a transition towards the circular economy. These models can be interpreted as forms of product reuse, as they allow products to be kept in use for as long as possible, without them being reintroduced into the production cycle. The differentiation of the forms may derive from the change of owner or user or from the change or not of the function performed. In this second case they seem to presuppose a greater contribution from the consumer.

More specifically, it is possible to order the different practices on a value creation continuum (Zainuddin *et al*., 2016) based on the degree of firm control over the reuse experience which, in essence, recalls the level of responsibility/involvement assumed by the consumer (figure 2).

At one extreme lies the value delivery in which the responsibility for creating value lies with the company. This is the case with the purchase of second-hand products, where the consumer assumes a passive role in the exchange.

Moving on the continuum we find firm-driven self-production (Cova *et al*., 2013), more typical of service situations, in which a series of simple tasks is delegated to the consumer, as happens in renting or in access-based consumption, which cannot occur without consumer participation as a co-producer.

Facilitated self-production (Cova *et al*., 2013) instead provides that the role of the firm is no longer that of supplier of consumer support, as in the case of renting, but of supplier of a physical or virtual platform, intended for facilitate the consumer's activities, to which the latter can join in order to self-produce. On these platforms, consumers interact with others who have the same expertise, and not with the company. This is the case of collaborative consumption practices, in which an autonomous co-creation is carried out (Zwass, 2010), characterized by communities of consumers who create 'marketable value' together and independently from the firm. This category includes repair, in which the firm facilitates the consumer's initiative, assists him/her by providing the spare parts he needs. Therefore, the firm has a relative influence on the consumer's activity but is unable to exercise control over what it does or how it does it. Therefore, the contribution of the firm is limited and the degree of involvement and competence of the consumer is high.

Finally, at the opposite end of the continuum we find emancipated self-production, in which self-producers are not under the control of the firm and act on their own initiative (Cova *et al.*, 2013), as happens with upcycling. Unlike repair or collaborative consumption, upcyclers do not need the firm to obtain replacement components, nor aggregation platforms. Having to design and implement their outputs by exploiting finished products and using them with a different function, they reflect a high level of creativity, as well as skills and commitment. As with repair, we are in the area of value self-creation, as it is only the consumer who takes responsibility for creating value in the reuse experience.

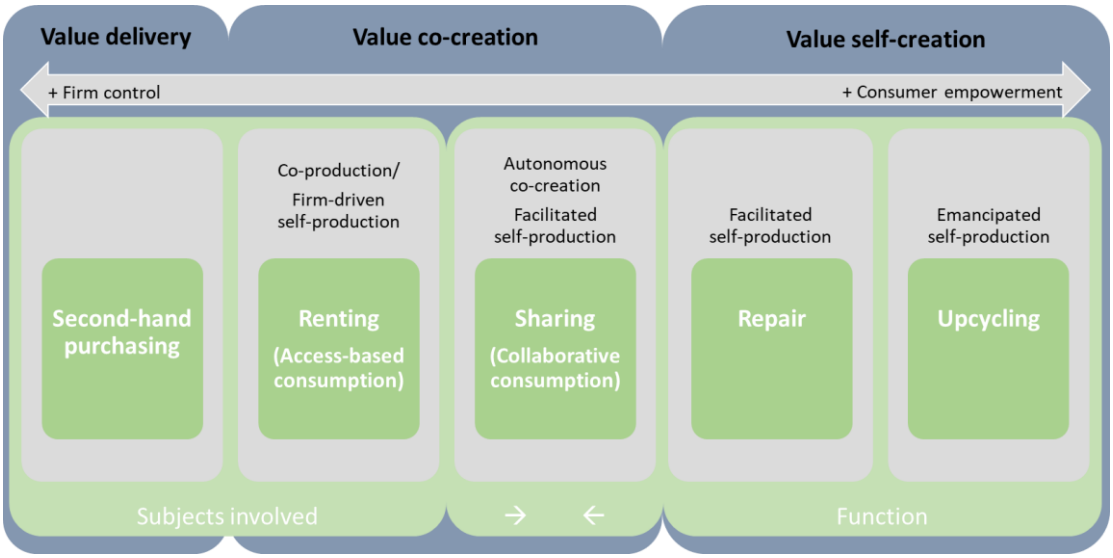

Figure 2 - Product reuse as value creation.

1.4. Framing the circular economy from a firm perspective: corporate sustainability, ecopreneurship and sustainability transition

In 1987 the statement of the World Commission on Environment and Development of the United Nations implicitly sanctions a definitive acknowledgment of the negative

consequences produced by the linear economy and lays the foundations for the elaboration of the concept of sustainability. The statement, as has been noted, is mainly of an ecological matrix, even before being social and economic (Lombardi, 2011).

With reference to firms, in general, we are witnessing the progressive affirmation of a business approach based on sustainability, that is, based on the search for satisfying the expectations of an increasing number of stakeholder groups.

The issue of sustainability has been the subject of numerous studies. Within the field of corporate social responsibility and sustainable development, the model called The Triple Bottom Line (Elkington, 1997), or model of the "Three Ps" (Planet, People and Profit), was proposed, according to which the sustainable corporation is such if profits are compatible with environmental constraints and social demands, that is, if it is able to reconcile profit with environmental protection and with respect for stakeholders inside and outside the organization. As for the Planet dimension, it aims to preserve the three functions of the environment over time: resource supplier, waste receiver and direct source of utility (Lombardi, 2011).

Corporate sustainability should not be confused with corporate social responsibility (Sethi, 1975; Carroll, 1991), an expression that refers to the positive social effects that corporate behavior has on society. Carroll (1991) elaborates a pyramid scheme according to which the social responsibility of an organization involves four types of responsibility: economic, legal, ethical and philanthropic. Among those who support the interconnection between the two concepts, Siano (2012) proposes to conceive the latter as the premise of the former: a sustainable corporation, to be such, must respect the principles of CSR, as they 'substantiate' the three dimensions of corporate sustainability, these 'naturally correlated' to them. Focusing on the Planet component:

"Economic responsibility acts on safeguarding the ecosystem through the reinvestment of profits aimed at producing environmentally friendly goods and services. Legal responsibility contributes to environmental protection to the extent that it requires compliance with specific standards/certifications (see I.S.O. 14001 standard and E.M.A.S. regulation, on European Community environmental legislation). Ethical responsibility leads the company to adhere to the principles of environmental protection and careful and rational use of natural resources. Finally, philanthropic responsibility supports the safeguarding of the Planet through the company's voluntary programs and activities, aimed at improving the environmental impact of company activities, as well as preventing risks for populations and for the ecosystem" (Siano, 2012, 9).

Borin *et al.* (2013) suggest that there is a variety of green strategies that firms can implement: new green products, recycled/ refurbished products, green processes.

Vollero (2013) highlighted how, with the spread of the new business approach oriented towards sustainability, there was a progressive interest in the communication of its three aspects. In addition to the advantage of attracting eco-conscious consumers, the communication of the commitment in terms of sustainability has effects on reputation. For example, Hillestad *et al.* (2010) identify benefits on corporate reputation from the inclusion of environmental responsibility as an essential element of the business strategy.

Precisely in the construction and development of reputational capital, on the one hand, and in the containment of reputational risk, on the other hand, the purposes of communication in sustainable business were summarized (Siano, 2012). The construction of reputation, linked to the opinions of stakeholders, based on the perception and evaluation of the organisation's conduct that take place over time,

implies a constant commitment in the search for alignment with the needs and expectations of the stakeholders, which is precisely what the 3P model entails.

Since the basic function of corporate communication consists in conveying promises and reporting results to the public, it appears to be one of the causes of reputational risk when the organization does not honor its commitments. Being in its nature to make promises inherent to the 3Ps, sustainable business is particularly subject to this risk.

We talk about greenwashing when sustainability communication is not based on solid foundations. Reference is made to this phenomenon not only for environmental issues but, in a broader sense, for "practices of 'cosmetics' of corporate identity that tend to 'make up' or hide the most controversial aspects from the point of view of sustainability" (Vollero, 2013, 7).

In the literature on the entrepreneurship, sustainability in the environmental dimension is referred to ecopreneurship (Schaltegger, 2002). Schaltegger and Wagner (2011) underline that ecopreneurs focused on environmental performance rather than on social performance or sustainability performance (ecological and social). The term ecopreneurs, 'ecological entrepreneurs', was developed by Pastakia (1998) as individuals or institutions that spread environmentally friendly ideas and innovations through profit or non-profit activities. Actually, there is no agreement on the definition and there is a wide debate on ecopreneurs and ecopreneurship. One of the most attempts in this literature is the development of typologies of such an ecobusiness. According to the two roots of Pastakia, Linnanen (2002) indicated the drivers as based on two criteria: the desire to change the world and the desire to make money. When these two dimensions are totally conflicting, we have a non-profit business (high desire to change

the world and low desire to make money) or, in turn, opportunist. When they concur, we have successful idealist (high-high) or self-employer (low-low).

The relationship between ideals and profit has been debated among scholars. Schaltegger (2002) proposes a business continuum based on priority given to environment as a business goal and the market effect of the business. When the environmental performance goals are at core of the business but with a low market effect, we have the alternative actors, who create an alternative scene. With a medium market effect, we have the bioneers, who represent an eco-niche. Whilst the only ones that intercept the mass market are the ecopreneurs.

A decade ago, Rodgers (2010) concluded that the Schaltegger's entrepreneurship in the SMEs sector is just beginning because the market share is not yet leading, small start-ups are rooted in the green vision of their entrepreneurs, therefore, giving priority only to this aspect. On the other hands, Santini (2017) underlines that while in a first phase ecopreneurs were considered a niche, committed 'solitary heroes' (2), now they also aim at obtaining market share in a competitive arena and are gaining importance as a research issue.

Typologies proposed focus on individuals, personal motivations or beliefs. Walley and Taylor (2002) identify four typologies of green entrepreneurs based on two criteria: motivation and external context, thus distinguishing innovative opportunist, visionary champion, ethical maverick and ad hoc enviropreneur and useful to identify an evolutionary of ecopreneurs. Isaak (2002) examines the firm's environmental orientation and the stage of the firm lifecycle, distinguishing firms in green business, the firm that adopts this orientation after the start-up phase, and green green business, the firm born green.

The reasons behind ecopreneurial motivations have been investigated by scholars. Santini's (2017) review synthesizes them in laws and regulatory system, market opportunities due to a consumer environmentalism that has led to an increasing demand for eco-products and aversion towards multinational or large corporations. But a key role has personal attitude and its authenticity. The ideals and commitment of entrepreneur is such as to shape the entire business model, on the other hands, it has been highlighted, when this is not authentic or a priority it is not an entrepreneurship but an environmental management or administration (Schaltegger, 2002).

Similarly, Hockerts and Wüstenhagen (2010) argue that sustainable entrepreneurship refers to small or large firms that engage in disruptive and not merely in incremental innovation. Moreover, they underline that the former is typical of Davids, while greening Goliaths usually engage in the latter (eco-efficiency, corporate social responsibility or sustainability management systems). Start-ups labelled born-sustainable are defined as created to develop a business model that has the sustainability at core (Todeschini *et al*., 2017). They are also defined 'emerging Davids'. They usually are small firms, rather new, with a small market share but high level of environmental (or social) performances (Hockerts and Wüstenhagen, 2010). Start-ups have been focused on by sustainable entrepreneurship. 'Greening Goliaths' are established and large firms with high market shares considered moving slowly with incremental environmental process innovation and giving sustainability a lower priority than economic objectives (Hockerts and Wüstenhagen, 2010). This is referred to as a 'weak' sustainability proposition, 'sustainability upgrading' or 'greenwashing' of existing products (Schaltegger *et al*., 2016).

Innovation is just another key issue. In specific ecopreneurship domain, authors have deepened eco-innovation and its sub-theme of clean-technology venturing (Boehnke and Wüstenhagen, 2007). In general, the influence of the size of firms on innovation has been faced, highlighting that start-ups and established firms have different roles depending on the phase of industry evolution (Hockerts and Wüstenhagen, 2010). In a first stage of the sustainability transformation of an industry, sustainability start-ups bring to the market an innovation. They are bioneers that do not overcome the niche dimensions and do not represent a disruptive change but initiate the industry transformation. Subsequently, some established firms begin to offer line extension in order to follow the growing trend. Thus, sustainability transformation continues, and a second generation of start-ups appears, the 'high-growth Davids'. They are more market share oriented and mix product innovation of the early start-ups and process innovation of the large established firms. They know the niche market dynamic and intend to go beyond through a more professional management. Finally, mass-market firms begin to consider start-ups as a competitive threat but also a market potential. Thus, they access to the sustainability niche, bring process innovation in the supply chain. This improves the availability of products of higher quality for a higher number of consumers and, in the same time, this tends to improve the sustainability of the products through process innovation (figure 3).

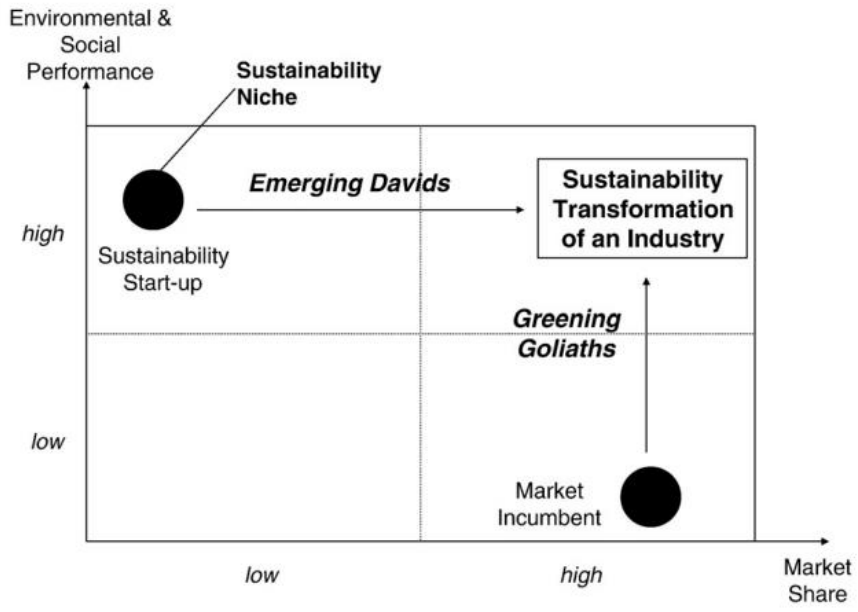

Figure 3 - Co-evolution of sustainability start-ups and market incumbents towards the sustainability transformation of an industry. Source: Hockerts and Wüstenhagen (2010)

The role of sustainability entrepreneurship in the sustainability transition has been also recognized in a multi-level perspective, as well as the interaction between the two players (Hörisch, 2015). According to this, start-ups would have the role of increasing the market effect of their sustainability innovations in order to incentivize the replacement of unsustainable products and services, using 'push strategies' to push these innovations into the 'regime', i.e., to have them adopted by established firms. This expands their market, thus spreading the principles of sustainability. Conversely, actors from 'regime' can use their resources to pull sustainability innovations to the mass market level.

New start-ups are considered more likely to engage in sustainable entrepreneurship than established firms as, being characterized by ideals, they are less conditioned by a specific technology (Hockerts and Wüstenhagen, 2010), and, being newcomers, have

more credibility than established firms that are responsible for creating damage (Hockerts, 2006). Sustainability start-ups internalize external costs that represent an environmental (or social) damage. This is underpinned by customers through a premium price paid for a superior product. Usually, the excessive focus on their mission leads to focus on only one issue than the established firms. This narrow focus is also due to the limited resources. Indeed, another characteristic of sustainable start-up is the fact that they tend to choose to keep their market small and exclusive for an economic reason and not only an idealist one, as they do not want to lower the product level to meet more customers, in order to remain unattractive for established firms, that could invest more resource than them in R&D, for example (Hockerts and Wüstenhagen, 2010).

1.4.1. Circular business models and circular entrepreneurship

As seen, circular is a way to achieve sustainability (Geissdoerfer *et al*., 2017). Circular economy is considered a crucial strategy to achieve corporate sustainability (Murray *et al*., 2017).

In particular, circular business models, which are circular operations on the micro-level, are a specific way to achieve environmental and economic value (Henry *et al*., 2020), that is through assuming the circular economy principles as guidelines in business model design, while social benefits are considered a secondary driver (Pieroni *et al*., 2019) or a missing aspect, not being clear how circular economy could imply these benefits (Murray *et al*., 2017).

More specifically, circular business model innovations aim to incorporate the principles of the circular economy into the business model innovation process (Geissdoerfer *et al*., 2018). An example is the product-service system model which involves a transition from selling to leasing and sharing services and therefore from the ownership of an asset to its use, thus encouraging the company's investments in the durability of a product (Mont and Tukker, 2006). Urbinati *et al.* (2017) distinguish between upstream, downstream and full business models depending on the position of innovation for circularity within the value chain and supply chain of goods or services. The companies that adopt the first type bring circular innovations at the level of internal activities and suppliers, therefore at a pre-customer stage of the product or service through design practices (design for recycling, reuse or disassembly, innovation of materials-inputs), collaborations with suppliers in order to obtain waste flows produced outside the company or selection of partners for the supply of biodegradable materials. Companies that adopt the second type do not make significant changes at the supplier level and internal practices or product design but at the level of the interface with the consumer. Enterprises adopting the third type combine the upstream and downstream modes.

More in general, circular entrepreneurship has been proposed as a new concept (Zucchella and Urban, 2019) that consists in "processes of exploration and exploitation of opportunities in the circular economy domain" (vii) that lead to business model innovation.

Two types of circular entrepreneur are recognized: born-circular firms and growing-circular firms (Zucchella and Urban, 2019). As in related sustainability literature, the formers are considered to consist of start-ups, hence, small and young firms, the latter, long established and large one (multinational company, great family business).

Approaching circular economy principles requires the transformation of the established firm's business model, but this requires the difficult challenging to transform the way firms create, deliver, and capture value (Lewandowski, 2016).

Frishammar and Parida (2019) stress both the innovation aspect and collaboration with other actors creating an ecosystem as necessary to transform business models towards extending lifespan of materials and products. However, business models of established firms are considered related to 'circularness' (Frishammar and Parida, 2019, 8) more than circularity, as usually they do not adhere perfectly to the principles of circular economy but for a certain degree. Moreover, although circular economy is becoming part of corporate sustainability agenda (Stewart and Niero, 2018), in the strategic management domain it has been found that how to transform own business models, what managerial practices for value creation and capture occur for the different kinds of firms and industry are still open questions (Urbinati *et al*., 2017; Centobelli *et al*., 2020). Moreover, it has been highlighted that studying circular economy implementation at the micro level is desirable as the transformation of the individual firms is a requisite for a circular economy transition of a whole industry (Franco, 2017) but research on the micro level has been limited (Barreiro-Gen and Lozano, 2020).

Regarding circular start-ups, their domain has been delimited and, in general, the key issues related to born-circular firms have been explored. As environmental start-ups, they are aimed at achieving environmental and economic value, but their business model options are more restricted, they are more specifically related to circular business model strategies (Henry *et al*., 2020, 5). They are as conventional start-ups when circular business model is implemented partially without an effect on environment (Henry *et al*., 2020). More precisely, the waste problem, characterizes born-circular

firms usually, developed starting from customers (and tested through crowdfunding platforms) and their needs or from upstream challenges (Zucchella and Urban, 2019). Henry *et al.* (2020) proposed a typology of start-ups based on the main circular business model strategies: design-based, waste-based, platform-based, service-based, nature-based start-ups.

Established firms are considered giving sustainability a lower priority than economic objectives (Hockerts and Wüstenhagen, 2010). However, recently, it is pointed out that they can engage in disruptive sustainability innovations (Schaltegger et al., 2016), even though others have argued that these firms tend to implement lower circularity strategies, such as recycling (Bauwens et al., 2020). Traditionally, the opposition between ideals and profit has characterized the relationship between the two players. A decade ago, Rodgers (2010) concluded that in the SMEs, the market share is not yet leading, small start-ups are rooted in the green vision of their entrepreneurs. Against, Zucchella and Urban (2019) argue that born-circular firms are guided by own environmental orientation but also by profitability opportunity. In addition, social dimension as a secondary effect should distinguish circular start-ups from social start-ups and sustainability start-ups (Henry et al., 2020). On the other hands, it has been highlighted that born-circular firms seem to integrate the two aspects as if human resources are part of environment, for example the positive employment effect (Skånberg and Wijkman, 2015) with the creation of green jobs and attraction of talented and motivated people. Moreover, the circular principle of using wasted resources aligns well with the use of disabled or elderly people (Zucchella and Urban, 2019). This led to talk about the social circular economy (Soufani *et al*., 2018) to synthetize social benefits and circular economy principles. Accordingly, an issue identified is the legal forms

innovations by circular enterprise, like benefit corporation. Financing constraints is another issue. Investors have more difficult to understand the innovativeness of these type of business. Thus, the circular requires specific financial circuits able to understand and to offer mentoring. In fact, context is a key aspect. Circular entrepreneur welcomes global challenges but faces those favoured by sustainability culture as well as local opportunities.

Moreover, also born-circular firms tend to co-create value both for lack of resources or small scale and for belief (Zucchella and Urban, 2019). Thus, the leadership of the founder, as for broader ecopreneurship, is essential to gather human resources, engage potential partners and customers into the project.

Innovations in products, processes, and organizations are necessary in circular economy but to achieve them there is need of resources and competences (Suchek *et al*., 2021). In general, Zucchella and Urban (2019) highlight that the implementation of the circular business model requires the development of capabilities both for new and established firms.

Zucchella and Urban (2019) have proposed a summary model for circular entrepreneurship which contemplates, on the one hand, firm's internal and external enabling factors and, on the other hand, the entrepreneurial process. The model illustrates the factors affecting circular enterprises moving from individual level (entrepreneur) to the organizational level (resources, capabilities) to the interorganizational level (collaborations) to the external context. The entrepreneurial process consists in exploration and exploitation of opportunities in the circular economy domain. According to Zucchella and Urban (2019), the circular economy is the domain in which opportunities can be not only discovered, identified but also formed, so it

represents a creative attempt (Zucchella and Magnani, 2016) to create opportunities. Thus, the opportunity explored and embedded in the value proposition is the result of interpretation. The value proposition will be the combination of benefits that the circular enterprise addresses to its customers. Designing a value proposition links the opportunities and individuals to the exploitation of these through the entrepreneurial organization and a business model. The subsequent step, the exploitation of the opportunity, is the moment in which individuals (entrepreneurs) set up an organization or renew the existing one. Exploitation consists of achieving necessary resources and capabilities and developing a system of partnerships and a business model. Zucchella and Urban (2019) highlight that the implementation of the circular business model requires the development of capabilities. Both new and established firms, when facing the challenges posed by the circular economy, need to develop capabilities, which support the implementation of the business model. According to Lacy and Rutqvist (2015), business strategy, innovation and product development, in-sourcing and manufacturing, sales and marketing, reverse logistics and return chains are fundamental capabilities for a successful adoption of circular business model. A key capability for any firm in the circular economy is represented by network/alliance capabilities as to start a circular business model it is necessary to set up a network of players, a system of partnerships, and engage different stakeholders: “Most business models in the circular economy go beyond the organization boundaries of one firm. They are frequently designed to encompass different players, including actively engaged users (as we discussed before), public institutions, research centres, suppliers and so on” (Zucchella and Urban, 2019, 82-83). The development of these relationships represents the internal/external level enabling factor. As the authors identify, another internal factor

are marketing and communication capabilities, in fact it can be difficult to explain a circular project, thus communication can have a relevant educative function. Similarly, internal communication has a role in the success of a circular project. It permits to attract talents, align them to circular objectives. Finally, the model presents external factors to the development of circular business models, such as institutions, regulations, norms or supportive finance.

CHAPTER 2

An emerging consumption practice towards the circular economy. A netnography in an Italian community of upcyclers

2.1. Overview of the chapter[2]

This chapter is dedicated to the empirical investigation in the domain of consumption, in particular, to one of the sustainable consumption practices towards the circular economy, namely, consumer upcycling as a product reuse practice.

Both the individual dimension, by understanding motivations and identifying upcycler types, and the collective dimension of consumer upcycling, identifying shared knowledge, collaborative ideas and creation of value in upcycling online communities are investigated. Therefore, upcycling is considered in this work as an example of value self-creation and co-creation, bringing out a circular process of value creation.

The chapter is divided into two sections which report the two constituent parts of the empirical investigation.

For each of these two parts, netnography, applied to an Italian community of upcyclers, is chosen as our research approach as it is qualitative and interpretive, and enables us to examine the relationship between online and real-life activities, thus providing a better understanding of these under-researched practices.

[2] The contents of this chapter are taken from two articles published in journals such as Journal of Cleaner Production (Coppola et al., 2021) and Italian Journal of Marketing (Coppola et al., 2020).

In the last paragraph of the chapter, we propose implications, both at marketing and policy-making levels, related to the investigation illustrated in the two previous sections.

2.2. Understanding motivations and identifying upcycler types

The investigation aims to expand the knowledge of upcycling at the individual level, thus responding to the request to shed more light on the differences/similarities with other similar constructs (Sung, 2015). In particular, consumer upcycling is identified in this work as a particular example of emancipated self-production, in which individuals play the dual role of consumers/producers (i.e., prosumers) and co-create value independently of the firm. Thus, consumer upcycling is framed with respect to other reuse practices (as seen in the previous chapter) but also with respect to other examples of self-productive practices not necessarily related to sustainable consumption.

We first classify this practice within the more general phenomenon of self-production (Cova *et al*., 2013; Mai and Olsen, 2015). Then, we present our extended range of extrinsic and intrinsic motivations underlying upcycling (Sung *et al*., 2014; Wilson, 2016), which are not limited to consumer environmentalism. This is made drawing on Self-Determination Theory, a well-known theory of social psychology which has also been employed in studies examining the motives that drive consumer and pro-environmental behavior (Ryan and Deci, 2000). Our netnography suggests a novel dimension of upcycling, which consists of a pragmatic form of anti-consumerism

determined by progressive consumer empowerment, in terms of autonomy and the development of skills with a pedagogical slant within the family context.

From a practical point of view, we propose a typology of upcyclers. Related implications, both at marketing and policy-making levels, are provided in the last paragraph of the chapter.

2.2.1. Consumer upcycling as emancipated self-production

Previous studies on upcycling have mainly referred to the fields of engineering, technology, design and business (Bhatt *et al*., 2019; Bridgens *et al*., 2018; Sung, 2015) with little research on the consumer domain. In addition, despite the potential importance of upcycling practices in the transition to sustainable consumption patterns, they have been less extensively researched than other forms of product reuse (Bhatt *et al*., 2019; Bridgens *et al*., 2018).

Upcycling is generally acknowledged to be characterized by two levels: the industrial material level, focused on converting industrial nutrients (Dictionary of Sustainable Management, 2019), and a product/object level, consisting in the creative modification of products or objects and practiced, in turn, at an entrepreneurial, professional (e.g., artists or crafters), or individual level (Sung *et al*., 2014).

The focus of this study is on consumer upcycling. From this perspective, upcycling is, undoubtedly, individual and *ad-hoc*, that is a post-manufacturing process (Bridgens *et al*., 2018) and can thus be usefully positioned in the context of self-production practices.

From a conceptual point of view, the study is in line with a long-line tradition of studies that address new forms of consumer behavior, such as Consumer Culture Theory (CCT) and Value Co-Creation Theory, well-known approaches in consumer behavior and marketing studies to explain consumption patterns. Many studies that apply the CCT address concepts concerning self-production, such as new patterns of consumption choices and behaviors, from a socio-cultural point of view. In addition, the Value Co-Creation Theory is commonly applied in consumer behavior and marketing studies, as it can help explain the active role of consumers and value creation in the product/service design process. A key concept in these streams of research is prosumption (Toffler, 1980), a term literally indicating that the roles of producers and consumers are blurred and merged within the same subject. Self-production practices achieve prosumption (Ritzer and Jurgenson, 2010) as consumers become empowered and are the producers of things that they consume (Cova and Cova, 2012).

Empowered self-producing consumers have been discussed by several authors, which point out different dimensions, including of the autonomy of prosumers. For example, Campbell (2005), who refers to consumers that design and implement the things they consume as 'craft consumers', as they make them autonomously and control all phases of production. The effects of these activities are explored by Elliot (2016), who indicates that craft consumption leads to consumer transformation as it implies 'transmodern' thinking, which is characterized by a combination of intuition and spirituality with rationality (Luyckx, 1999). Other authors highlight the role of consumer competence: Cova and Cova (2012) suggest that prosumption is demonstrated in the development of consumer competencies, and Watson and Shove (2008) point out that engagement in the projects and practices of craft consumption depends on the

distribution of competencies concerning the hardware of consumption (tools and materials). The creativity aspect is also raised. Berthon *et al.* (2007) refer to consumers that 'adapt, modify or transform proprietary offerings' (p. 43) as 'creative consumers' because their creativity guides their innovation, i.e., their problem-solving skills. Potts *et al.* (2008) propose the concept of situated creativity to explain how consumers co-create among themselves, independently of firms. Regarding consumer upcycling specifically, Wilson (2016) defines the practice as a form of 'environmentally friendly creative consumption' (p. 395), thus emphasizing the creativity factor and the close link between the two activities. Janigo *et al.* (2017) and Bhatt *et al.* (2019) show that consumer creativity and competences in fashion are often associated with developing upcycling techniques. Thus, we can identify competence, creativity and autonomy as the three main dimensions of consumer empowerment. All of these are accelerated by digital media (Labrecque *et al*., 2013), as digital aggregation spaces provide users with alternative sources of knowledge and tools so they can develop their creativity skills and other competencies that enable them to co-create with firms (Rayna and Striukova, 2016), with other consumers or autonomously.

According to Troye and Supphellen (2012), self-production ranges from the production of goods/services under complete autonomy, without any commercial use, to co-production using tools such as input-products and devices provided by firms. These include 'branded kits', which are 'prefabricated branded inputs', specifically designed for self-productive activities such as, for example, an IKEA chair.

Hence, the definition of self-production includes both firm-controlled or firm-assisted practices and others where consumers act autonomously (Mai and Olsen, 2015). On similar lines, as seen in the previous chapter, Cova *et al.* (2013) identify four modes of

self-production along a continuum based on the degree of control by firms over production or, alternatively, according to the level of consumer empowerment. There is firm-driven self-production, where consumers follow a predetermined set of standard procedures (e.g., self-service in fast food) provided by firms, for which they need only some basic skills (Grönroos, 2008). Moving along the continuum (figure 4), guided self-production originally concerned social initiatives (labs) aimed at helping disadvantaged groups to learn to do things for themselves.

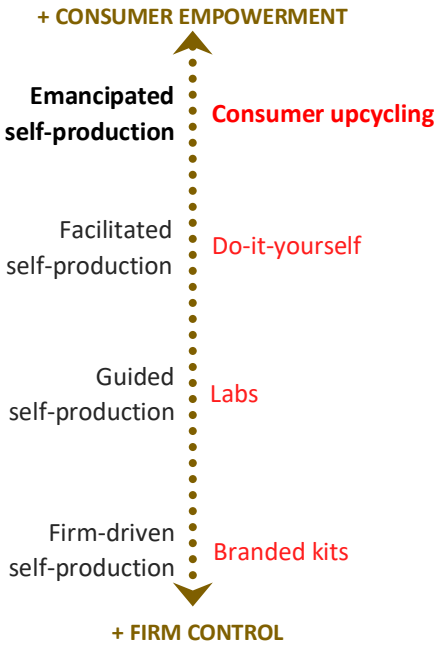

Figure 4 - Consumer upcycling on self-production continuum

Facilitated self-production consists in providing a platform (e.g. Airbnb or BlaBlaCar), where consumers interact with others with similar skills and/or complementary needs to self-produce desired services (Dellaert, 2019). This category also covers do-it-yourself (DIY), in which individuals produce 'material possessions' with the use of raw and semi-raw materials or components (Wolf and McQuitty 2011, p. 154). The maximum

expression of consumer empowerment is emancipated self-production, in which consumers use products already in their possession to support their own creativity (Cova *et al*., 2017), acting on their own initiative. Unlike DIY, emancipated self-producers do not need a firm from which to obtain raw and semi-raw materials. Their skills and commitment in the activity are high, thus having to design and implement their own output by exploiting finished products and using them with a different function.

Hence, upcyclers are prosumers, and are emancipated self-producers as the type of reuse they practice consists of creating new products by changing the functions of old ones, without any direct intervention from firms. Thus, the empowerment skills of upcyclers enable them to be more autonomous, creative and competent, which are characteristics that define the nature of upcycling.

2.2.2. What drives craft and creative consumers to upcycle?

Few studies focus on consumer upcycling, and those that do mainly consider the conceptual definitions and the various competing motivational drivers, and are generally not based on empirical investigations. In addition, these studies mainly refer to the literature concerning other self-production practices such as DIY, rather than those specifically on upcycling.

Environmental concerns are generally considered to be important motivational drivers of upcycling (Sung *et al*., 2014; Wilson, 2016), which is why the practice is often recommended (Szaky, 2014). Other rationales include the money or time saved on the

purchase of new products, and thriftiness (Nalewajek and Mącik, 2013; Sung *et al*., 2014). Motivations related to craft, making and DIY have also been explored. Wilson (2016) notes that upcyclers who are motivated by joy or a sense of accomplishment, or because it is relaxing (Sung *et al*., 2014), may be more interested in the experience of the activity itself rather than the upcycling output. Last, the aesthetic appeal of an upcycled item can be another motivational driver (Wilson, 2016), as the production or modification of a personal item can satisfy the need for uniqueness (Tian *et al*., 2001).

Very few of the relevant studies are empirically based, possibly because ecological motivations are over-emphasised. Nalewajek and Mącik (2013) explore the motivations to reuse products when a change of function or context occurs. Robson *et al.* (2019) investigate the motivations for creative consumption. These studies typically take an inductive approach, where motivations are presented as unitary (e.g., Nalewajek and Mącik, 2013) or viewed in combination as a simple dichotomy (Robson *et al*., 2019), which does not fully account for the complex reasons why individuals upcycle.

The sense of autonomy, willingness to express creativity and skills of upcyclers are generally undervalued, and thus their underlying psychological patterns have been overlooked in the literature. This lack of a theoretical approach that encompasses all possible motivations for this self-production practice leads us to base our empirical investigations on Self-Determination Theory (SDT).

The SDT is a well-known theory of social psychology that assumes intrinsic and extrinsic sources can motivate people (Ryan and Deci, 2000). These are presented along a continuum, based on the degree of separability of the outcome (tangible benefit/reward) from the activity. In SDT, four sub-categories are proposed within the extrinsic category, based on the degree of internalization of the value of an activity.

These correspond to four types of behavioral regulations: external (rewards or punishments), introjected (to avoid guilt or to enhance self-esteem), identified (self-endorsed) and integrated (congruent with the needs, goals and values that are part of the self). Intrinsically motivated people find performing an activity inherently interesting or enjoyable. Thus, they behave more autonomously, and thus are self-determined. A high level of intrinsic motivation depends on the satisfaction of the need to be competent and autonomous (Ryan and Deci, 2000).

Thus, the focus of the SDT on motivations and needs provides an effective basis for examining a practice characterized by a high level of consumer empowerment, which emerges through increased competence, creativity and autonomy. This theory has also been an effective basis for studies examining the motives that drive consumer (e.g., Kim and Ahn, 2017) and pro-environmental behavior (Webb *et al*., 2013). We also draw on the SDT approach because it highlights the value of intermediate motivations in upcycling, rather than focusing solely on ecological motives, on motivations as unitary or on the dichotomy of extrinsic/utilitarian versus intrinsic/hedonic motivations (Robson *et al*., 2019; Wilson, 2016). If upcyclers are viewed as emancipated self-producers and are motivated by their sense of competence, autonomy or creativity, the full range of psychological motivations underpinning this practice must be examined, and by using SDT, we can comprehensively examine the various reasons for engaging in an activity.

Moreover, the SDT enables us to organize motivations and examine them through by identifying their underlying values. Behavior can be predicted by both motivations and value orientations, and the relationships between values and SDT categories have been examined in previous studies. A positive correlation is found between altruistic and biospheric values and motivations that are self-determined (De Groot and Steg, 2010).

De Groot and Steg (2007) define biospheric values as those concerned with nature and the environment and distinguish them from egoistic values that emphasize individual interests, and altruistic values that focus on the wellbeing of others. Upcycling is not simply a pro-environmental behavior, so a more suitable classification is particularism/universalism (Parsons and Shils, 1951), which incorporates altruistic values but extends them. The level of particularism or universalism depends on the level of obligation the subjects feel they have to others (Lipset and Lenz, 2000), who are those perceived as holders of rights towards the subjects (Marradi, 2005). These can include individuals, the family, close friends, and more broadly other members of society, animals and the natural environment. The values underpinning upcycling behaviors can thus help reveal how and why such practices are carried out, and different combinations of motivations and values can lead to different types of upcyclers being identified.

Therefore, we pose the following three research questions:

RQ1: What are the SDT motivational categories that can be associated with upcycling practices?

RQ2: Can a range of motivations underlying upcycling, including intermediate motivations, be developed to enhance the dimensions of consumer empowerment?

RQ3: What different types of upcyclers can be identified by examining both motivations and values?

The responses to these questions can both reveal the benefits consumers attribute to upcycling and help us understand how policy makers can increase awareness of and better disseminate information about sustainable consumption (Anderson *et al*., 2018), such as extending product lifetimes and the reduction of waste, which are inherent in

these practices. A categorization of upcyclers based on their motivations and values can be also valuable for policy makers, enabling them to explore possible incentives (or benefits in addition to those concerning the environment) that could be leveraged by encouraging particular reuse practices.

2.2.3. Method

To address our three research questions, a netnographic approach was used, which is a method originally developed in consumer and marketing research (Catterall and Maclaran, 2002; Kozinets, 2002; Kozinets and Handelman, 1998). The rationale behind this is that self-production has experienced a fast and steady growth mainly through online communities. Thus, netnography explores the online social interactions and cultural practices while they take place by engaging in online observation (Kozinets, 2010). The advantage of observation over other viable qualitative data collection methods such as interviews or focus groups is that it is a naturalistic approach. Netnography, unlike other similar approaches (e.g., in-person ethnography), can be fully unobtrusive, thanks to lurking and thus ideal for a deep and emphatic understanding of the subjects (Kozinets, 2010).

Research context

Self-production, as motivated by environmental benefits, is becoming increasingly common worldwide. The results of a survey (Statista, 2017) of US consumers show that 21% of respondents regularly upcycle used materials (e.g., clothes, bottles, boxes) and

28% do so occasionally. The spread of the phenomenon in Europe appears more diversified, even though current data on consumer upcycling are not available. To understand territorial differences across Europe, we conducted an analysis of upcycled products put up for sale on Etsy (www.etsy.com), the largest online marketplace for handmade and vintage items and craft supplies. Over 52000 items are on sale in Europe, half of which are from the UK (27153), with about 3300 from Germany, 2500 from France, just over 2000 in both Italy and Spain and about 500 in both Sweden and Finland. In proportion to the population, the number of upcycled products is higher in Northern than Southern Europe, which suggests that Northern European consumers have a higher awareness of the issues related to upcycling. UK and Italian consumers involved in the (self)production of energy from renewable sources are found to be motivated both economically and ecologically, while Norwegian consumers consider the environment a higher priority (Standal *et al*., 2018), which further confirms the differences in the extent of these reuse behaviors and associated individual drivers. Thus, Italy presents an appropriate context for our investigation into consumer upcycling motivations in a fast-growing context. Numerous Italian online communities (forums, blogs, social networks pages and groups, etc.) and initiatives (i.e., start-ups, competitions) concerning these practices have emerged in the last decade, which also enable us to explore in detail consumers' motivations to upcycle.

To identify the most appropriate online community in Italy, a codified procedure was followed. Queries were carried out using specific keywords or keyphrases for different online environments (forums, social networks, blogs) and 'Unideanellemani. Ricicla Riusa Riadatta Ricrea Reinventa' (unideanellemani.it – 'Oneideainthehands. Recycle Reuse Readapt Recreate Reinvent') was the community selected.

At the time of queries (June 2017), the blog was ranked fifth on the Google SERP (search engine report pages). The other communities in the first SERP do not deal exclusively with upcycling. They also correspond with communities devoted to do-it-yourself. Unlike others, 'Unideanellemani' focuses on upcycling and only later it has been evolving in dealing with other related practices. Other communities, focused on upcycling, though, did not meet to the Kozinets's netnographic criteria.

It was the only one that met all the netnographic criteria indicated by Kozinets (2015), namely, relevance (related to research topic), interactivity (continuous flow of bidirectional communications between participants), activity (i.e. regular postings, different active users), heterogeneity (popularity in the web), data-richness (detailed data, length of comments), experientially satisfying (members seem to live a meaningful and engaging experience).

Data collection and coding procedures

The data-richness and the public setting enabled a covert field site access. Although the research focus does not concern particularly sensitive issues, this strategy was chosen because the risk of field disruption was possible which would otherwise have limited the possibility to investigate the phenomenon in its natural development (Hewer and Brownlie, 2007)[3]. For the same reasons, non-participant observation was chosen as the collection technique.

[3] Revealing one's presence and asking permission is a requirement even within a public setting (Kozinets, 2010), such as a blog. However, the methodological benefits of a covert access were considered superior to the ethical implication resulting from lack of 'honesty' (Kozinets, 2010, p. 147) towards the community that is subject of study. This is because the risk of harm was evaluated minimal (Kozinets, 2010), given the public setting, but also the lack of sensitive issues, the adult age of the group members.

The observations enabled us to follow the posting in real time, and to read previously posted messages, understand the techniques and absorb the meanings. The subsequent data collection concerned all of the online interactions of the dedicated blog section consisting of 131 postings and 2940 comments, for a total of 3071 messages, posted from 29 May 2010 to 13 November 2018.

All the textual content of the observed section was collected by downloading it through text capture software (NCapture – Nvivo 11). Using computer-assisted qualitative data analysis software (CAQDAS), NVivo 11, a thematic analysis (Guest *et al*., 2012) of the *corpus* was conducted. Specifically, firstly a word frequency query was run, in order to have a list of the words used by the community members. After checking the context of use of each word, those considered semantically relevant and not ambiguous were grouped into categories and assigned verbal labels. Thus, following the typical analysis of ethnographic data (Goulding, 2005), the categories were not predefined, but formed through the constant comparison of concepts, taking into consideration both emic and etic interpretations[4]. This phase of the coding procedure was conducted by two researchers who discussed and agreed on the findings. Each keyword group was then subjected to a text search query, to obtain the total number of references for each category. Our analysis then took the form of a hermeneutic interpretation (Kozinets, 2010) conducted by the two researchers. Following an iterative process, themes were linked to specific motivational drivers and textual extracts assigned. Once the data was

[4] In behavioral and social sciences (such as in anthropology or ethnography), emic refers to the perspective of the studied group (i.e., the 'Unideanellemani' community in this study) while etic indicates the perspective of the observer (i.e., the researcher) who is outside of the particular system under investigation. In netnography, the data analysis requires both to be empirically familiar with the studied phenomenon but also able to translate data and codes from emic to etic language, so behaviors and practices can be compared to other related experiences (Kozinets, 2010).

classified, the analysis was focused on identifying patterns that depicted SDT motivation categories and particularistic-universalistic values.

Disagreements between the two researchers were discussed and reconciled. Our reported results were back-translated into English by a senior researcher and then revised by an English native speaker to ensure both adherence to the original meaning and readability.

2.2.4. Findings

We identified categories within the data by unifying the text into a series of fragments which are then rearranged under a set of thematic headings connected to consumer upcycling (figure 5). These semantic areas highlighted the rationale underlying the practice of upcycling and associated mechanisms of consumer empowerment.

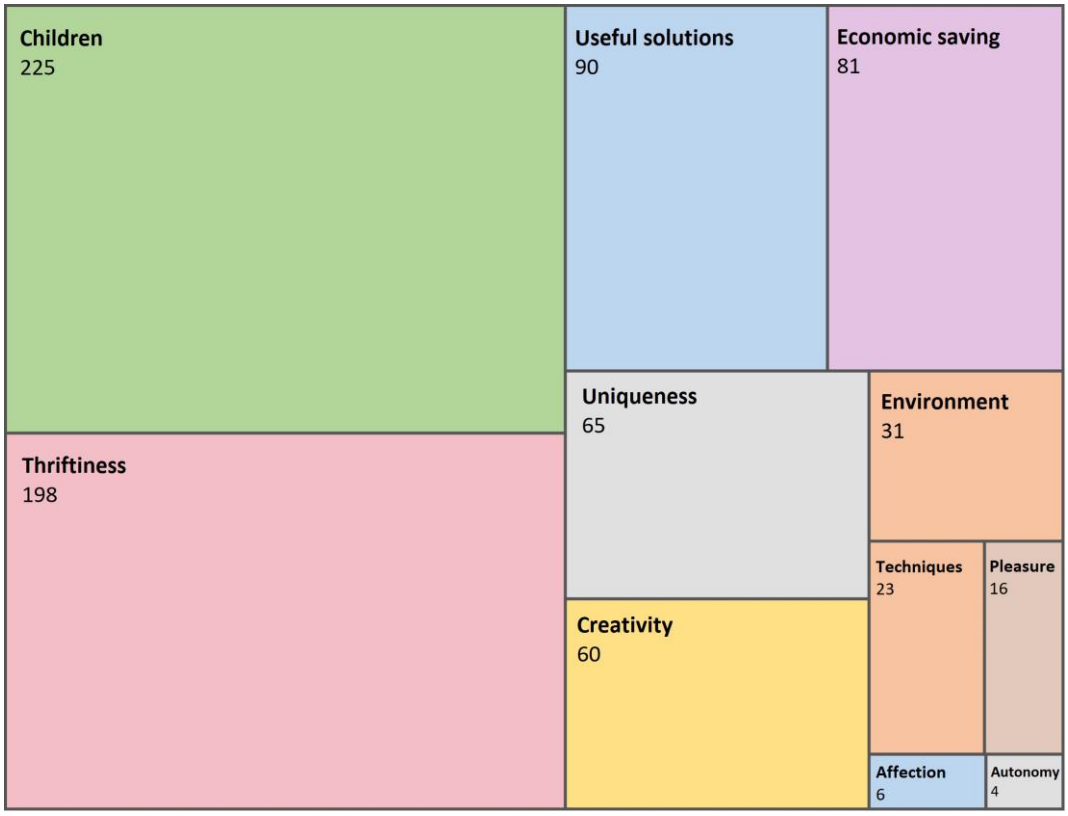

Figure 5 - Themes related to consumer upcycling compared by number of references

Family upcycling with children was the most represented theme, thus indicating the household dimension of upcycling. Other key upcycling themes were thriftiness, useful solutions and economic saving, with the environment only playing a minor role.

The concept of uniqueness shows how aesthetic appeal or the symbolic value of upcycled items are important for those that are devoted to the upcycling. Themes related to personal fulfillment (pleasure, creativity, autonomy, techniques) were less common than those indicating a more utilitarian and pragmatic dimension of upcycling (useful solutions, economic saving, thriftiness). In addition, saving and upgrading materials or things for the possibilities that they offer to achieve what you have need by reusing them (thriftiness) appear to be more important than the impacts of affectivity and emotion, despite their relation to children.

After having shown the appropriateness of the discussed themes to the practice, we then analyze the findings in terms of our three research questions.

2.2.4.1. Motivations for upcycling

By applying netnography to the selected community we were able to extend the motivations for upcycling presented in the literature. The SDT enabled us to arrange these along a continuum, whose poles are represented by external regulations and intrinsic motivations (Ryan and Deci, 2000). This continuum is based on the degree of separability of the outcome (tangible benefit/reward) from the activity of upcycling and enabled us to focus on the degree of control/autonomy in upcycling.

Economic savings and wise money

Economic savings and 'wise money' represent an external tangible reward for upcycling, and can therefore be considered an external regulation of the practice. The economic benefit derives from being able to save money on the purchase of new products by adapting or transforming products that we already have, in order to obtain a self-produced equivalent with the desired function, which, unlike DIY, does not usually require any purchases of materials:

> «In the shops, I find all types and all colors of Christmas decorations. I look at them, I touch them, then I take a look at the price and ... I put them back in their place. They

> cost so much!!! In short, given the economic crisis, it seemed to me that I had to think about Christmas in terms of savings and do-it-yourself.
> These [shown in the picture] are the first ones I made. They are quick jobs to do and are made entirely with reused materials [...]»

> «I needed the free cotton tape for a summer project (see beach bag).
> [...]. Perhaps not everyone knows about this system yet [to upcycle t-shirts], which among those found on the web, is one of the few that allows you to obtain a zero-cost yarn to be knitted or crocheted and above all without knots.»

As also happens for DIY (Wolf and McQuitty, 2011), upcycling is not necessarily due to lack of sufficient funds for purchasing new products, but often simply to use money wisely:

> «I will make them for my son's first birthday, which will be on September 23rd, also because the gifts for guests at his baptism are produced by Swarovski and will be given out on September 20th, so I have to save on the birthday presents.»

Solutions that optimize time, money and effort

Consumer upcycling can satisfy the need for useful solutions that can simplify or organize or optimize something in order to save time, money and effort. Here, upcycling is performed due to a fully extrinsic motivation, as it is regulated externally by rewards (i.e. time, money, effort):

> «From a plastic milk bottle I created a handy coffee cup holder. I don't know about yours, but my cups are never well stacked and they are always falling over»

> «[...] a spare floor cleaner for free by upcycling an old towel, a simple idea that does not require perfection, but gives great satisfaction (and it rhymes!)

More than anything it is the classic '*two birds with one stone'*: free mop + towel upcycling in one go.»

Product unavailability and uniqueness

The temporary or permanent unavailability on the market of the desired product is another reason for consumer upcycling, similarly to what happens with DIY (Wolf and McQuitty, 2011). The benefit of it is to obtain the desired item by producing it independently, as this is the only way to get the desired product. This is a tangible external reward that regulates upcycling.

«[She reports a conversation with a shop assistant]
Good morning, I need some very simple hair clips. But they must be in different colors. Do you have any?
_ No, I'm sorry. We only stock the classic ones, black or brown.
_ Too bad, I would like really colorful ones.
_ Why don't you do it yourself? They can be colored with nail polish. Have you ever tried it? [...]
Back home I decorated all the clips, the hair clips, the bobby pins, the hairpins I had around. I also found some old duckbill clips. I even painted them.
I will use this system more often, if only to dispose of the glittery nail polish […] that I bought months ago and that I never put on.»

Another motivation for upcycling is uniqueness, that is related to the need to create original items. Here, the external reward is intangible. In fact, the benefit has a certain degree of separability from the practice as it consists in obtaining an object that is desired, although not for its functional value but simply for the value connected with creating unique items. The unavailability on the market is, here, actually sought after

and not a negative thing. For example:

> «So I took your advice about reusing bed sheets […] I made myself some summer pants, given that the sheets are made of cotton. I had to make a few additions and used an elastic waist. The result is that I have a NEW pair of pants that no one else will have!»

> «I was looking for ways to wrap gifts in an original way and you really gave me some nice ideas. Above all, the use of old shirts is a real stroke of genius. I usually reuse the fabric for cleaning, but I never thought of reusing it for gifts.»

Reduction of waste production

Safeguarding the environment can be considered an extrinsic motivation, since the perceived benefit, reducing the production of waste, is separable from the experience of reuse as such. The behavior is regulated by a force that can be the feeling of guilt or anxiety or conversely a feeling of worth. In the SDT, introjected regulation indicates that an individual performs a behavior in response to such a pressure. Thus, this regulation is a more internalized environmental concern, although it is not fully part of the self. In 'Ideas and good tips for upcycling plastic bottles', the blogger motivates the post as follows:

> «There are many things I can't do without and unfortunately they are almost all in plastic bottles.
> Then, when I finish the product, I get cross: *how much plastic to throw away!*»

Upcycling can be used to create an output that not only gives a new life to waste, but also avoids the consumption of disposable daily products as well as products that, once the life cycle is completed, would not be recyclable:

> «Great idea!!! It also really bothers me wasting all those disposable make-up pads (which go into the non-recyclable bin) and this seems to me a very interesting alternative!!!»

Awareness of environmental issues

The rationale behind upcycling can derive from the desire to make others aware of environmental concerns. Here, the regulation is even more internalized, although still instrumental. Individuals have not only introjected it but have also identified this regulation with the importance of the practice. They therefore do not feel they need to respond to an external concern as they are themselves ambassadors of environmental awareness. Thus, upcycling is a means to highlight the biospheric value of upcycling itself:

> «Here, I have patiently worked on crochet yarns made from more than 70 plastic bags cut into strips giving life to [miniature] churches, houses and figures.
> I wanted to create something beautiful and unique that would stimulate environmental awareness in people that still do not have.
> For this reason, combining the art of crochet with the philosophy of upcycling, I created a colorful, original and unique nativity scene, using only recyclable materials.»

Thriftiness

Consumption reduction (Evers *et al*., 2018) becomes the desire to avoid wastefulness by making better use of resources already owned and, therefore, it implies a tendency to keep rather than throw away. Thrift enhances the benefit of upcycling by enhancing the materials/products already in one's own possession, turning them into something useful. This motivation is thus not fully extrinsic but relatively internalized and can be regarded as an identified behavioral regulation. In the SDT, among extrinsic motivations, identification with the behavior indicates, in fact, that individual is conscious of the inherent values of the practice but still performs the activity to obtain a separate outcome:

> «I am 'XXX of the CircoloVizioso' [the username of a blogger who is a member of the community], a faithful follower of reuse at all costs! And not just because of the penny-pinching, but because I love the philosophy of 're-living' and I really don't like throwing anything away when it can still be used in some way… [...]»

Wastefulness can be avoided by extracting additional value from something that was consumed or not in its original function:

> «I have pulled out my old bottles of perfume, that I never got round to throwing away. I will see if I like their fragrance and, thanks to you and various friends, I have come up with a lot of solutions to use them. You see? Never throw anything, sooner or later an idea will pop up in your head!»

> «[She refers to an upcycling idea posted by the blogger and related to transforming greetings cards into Christmas decorations]

ABSOLUTELY FANTASTIC!!! I have an avalanche of those greeting cards that you showed in the post, which I regret I threw away, even though I know that I will never send them to anyone ... THANKS!»

Affection

Affection is another motivation that can be classified as an identified behavioral regulation that is not fully extrinsic but relatively internalized. This entails 'keeping' what we already have, but not only for the sake of thriftiness. It seems something similar to motivations related to consumers who are attracted by nostalgic products (Loveland *et al*., 2010) or who are attached to old objects (Cherrier, 2010). The attribution of a new function is determined by the desire not to dispose of an object that is invested with an affective, symbolic value, even though it does not have any other function that would justify keeping it. Thus, this combines two needs: how to reuse a certain object and how to get something useful out of it:

«D.: As I don't want to throw my daughter's t-shirts, bodysuits and pajamas - I am emotionally attached to them - I made a blanket for her bed (in winter it is a duvet cover, in the summer a simple bedspread). [...]
S.: Lovely idea! Space is freed up and memories are preserved! I'll put this on my to do list.»

Learning (children)

Parents can exploit upcycling as part of an educational practice in order to stimulate imitation in children. The aim is to develop problem solving and creative skills in a relaxed and recreational environment, and also for the pleasure of doing something

together as a family. The benefit is external to the activity because it is undertaken to promote the development of cognitive abilities in the child. On the other hand, the experience of upcycling is meaningful in itself and not merely for achieving an end product. In other words, 'learning' motivation can be associated to an integrated regulation, the most self-determined form of extrinsic motivations (Ryan and Deci, 2000). In fact, parents-upcyclers, in spite of upcycling with an instrumental aim, have clearly identified the value of the behavior (and integrated it with own goals) to transmit it to their children. As upcycling makes children become more competent, autonomous and creative, parents-upcyclers recognize it as a means of empowerment:

> «[...] this is how children learn. You were very good. We made a homo sapiens' village with our children and we had so much fun. Children have to build things in order to learn, to strive to do their best, with all the upcycling material we can give them [...]»

> «The most important thing, it is not how beautiful the dollhouse comes out (which in any case was really nice), but the principle of familiarizing children to play with just a few things and stimulating their imagination by upcycling them.»

Satisfaction of doing things by oneself

The satisfaction that comes from doing something yourself is an intrinsic motivation mainly aimed at obtaining something wanted. Upcycling is motivated by the feeling of empowerment arising from the autonomy experienced in craft consumption (Campbell, 2005). The outcome is not separable from the activity itself. There is no regulation, external or internalized, controlling upcycling. The goal is to avoid buying, not for economic savings but for the satisfaction of producing something independently:

> «Obviously creating do-it-yourself patches and embroidered patches is not something for everyone. Not because they are difficult [to make], but because it is a creative and upcycling task that requires passion.
> Those that don't have this passion - unfortunately for her/him - will have to go and buy patches at a haberdashery store. We 'struzianti' [nickname of group's members] instead continue to say #icandoitmyself, because the pleasure of doing something by yourself cannot be bought, don't you think? 😉»

Pleasure of expressing creativity

Satisfaction and pleasure not only derive from the DIY element, but more specifically from self-producing by re-using. Through the creative contribution required for the adaptation, modification and transformation of objects, upcycling becomes a means of expression and empowerment. In this case, the benefit is the expression of her own creativity:

> «Dear D., this site was a beautiful recent discovery, congratulations. I'm at home down with the flu, the community has kept me company, making me want to create and use my imagination, which I hardly use in my office job.»

This benefit is highly inherent in upcycling. It is the pleasure of getting an item by transforming something else, not because the end product is useful, but for the experience of reuse in itself:

> «Nice idea! Who knows if some child discards a windbreaker? 🙂 Actually I made a lot of various [camera] cases, with old felted sweaters, old jeans, but I miss this one!»

Unlike thriftiness, this motivation has nothing to do with the desire to reduce

wastefulness.

Eco-creativity

Upcycling can also be undertaken due to other intrinsic motivations, such as the pleasure of expressing oneself, but with the awareness of environmental issues related to consumption and waste. The benefits are thus a further stimulus to enjoy the activity, even though the creative aspect is subordinate to the environmental benefit:

> «Hi D., very good. I can only agree with you (as always!) Seeing products as disposable items is easier...but there is no comparison with creativity, and then environmental costs in the end are much more expensive ... hurrah for upcycling and inventiveness!»

Increasing knowledge and know-how of upcycling

Another intrinsic motivation is the pleasure of increasing one's knowledge and know-how of upcycling. There is no specific reward or instrumental reason, but the focus is on experiencing the practice, on a keen interest in learning about upcycling and on rediscovering techniques from the past. In the post 'How to make strings with leftovers of wool or cotton threads' is described a technique used in previous decades to obtain a category of products (which originally had been quite expensive), the trimmings, from the waste:

«D.: Yes, I imagine that many people are familiar with this method. But maybe one in ten are not familiar. And then I like to remember the good times, when the art of making do was 'normal' [...]

M.: Thanks for sharing this method with us, these are things that are lost with time unless someone like you doesn't remember them. [...]»

2.2.4.2. The types of upcyclers

A typology of upcyclers was created based on the above-mentioned motivational drivers. First, the drivers were ordered along an extrinsic/intrinsic continuum. The values underlying the motivations were then revealed and ordered along a continuum based on particularism/universalism (Parsons and Shils, 1951). A maximum level of particularism is represented by an upcycling activity driven by egoistic values, hence by personal benefit or advantage, the satisfaction of individual interests, e.g. saving money. An intermediate level is reached when the upcycling is oriented towards the family (children), hence when it is driven by more altruistic values. A maximum level of universalism is represented by biospheric values, such as when the upcycling is driven by the willingness to reduce waste or raise awareness of environmental issues.

Finally, by examining both motivations and values concurrently, five types of upcyclers were identified (figure 6). Note that the motivational drivers relating to particularism seem to be more frequent, so in reality the five segments of upcyclers probably have different weights, rather than how they are represented in figure 6.

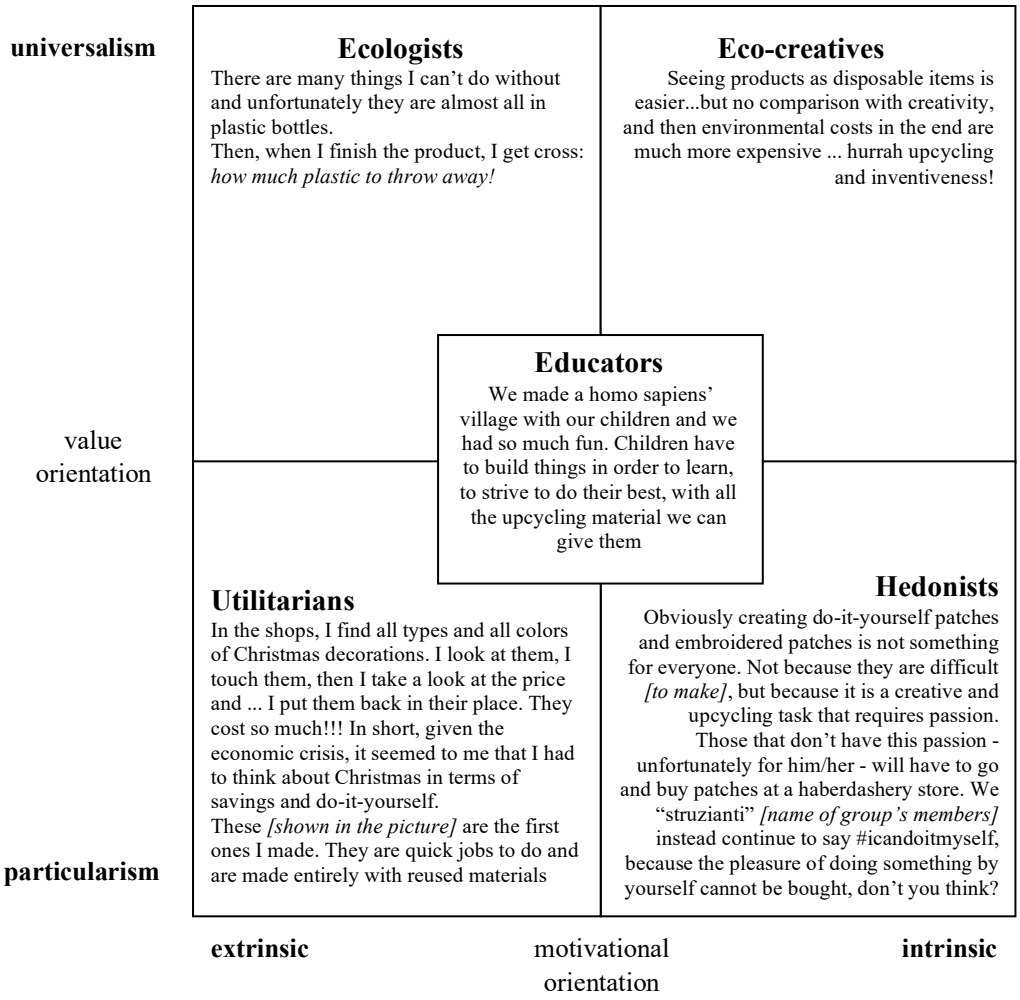

Figure 6 - Types of upcyclers (with illustrative excerpts)

'Utilitarians' are particularists driven by extrinsic motivations, such as external and identified regulations. They usually approach this type of self-production to obtain a personal, egoistic benefit that is, external or otherwise instrumental, separable from practice. This type of upcycler is 'resource driven', that is, the aim of their upcycling is to save or exploit their own resources, or to make up for a lack of them on the market. Utilitarians present a high level of particularism and perform upcycling to save or wisely allocate money, and to find ways of better organizing/optimizing things, thus

saving time and effort. However, the particularism they express can be a less accentuated level of particularism, in which their own interest is accompanied by the desire to give or exploit resources (without sparing them). They often create products that are unavailable on the market, or exploit products they no longer use, are already in their possession (thriftiness) or that have a symbolic value (affection).

'Hedonists' are particularists driven by intrinsic motivations, therefore, people who upcycle to obtain a personal benefit that is inherent, and not instrumental, in upcycling. A hedonist tends to get the satisfaction of doing it him/herself, expressing creativity, or increasing their knowledge and expertise related to upcycling. Therefore, they are self-determined upcyclers because their behavior is fully autonomous and is not controlled by regulations.

'Ecologists' are universalists driven by extrinsic motivations, such as introjected and identified regulations. They upcycle to obtain a universal benefit that is instrumental to the upcycling itself, although somewhat internalized. They tend to focus on reducing waste production and raising awareness of environmental issues, revealing a high level of universalism, which is represented by biospheric values.

'Eco-creatives' are self-determined universalists, namely people who upcycle for an inherent benefit, for example, to express creativity, whose perception is intensified by the awareness of the positive impact of upcycling not only on themselves but also on others, on the natural environment.

Finally, 'Educators' occupy a position somewhere between particularism and universalism, between intrinsic and extrinsic motivations. In fact, they do not hold environmental concerns but are driven by altruistic values. Educators approach upcycling to obtain a benefit not only for themselves but also for their broader families

(their children), especially in terms of the acquisition of cognitive abilities and recreational experience. Although these upcyclers are not intrinsically motivated, their behavior is somewhat autonomous and thus self-determined, because they have fully internalized the importance of the practice, integrating it into their selves and relating it to goals over time. They in fact feel that upcycling is generally good for the development of the family, beyond the specific contingencies.

2.2.5. Discussion

Although consumer upcycling is recognized as being environmentally friendly (Szaky, 2014), our findings show motivational drivers of upcyclers do not seem to be focused primarily on environmental protection. However, two types of upcyclers with biospheric values have been identified. Unlike De Groot and Steg (2010), we find that these may not only be characteristics of intrinsically motivated individuals.

However, the upcycling drivers encompass a wide range of motivations on the intrinsic-extrinsic axis, in which self-determination and empowerment motives (skills and competence development, creativity and autonomy) especially in a family context seem more common than environmental concerns. These upcyclers appear to focus directly on the three dimensions of consumer empowerment. However, upcycling can be a means of going beyond the constraints of choices offered by the market, when these are not aligned with consumer trajectories (Shankar *et al*., 2006). Thus, for upcyclers looking for extrinsic motivations such as unavailable or unique solutions, and whose

needs can only be satisfied outside the realm of market choices, the dimensions of empowerment are instrumental and enable them to obtain something they desire.

However, we had not predicted some of the motivational drivers, namely those in an intermediate position along the SDT continuum. Specifically, two main themes seem decisive in explaining upcycling behavior: children's learning and thriftiness.

Upcycling is perceived by parents as a tool to set their children on the right path through their exposure and involvement in the design and production of upcycled items. As Elliot (2016) finds, such evidence shows that these types of upcyclers have internalized the relevance of the practice and recognize its implications in terms of individual transformation. Upcycling for 'educators' is seen as a way to develop both problem solving and creative skills, which are essential in life, and which can be considered closely related to a transmodern thinking. Even teamworking (practicing with children and/or with parents) is seen as a means of nurturing essential skills such as those inherent in socializing. In this regard, Wong (2019) points out that crafting helps develop teambuilding, leadership and empathy.

As suggested in SDT (Ryan and Deci, 2000), the feeling of relatedness can help to internalize the significance of a behavior, and educators also see upcycling as a recreational moment, as a fun activity to do together within the family: the pedagogical intent is thus intertwined with intrinsic motivations. This is consistent with what Brunneder and Dholakia (2018) found regarding the self-creation effect, for which a set of positive responses, both emotional and cognitive, to a situation are mediated by an appreciation of the output of the self-creation process and moderated by self-consciousness. Therefore, upcycling seems to lead to the general well-being of the

whole family through the happiness of each individual member and thus contributing to the construction of their identity.

In summary, these results indicate that upcycling is a practice that is empowering over time, and that leads individuals to a specific type of thinking and lifestyle. Thus, the motive of learning appears to precede and mediate any other motive. In addition, the altruistic values involved mean that education is essential in the optimization of product lifetimes, as this will be regarded as an indirect benefit resulting from the more integrated regulation for the self, and will not need to specifically influence the reasons (less self-determined) that lead to the contingent replacement of products with ecological issues (Van Nes and Cramer, 2006).

Thriftiness, already observed in previous studies (Nalewajek and Mącik, 2013), seems to have wider meaning and scope: transcending the environmental and economic benefit, it becomes a fundamental driver for upcyclers. Thrift upcycling should imply "choosing to choose less" (Shankar *et al*., 2006, p. 1022), therefore, to consume less as a result of overload of choice offered by the market. This resonates with some papers on anti-consumerism, as the thrift upcyclers are similar to the custodians of the materials, to the non-clinical hoarders of objects studied by Cherrier (2010).

It is no coincidence that references within the blog often refer to the cellar, the attic or the tin box, where objects can be stored awaiting transformation. Even these upcyclers with their 'custodian behavior' resist the 'throwaway culture', the consumerist ideology of newness. As accumulation expresses an anti-consumerism that does not deny the attachment to material possession, but rather passes through it, since objects are the materialization of values (Cherrier, 2010), so the 'thrift upcyclers' express a deeper and

more active anti-consumerism, thus not limited to storing things, but actually enhancing materials.

In addition, unlike other forms of resistance (Izberk-Bilgin, 2010), consumer upcycling does not constitute opposition to the market, an organization or a specific brand but "a hidden and scattered form of anti-consumerism" (Cherrier, 2010, p. 269). However, not all alternative consumption practices share this trait, as some studies of collaborative consumption report more explicit anti-consumerist motivations (McArthur, 2015). As for educators, the environmental benefits, such as the consumption reduction, is a consequence of a more internalized motivation, i.e., extracting additional value from materials. Thrift upcyclers are utilitarians, and do not exhibit biospheric or altruistic values.

Cherrier (2010) notices that hoarders do not make a clear distinction between the material and the social, because tangible objects often act as a trigger to recall memories. In the same vein, the theme of affection revealed by our research, which is also related to children, shares some aspects of thriftiness. Affection is an indication of the presence of a transmodern thought even among these upcyclers. They are parsimonious people who consider objects as prostheses of memory and, therefore, more charged with (symbolic, as well as of use) value, therefore, worth preserving.

In sum, the results seem to indicate an anti-consumer tendency characterized by a modality of resistance that is both introspective and pragmatic, but not specifically ideological. The results could also explain why being motivated for ecological reasons is not prominent, even though upcycling clearly has positive implications for the environment.

2.3. Value creation circular process: shared knowledge, collaborative ideas and creation of value in upcycling online communities

The present investigation combines the lens of practice, co-creation and knowledge approaches, thus representing a first attempt to frame the self-production, and in particular consumer upcycling, as a complex phenomenon that transcends the individual dimension, favoured by the consumer empowerment accelerated with the participation to online communities of practice.

From a practical standpoint, the study explores the ways by which the upcycling is promoted by online groups of consumers whose members share the same language, rituals and the use of specific tools to inform their behavior, thus developing communal ideas, principles and (environmental) pro-social values.

2.3.1. Online communities: consumption practices and knowledge flows

Social media and associated user-generated content have progressively determined the empowerment of the consumer role (Labrecque *et al.*, 2013; Boyd *et al*., 2014) and the rise of different modes of consumer-to-consumer communication (C2C), which favoured the growth of independent sources of information with respect to traditional media/organizations (Prahalad and Ramaswamy, 2004; Wu and Fang, 2010; Vollero *et al*., 2019).

The typical digital environment of C2C communication are “online communities”, defined as virtual organizational forms based on engagement and expertise (Faraj *et al.*, 2011). It has been generally acknowledged that online communities can constitute communities of practice (Zhang and Watts, 2008; Silva *et al.*, 2009; Faraj and Shimizu, 2018).

The practice theory perspective to analyze communities has been used recently also in marketing and knowledge management literature (Vargo and Lusch, 2016; Faraj and Shimizu, 2018) for a number of reasons. Firstly, it is because these types of online community are motivated by a joint enterprise (Wenger, 1998), that is, the presence of aggregate members interested in similar practices. This facilitates them to become aware of their common interests, thus raising their sense of belonging and redefining their identity in relation to the practice (Tseng and Kuo, 2014). Secondly, community of practices (CoPs) are characterized by mutual engagement (Wenger, 1998) and engagement with brands (Brodie *et al.*, 2013). In the context of virtual brand communities, Hollebeek *et al.* (2017) built a typology of engagement practices, while Kozinets (2010) identified the two main elements that determine online community formation and participation in them: identification with a shared consumption activity and strength of social ties. In general, scholars highlighted web 2.0 technologies enabled complex forms of interactions thus facilitating social processes (Faraj and Shimizu, 2018). This occurs not only in explicit forms, through information storage and retrieval, but also by means of tacit knowledge flows (Panahi *et al.*, 2013; Faraj *et al.*, 2016; Hollebeek *et al.*, 2017). In addition, the rising attention on online CoPs is due to their ability not only to exchange information but also to cultivate culture (Kozinets, 2010; Gannon and Prothero, 2018). Thus, the third factor characterizing CoPs is a shared

repertoire (Wenger, 1998), that is, meanings that the community has produced and aimed at guiding group behavior. These meanings are built through reification, which indicates "giving form to member experience by producing objects" (Wenger, 1998, 55), forming the fourth factor. From this point of view, Faraj and Shimizu define online CoPs as "collective spaces of knowledge flows" (2018, 3), since they are space for knowledge collaboration, intended as both sharing and co-creation of knowledge (Faraj *et al*., 2011).

Previous studies focused on self-creation or on co-creation, conceived as adjacent but distinct phenomena. Zainuddin *et al.* (2016) represent self-creation on the value creation continuum as separated phenomenon from value co-creation. Zwass (2010) highlights the community dimension in the co-creation process and affirms that it does not exist exclusively in sponsored co-creation but also in autonomous co-creation, characterized by consumer communities that create together "marketable value" in an independent and spontaneous way.

Self-production corresponds to a value self-creation. If Wilson (2016) highlighted the self-productive aspect of upcycling, by using the terms "consumer upcycling" and "creative consumption", thus emphasizing the close link between this activity and the creative consumer, Sonnenburg (2004) discusses about creative collaboration in product creation within a group, defining it as a communication system, also computer mediated, that takes place with a problem and finishes giving a new product or a new idea.

Thus, the work aims at exploring the social experience of self-producers in online communities, investigating the possible overlapping between value self-creation and value co-creation. Our research questions are divided as follows:

RQ1: What are the features of communities of practice that can be identified in upcycling online communities?

RQ2: How do the individual and collective dimensions of the practice interact?

Hence, the work's research questions are related to the identification in upcycling online communities of main features of communities of practice (namely joint enterprise, mutual engagement, shared repertoire and reification), and to the analysis of the interplay between this practice and the co-creative dimension of self-production in a communal form.

2.3.2. Method

In order to answer to the research questions, by exploring the online social interactions and cultural practices while they take place (Kozinets, 2010), a netnographic approach, (Kozinets and Handelman, 1998; Catterall and Maclaran, 2002; Kozinets, 2002), has been used, by allowing researchers to experience "community life" from the perspective of the members of the group studied, in order to restore their original meanings.

Research context, data collection and coding procedures

The research context is the same described in the previous section. Moreover, also in this case, the data-richness and the public setting enabled a covert field site access and non-participant observation as the collection technique.

Observations allowed to follow the posting in real time and to read previously posted messages, understand techniques and absorb meanings. Subsequently, data collection

concerned all the online interactions of the dedicated blog section consisting of 134 postings and 2968 comments, for a total of 3149 messages, posted from May 2010 to October 2019.

These were downloaded with a text capture software and subjected to a coding procedure. The codes were built through an iterative process of comparison of concepts (Goulding, 2005), in order to depict the features and processes identified as research aims. The final step was the data analysis, which was essentially a hermeneutic interpretation of the data (Kozinets, 2010).

2.3.3. Findings

History and evolution of the community

The community is formed within an individual blog, run by a mother who also plays the role of moderator. Community members, bloggers and simple readers, are above all women and mothers between 25 and 70 years dedicated to women's hobbies. In particular, the community deals with upcycling ideas both starting from the object to upcycle and from the desired outcome.

The community was born in 2010 with a post entitled "I mean, like... nothing gets thrown away!", which explains the reason for the opening of the blog, it is to upcycle products no longer usable in the original function to foster an ecological awareness:

> «[...] I can no longer see the things we throw away as waste, but they have become a source of inspiration for me. So before I get rid of any old object or garment, the question that arises is: "What can I do?"
> My Blog starts here.
> The thing that is most important to me, in fact, is not so much to show what I do, as to stimulate in the people an ecological awareness that unfortunately many still do not have. [...]»

Since 2016, the subsection on upcycling is becoming less active due to a change, marked by a reflection by the blogger, as detailed in the post "Upcycling: is it always all well and good?". It represents the transition to a more mature attitude towards upcycling, reaching the conclusion that not all outputs obtained are environmentally sustainable, but it is necessary to combine creativity with the ethics:

> «No, […] I don't even regret my love for upcycling - […] - I am just growing in [...]
> Will I stop upcycling? No, I just started asking myself lots of questions [...]
> In many years spent on the web, in terms of upcycling I have seen everything and more: from real works of art made from waste to the smart recovery of old objects, from things reused in a brilliant way [...] But I also saw things that had very little to do with upcycling, [...] And I'm not referring to the aesthetic result, as to the practical and ethical one. [...]»

From 2016, therefore, the blogger's posts propose ideas that mainly produce a benefit for the environment. This also involves a change in the type of projects illustrated.

Shared rules

The production of knowledge within the community are governed by the regulations in the "Copyright" section. Users are invited to propose constructive comments, respect

the intellectual property of texts, photos and contents, ask permission for inclusion in aggregators and for any commercial use of the blog content. Active users seem very respectful of these rules.

Accomplished rites and collaborative activities

A recurring interaction pattern, a sort of "generation of ideas" ritual, has been identified: the blogger presents the upcycling design to the members of the community, who, in turn, respond by making changes, in order to improve the aesthetics or functionality of the output, to offer alternatives in its use occurrences, but, above all, to suggest other ways of upcycling the same object.

Through this ritual, members' involvement increases, and the collaborative activity of the community takes place: bloggers and users produce ideas, solutions together. Some posts can be defined as collections, dedicated to a certain product, in which the blogger draws up a list of ideas known by her, to reuse a certain item, expressly asking the readers to expand it with their own suggestions.

The process of generating ideas remains open, that is, it is not possible to select the best upcycling design for the object in question. The post "Put the socks on the balls: an idea to upcycle the broken stockings" produces 17 alternatives, becoming a post-collection:

«V.: [...] I don't throw away the stockings too, I wash them waiting for a use [...] But when I pick them up a bit I roll them all up and do some balls with which the cats have fun very. They are also useful for putting in soap scraps and forming bags to use exactly like a bar of soap. Another useful use is to utilize them to polish silver [...]
[...]
N.: I also discovered the use of socks as a bag for soap flakes: they are great!
And in addition I make perfumed sachets putting in cloves and lavender ... 😀
L.: [...] my mother cut them into strips, made them little balls for crochet and go of carpets for kitchen and bathroom [...]
M.: I also keep mountains of stretched pantyhose [...] Up until now I have used them as elastic for the tail (when I had long hair), as padding for cushions [...] for collecting dust from the floor etc. [...]»

Used language

Community members use a sectoral and practice-specific language dependent on the do-it-yourself techniques used to implement upcycling. On the other hand, the sign of a community-specific jargon is the term "struziante", with which the members define themselves. "Struziante" is called "the person who arranges to do things by herself and with what she has, who tries to repair, who rackets her brains until she has done what she wants, who uses her hands, head and heart to do things (not interested in what, not interested in how)".

Key values

The jargon, the rites and the rules practiced reflect the key value of the community, which is creativity. The "struzianti" are inventive people that consider creativity has a "common" skill, especially linked with manual skill that gives value to things:

«D.: Personally, I have no difficulty in defining the woman who tries to repair an umbrella with scraps from an old awning as ‘creative’, or her grandmother who sews naive aprons using old shirts. [...]
R.: I believe that the future belongs to those who appreciate the value of things and always work to “do with their own hands”»

Creativity is thus defined as the ability to combine rationality and fantasy, but always finalized to solve a problem.

Motivations to participation

There are several motivations that lead readers to participate in the life of the group, ranging from the request for technical advice on the practice to clear explanations of the designs to be implemented:

«Hi, I would like to learn how to make bags by upcycling jersey or lycra tapes or used sheets. How many centimetres can the upcycled strips be? [...]»

Another motivation for participating in the community is the recreational aspect, which is often associated with the sense of belonging to an upcycler community:

«[...] I would die laughing by reading the comments of the “crazy” upcycler-friends!!! Thank you D. to remind us that we are not alone in the UPCYCLING WORLD!»

Again, the motivation may consist in strengthening an identity as a creative person. In this case, participation is about corroborating members’ ability:

> «I know that D. and I are 2 volcanoes of ideas. When they ask, I explain, I show how it's made, with nothing in return and even if they copy, it doesn't matter: I have so many ideas in my mind for more than 30 years of creativity.»

Methods of implementation of the practice

The methods of implementation of the practice change according to the type of motivation for upcycling.

One of the product categories that bonds the upcycling activity of *Unideanellemani* members is "games and toys". The practice is considered useful for making these products by all upcycler-mothers: it is a way to save money, an educational tool for children and a means to reduce waste production. In fact, this category is considered not "environmentally friendly", as the toys have a short life cycle (given the rapid obsolescence due to the growth of the child). Moreover, for ecologists the pedagogical utility of the practice is such as to justify "improper" assembly methods, such as gluing for an output that will have a short life:

> «J.: [...] using recovery materials for children's chores is also good, because let's face it, buying new materials and then throwing them back is not exactly ethical [...]
> D.: [...] In the case of chores it is normal to reuse, paste, mess. In this way not only you can save money, but the children's imagination and manual skills are set in motion. [...]»

More generally, the analysis reveals two ways of starting the practice, depending on the element of focus of the self-productive process: the input (the objects to be upcycled) and the output (the result to be obtained). The focus on the output prevails, although

from 2016 there is a greater attention to the choice of inputs. In fact, textile and clothing items are privileged materials, reflecting the turning point in terms of sustainability, given the possibility of more effective assembly techniques in this sense (figure 7).

Extrinsic motivations to practice, based on an external benefit to the practice, focus on the way in which to obtain a certain output. The intrinsic motivations, being relative to a benefit inherent in the practice itself, instead tend to focus on the way in which to upcycle a certain item-input.

The opposition between two approaches is discussed in the opinions of the readers themselves:

> «For me the "art attacks" don't have a great value, I usually need something and I think about how to make it happen, if I can reuse and upcycle it is better…»

> «The object must then serve, it should not be the typical "good for nothing" item that you used to make a new post. On my blog I write a post about upcycling when I needed to create a certain thing ... my outputs come from a need ... [...] I identify a need and create a solution.»

It seems clear that users motivated by extrinsic benefits are guided by rules in the implementation of the practice, while users driven by intrinsic benefits do not have them, being focused on the pleasure of producing in themselves.

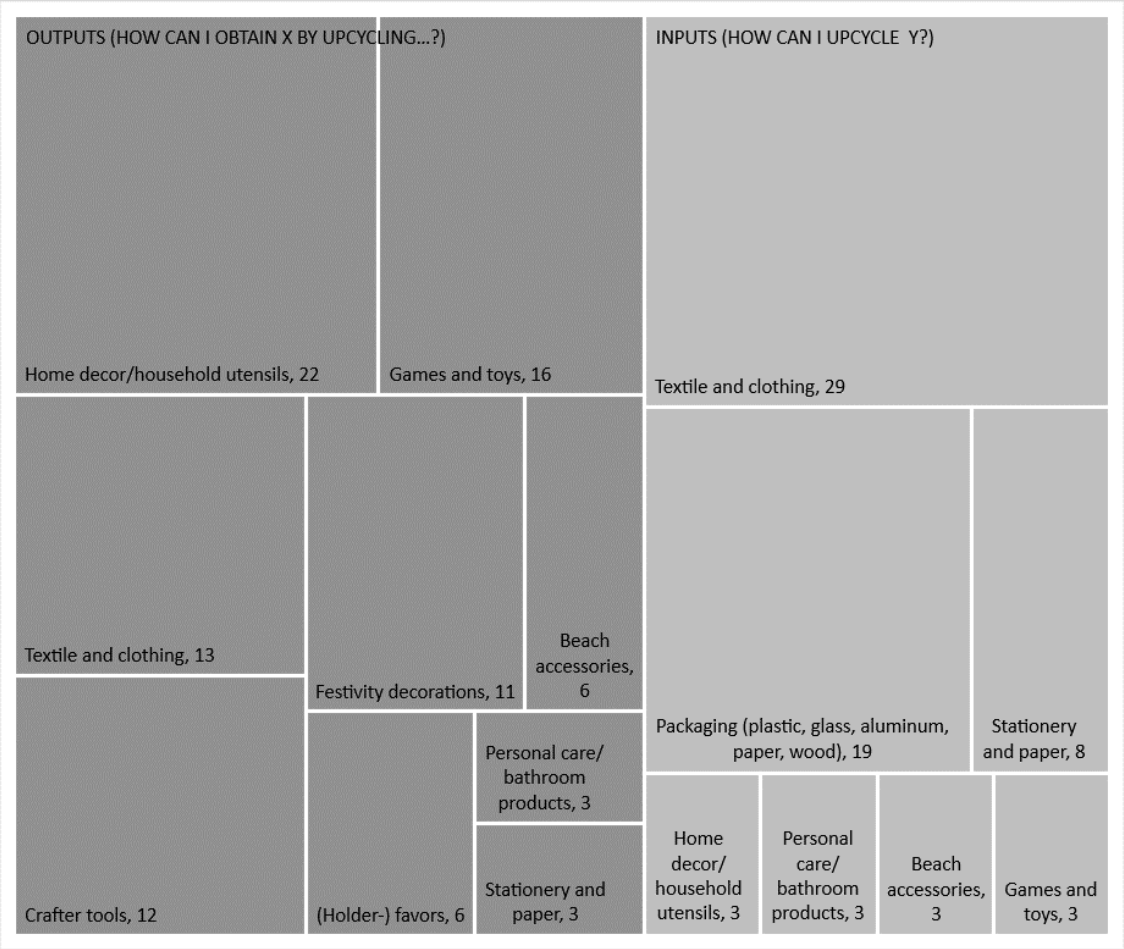

Figure 7 - Categories of upcycled items (outputs vs inputs)

More specifically, depending on the underlying extrinsic motivation, the rules change. For example, those who are thrifty exclude upcycling those objects that are still useful in their original function or that can return to it through other forms of reuse. Creative expression is then subordinate to thrift. Thus, the blogger, usually, dislikes the user with an intrinsic motivation (because she is fascinated by the idea of using a certain type of objects as input). In the next excerpt, she recommends avoiding upcycling a jacket, if it can be repaired:

«B.: [I upcycle] the jacket of my Little Monster, [so that] I avoid fixing it (it has to be sewn in some places), that so much next year will be small too! 😉
D.: But if it is to be sewn up I would do it. Just to tear it to pieces you're always on time. No?»

Similarly, those who approach the practice to save money exclude buying new products for the mere purpose of transforming them:

«V.: Really cute and your daughter is always more beautiful 🙂 if I find a special offer of a shirt I will do it!
D.: Do you have men's old shirts to upcycle?»

Instead, those who are motivated by the environmental benefits of upcycling assess the expected length of the second life cycle and, based on this, establish the characteristics and techniques of assembly of the inputs. More specifically, upcycling must have the purpose of actually extending the life of the reused products. If the output is only useful in the short term, or does not have an utility, the practice should not be undertaken, because it has no environmental benefits, on the contrary, it would cause damage due to the production of an output destined to a non-recyclable waste status, once its short life cycle has ended. From this perspective, those who upcycle ignoring these prescriptions are accused of having artistic motivations:

«to recycle something to make a creation of doubtful utility and use it for two days - if I really use, maybe done by gluing the plastic to the fabric, or the fabric to the cardboard or to the glass ... is it upcycling? [...] *Nulla quaestio* if I upcycle something destined to have a second and long life cycle [...]»

Thus, if the final output is only useful in the short term, or does not have a utility, the assembled items should at least be detachable or composed of a single type of material,

in order to recycle the components. For the same reasons, sewing is always a better option than gluing as it is more environmentally friendly. However, if the final output is useful in the long term, the assembly of recyclable and/or non-recyclable materials of different types is "allowed", as justified by the possibility of extending the life cycle of the materials.

2.3.4. Discussion

Although the community has developed into a blog, apparently based on a hierarchical relationship in which the blogger assumes the role of authority, it is characterized by a friendly atmosphere. From the analysis of motivations to participation it follows that the interaction within the community is oriented both to consumption activity and to social relationships. Interaction patterns are based on the exchange of detailed information regarding upcycling. However, fun moments are also created, in which communal ties are developed. For this reason, community is thus halfway between a geeking (weak ties and high centrality of the shared activity) and a building community (strong ties and high centrality of the activity) (Kozinets, 2010).

In line with Zhang and Watts (2008), *Unideanellemani* can be defined as a community of practice, firstly because members are linked by interest towards a joint enterprise, around which they create their identity as upcyclers (Wenger, 1998). Second, they have built a shared repertoire: rites, language, meanings, rules. In fact, the value of creativity that bond the members and determines their identity is inscribed in their jargon, namely in the meaning of the name that they have given themselves ("struzianti"). In line with

previous studies on CoPs (Iverson and McPhee, 2002; Smith *et al*., 2017), the community is characterized by both engagement and reification: the members' experience is embodied in a collaborative productive activity. This dynamic is more evident in the main interaction pattern in which the mutual engagement between the members is expressed, the ritual of generation of ideas, which represents the way in which the members co-create knowledge. The value of creativity explains its meaning. In fact, it is the moment in which each member exercises her/his creativity, shares it with others, reifying it in the collections, thus showing the group's learning process as the result of the "creaplex" (Sonnenburg, 2004), that is of "creating in collaboration". Each member, especially newcomers and beginner upcyclers, achieves an individual upgrade on the practice by learning from these moments, as well as by other ways of interaction (such as requesting technical advice). Through learning, the practice is also upgraded (Brown and Duguid, 2001).

In line with Zhang and Watts (2008), community members negotiate new practices. In its evolution, the methods of implementation of the practice show that not all approaches to upcycling are environmentally friendly, but only those that actually extend the life of the product or produce detachable/mono-material outputs. Consequently, a "2.0 practice" is outlined for eco-upcyclers that does not start from a focus on input or output but from a balance of both needs.

The results show the existence of an interaction between online communities and upcycling self-production activity (figure 8), through which the different levels of consumer empowerment are realized (information sharing, co-creation and self-production) according to a circular process.

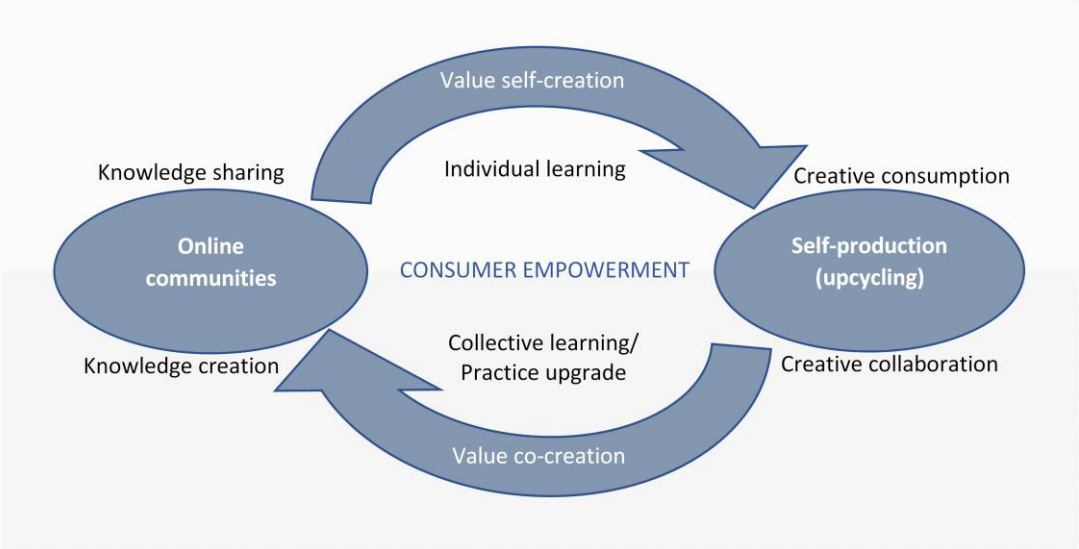

Figure 8 - Model of interaction between online communities and self-production

When online communities are, in fact, focused on a practice (Faraj and Shimizu, 2018), this constitutes a determinant of the development of value self-creation phenomena, as they are a knowledge sharing environment. This leads to an individual learning on the practice, favouring its implementation. Thus, value self-creation is realized through self-production. In the case of upcycling, the self-production is achieved through creative consumption (Berthon *et al*., 2007). In fact, creativity, intended as problem solving skill, is applied to modify or transform proprietary offering, and to manage how to convert discarded items. On the other hand, self-producers/upcyclers do not only devote themselves to creative consumption practices. They also determine value co-creation phenomena thanks to creative collaboration between users within the online communities (Sonnenburg, 2004; Ind *et al*., 2013). Favoured by participation, engagement and social relationship, individual problem-solving skill convey in a collective reification experience. In this way, online communities become a knowledge

creation environment. This resonates with Andreeva and Ikhilchik (2011) that maintain social settings facilitate creation of new knowledge.

Socializing represents the aspect that allows sharing knowledge but also combining it in an unusual way because individuals can put forward their ideas and views (Csikszentmihalyi and Sawyer, 2014). Thus, creativity is defined both individually (in terms of creative consumption) and collectively (Romero and Barberà, 2012). Ideas and views translate in new solutions, changes in a domain, co-constructed and accepted by the group. Collaboration, in fact, leads to collective learning process and, consequently, to an upgrade of the practice itself.

Although focused from the peculiar perspective of informal and spontaneous organizations, this process of dynamic knowledge creation in highly creative contexts presents analogies with the spiral process at the level of companies, systematized through the SECI model (Nonaka and Takeuchi, 1995). Similarly, it begins with socialization, continues with externalization and combination and ends with internalization of knowledge. Self-production can be thus evaluated not only as an individualistic phenomenon, because online communities can be considered the space where the co-creative dimension of self-production expresses and develops in a collective context.

2.4. Implications

The existence of different types of upcyclers can have interesting implications for both policy makers and practitioners.

As upcycling practices (waste reduction, product lifetime extension) have various benefits, policy makers should support and facilitate such practices, as they can help the transition to a bottom-up circular economy approach. This resonates with Bridgens *et al.* (2018) who see creative upcycling as a way to reconnect people, materials and places, foreshadowing the establishment of upcycling hubs within local communities in order to share ideas, resources and competence. Hubs can help to promote waste reduction, although upcycling behavior is not always pro-environmental but often characterized by empowerment. For example, hedonists and eco-creatives may find upcycling hubs to be a source of sharing and expressing competence, autonomy and creativity, while utilitarians may exploit the opportunity for enhancing discarded materials and exchanging techniques and tools to obtain the desired output. In general, hubs can increase feelings of relatedness and competence that lead to more internalized behaviors, i.e., more autonomy (Ryan and Deci, 2000). From a long-term perspective, public policy makers can then spend less effort encouraging upcycling through rewards/external control (e.g., tax reductions or fines), as the practice is likely to become more self-determined.

Upcycling could also contribute to social innovation processes (Jaeger-Erben *et al.*, 2015; Wegener and Aakjær, 2016), given altruistic values underlying the actions of educators. Hubs would move upcycling from an individual dimension to a collective one, extending the benefits found for the individual and the family unit to the whole community. These hubs could also act as 'education hubs' involving a 'citizen transformation': the involvement of families would lead the younger generations to be exposed to a transmodern way of acting and to experiment with the self-creation effect (Brunneder and Dholakia, 2018).

Policy makers can also evaluate the beneficial effect of integrating upcycling activities into education systems. While recent studies have highlighted the relevance of environmental education in school programs (So and Chow, 2019), others have contended that the current teaching of sustainability fails to actually change behavior, as it is focused on declarative knowledge through 'information intensive teaching' (Redman and Redman, 2014). Jørgensen *et al.* (2018) point out that waste reduction practices such as upcycling have an educational potential because they can also offer procedural, effectiveness and social knowledge, which are domains more associated with behavioral changes (Redman and Redman, 2014). Therefore, integrating upcycling into schools can effectively teach students to manage waste and, in particular, how to reuse (procedural competence). Finally, teaching upcycling can help internalize waste practices as behavioral norms, which then become normal and desirable everyday activities. As Jørgensen *et al.* (2018) suggest, upcycling in schools can be incorporated into artistic activities because waste education enables creativity and environmental issues to be connected, thus transforming waste practices into social practices. As the results of this study show, upcycling can be a pedagogical tool that facilitates the development of fantasy, intuition and curiosity. These tools can then be an entry point for learning about waste and ecology, also by leveraging empowerment motives. In addition, artistic activities involving waste can link schools to their local communities (i.e., if pupils collect waste for their artwork or bring scrap to the local municipality), thus creating synergies with local upcycling hubs.

The results of these investigations are also relevant for practitioners and managers. In addition to the positive effects of promoting such practices in work environments, firms can also do their part in supporting such environmentally friendly activities. Berthon *et*

al. (2007) identified the possible roles of firms in relation to creative consumers and Siano *et al.* (2014) conjecture a possible enabling role, like that of content provider. In particular, they can provide upcycling ideas to encourage waste valorization by consumers, in line with the suggestions of Wilson (2016) and Bridgens *et al.* (2018). Thus, firms can contribute to spreading eco-friendly consumption practices, and can gain reputational benefits from a more clearly identifiable sustainable identity. Furthermore, the ability of firms to create content that facilitates the consumer's self-production objectives could give credibility, make firms a 'trusted resource' (Pulizzi and Barrett, 2009, xviii). This ability could then give them specific skills in the sector to which they belong. Hence, this ability could make them thought leaders and fuel a positive reputation capable of guiding or strengthening consumer preferences (Siano *et al*., 2014), thus encouraging consumers to support them in the perspective of advocacy marketing (Urban, 2005). The role of content provider is in line with the marketing philosophy based on maximizing consumer interest, given its growing power. Firms can give advice, ideas, even if it means not to entice upcyclers to buy a company product. Acting in the customers' interests is, in fact, the way to get them to buy. Kumar *et al*. (2016), for example, highlighted that firm-generated content in social media has a positive effect on consumer behavior. Customers will also speak positively to others about the company and its products.

Furthermore, since a positive reputation acts as a 'guarantee' of the specialist skills possessed, it presupposes "a better ability on the part of the firm to apply for a subject capable of disseminating relevant content" (Siano *et al*., 2014, 6). Indeed, a firm with specialized skills is able to act as an editorial business. On the other hand, becoming a thought leader requires acting as a 'media company' (Brito, 2014), as digital

technologies have led to an information overload and a consequent deficit in the attention of the consumer who should, therefore, be attracted to interesting material, the publication of which is favored by social media, which allow firm-generated content addressed to the right audience, without using traditional media. Therefore, content marketing (Pulizzi and Barrett, 2009), through the creation and dissemination of information content (information, experiences, advice, knowledge), can make firms more competitive (Lee *et al*., 2013).

Firms should transform themselves into media companies establishing, firstly, a dedicated editorial team to drive content operations (Brito, 2014). Moreover, since online self-producer communities are characterized by participation, firms as content providers should emphasize the social aspect of the content, providing "social experiences based on shared content" (Oestreicher-Singer and Zalmanson, 2013, 594). This means supporting users to interact with other users and not just with the content and this is possible with the help of the community moderator both for generating ideas and for strengthening social ties. Hence, companies could provide relevant content such as upcycling ideas, by collaborating with the online community moderator.

In this perspective, firms do not act as a product provider but as a service provider and value facilitator, promoting servitization (Grönroos 2008). The focus of marketing shifts from tangible goods and activities to service intended as an expression of business skills (Lusch and Vargo, 2006), from which the customer benefits to feed their prosumption processes. This emphasis on intangible resources "fosters sustainability" (Vargo and Lusch, 2008, 35). The shift of production from the firm to the consumer implies, in addition, positive ecological effects as self-production, such as upcycling, has a lower environmental impact, for example, by avoiding pollution due to reduced product

transportation, than company manufacturing (Szaky, 2014).

In addition to providing upcycling ideas, firms can integrate consumer upcycling in the product life cycle through modular design, in line with the suggestions of Wilson (2016) and Bridgens *et al.* (2018), thus improving product longevity. By providing a sort of 'upcycling kits', alternative uses would be inscribed upstream in the product. This would allow firms not only to promote and encourage upcycling through ideas, i.e. at the level of the interface with the consumer, but to consider the practice as an option in the end-of-product life planning and part of the sustainability plan. In other words, the practice would constitute an option to create an upstream circular business model through an innovation at the design and development level (Urbinati *et al.*, 2017). Similarly, firms could integrate circular economy principles by marketing upcycled products, thus offering products made from waste materials, in line with Wilson (2016). In fact, redesigning and reassembling recovered waste for new items is considered a strategy to achieve circular economy in industry like fashion (Dissanayake and Weerasinghe, 2021). Furthermore, customization is indicated as a way to obtain circular economy because it favors the attachment to the product and therefore extending the life of the product, improves customer satisfaction (Dissanayake and Weerasinghe, 2021). The latter avoids "unsaleable overproduction" (Souren, 2003, 2). Studies have addressed the application of modular design techniques for the upcycling of leather waste (Hailu, 2021) and argued about technologies for customization such as 3D body scanning and virtual prototyping, that allow to check the design and fit of an item of clothing before making a purchase decision (Dissanayake and Weerasinghe, 2021). In the furniture industry, customization has been seen as a sustainable trend that, putting

consumers more directly in contact with manufacturers, also allows to mitigate the influence of retail buyers (Bumgardner and Nicholls, 2020).

Thus, firms could combine approaches to personalization and circular economy principles (in this case, reuse and, more specifically, upcycling), promoting customization as a driver for the diffusion of more sustainable consumption practices. For example, mass customization allows to produce customized goods for a mass market, through the principle of modularity: the product is broken down into predefined components (modules), based on the identification of customer needs and preferences (Pine, 1993). It is a process that combines variety and customization of the offer without increasing costs: the consumer can choose from a range of alternatives, the determination of which is predetermined by the company. Thus, firms could include alternatives consisting of waste materials, giving them new life. Products resulting from a customized assembly of components made from waste materials could then become a trend that leads to a change in taste and culture. The enhancement of the concepts of diversity and inclusion by the generation Y (Smith and Turner, 2015) is a factor that can prefigure this trend. More inclusive culture that characterizes generation Y, that is, could involve not only undervalued individuals but also discarded materials, leading to a mass customization based on waste rehabilitation.

Fashion, furniture or automobile are industries that lend themselves well to this type of mass customization as they are already characterized by an offer based on modularity and a strong creative drive. Constraints relating to the ability to predict quantities and sizes, for example, of the textile scraps supplied can be initially obviated by the use of limited-edition products, which do not require large quantities of materials and, in addition, have a semblance of unrepeatability that could make them even more

attractive. Finally, the assembly of modules should include the possibility of disassembly at the end of the product's life.

On the other hand, the typology proposed in the present work provides a useful tool for decision making in relation to the upcyclers, as it suggests that their strategies do not need to be oriented exclusively towards environmental topics. For example, for the utilitarian upcyclers who wish to save money, both support strategies (upcycling ideas or modular design products) would be effective, being relevant the attainment of this external benefit and not the autonomy with which to upcycle. It would be unlikely that this type of upcycler would buy upcycled products because this is equivalent to buying new items which, moreover, do not offer additional functions of use. Conversely, utilitarian upcyclers who desire uniqueness could positively welcome upcycled products for their aesthetic appeal as an intangible external reward. Instead, hedonists are unlikely to either purchase upcycled products or would not welcome stringent suggestions, since they gain pleasure from identifying and implementing autonomously different conversions of use. It would then be the task of the company to provide content or products that gratify the eco-creative and hedonist (by granting her/him the adequate degree of freedom, which is relevant to those who are intrinsically motivated). In addition, universalists would be interested only in proposals for content or modular products that exalt being eco-friendly, such as products involving mono-material outputs or eco-friendly assembly methods (without the use of glues) and stretching the life span of discarded materials. Obviously, eco-creatives, being intrinsically motivated, would accept a supporting role of firms only if it guaranteed an adequate degree of freedom, as for hedonists. Eco-creatives and ecologists could also evaluate the purchase

of upcycled products, given the benefits of keeping the materials in use and the possibility of using them to make others aware of the environmental benefits.

Although some upcyclers show forms of resistance to consumption, no oppositional attitudes towards firms have been detected. Conversely, branded products/content aimed at reuse would intercept their needs for keeping and valorizing materials. Similarly, parents would appreciate means that support their educators' role, but the purchase of upcycled products does not seem to go in this direction.

Customer initiation of co-creation with other customers should also be facilitated by firms by means of different types of incentives (Gruen *et al*., 2007). As Chen *et al*. (2018) highlighted, even if these initiatives are not firm-driven, the firm's enabling role in online communities could however facilitate to firm-desired outcomes at least in terms of consumer insights. For instance, the identified categories of products could also offer useful insights. Ecologists would be more interested in upcycling textile and clothing items, whereas who focuses on children learning would appreciate proposals related to games and toys.

Hence, firms can extract value in terms of consumer insight from the outputs made by upcyclers. Upcycling can reveal new opportunities in this sense, for example by indicating a particularly desired output or the characteristics that a certain input should have in order to be better upcycled. In line with Robson *et al.* (2019), the exploitability of creative consumers' innovation can be understood by considering their motivational and value orientation. Thus, the exploitability of upcycler's output may be higher when the motivation is extrinsic. This is because the output of those who are intrinsically motivated may be too creative to have high market potential (Robson *et al.*, 2019). Instead, when the practice is conducted to obtain a tangible reward, the output could

represent the response to a problem or gap in the existing offering. Moreover, the exploitability of the upcycler's output may also depend on the value orientation. In fact, the particularists' outputs do not have a significant market potential, because it could respond to that individual's own needs and, therefore, the potential to be limited. Conversely, when consumers upcycle with a more universalistic (biospheric or altruistic) orientation, the output could have a wider market potential. Thus, upcyclers ecologists, who are extrinsically motivated universalists and educators, altruists with mildly extrinsic motivations, could produce the most exploitable outputs.

The first step in learning from upcyclers by firms is to find and monitor them. Online communities as communities of practice can be treated as unstructured data sources. Alternatively, firms could support the formation of a community of this type by playing an enabling role by providing a technology platform to encourage the meeting of the upcyclers with each other. Further, firms could communicate their interest in upcyclers activities and enticing them to share their knowledge also by providing incentives (Hofstetter *et al*., 2018) (e.g., monetary rewards) to have insight for new products.

In summary, the typology of upcyclers may reveal new market segments that firms can serve. Ecologists appear to be the segments with the highest attractiveness, in relation to the variety of strategies that can be considered by firms (upcycling ideas providing, upcycling kits providing, upcycled products providing and output exploitability), utilitarians, educators and eco-creatives are moderately attractive, and the hedonist segment has low attractiveness, as their needs can hardly be satisfied by firms (figure 9).

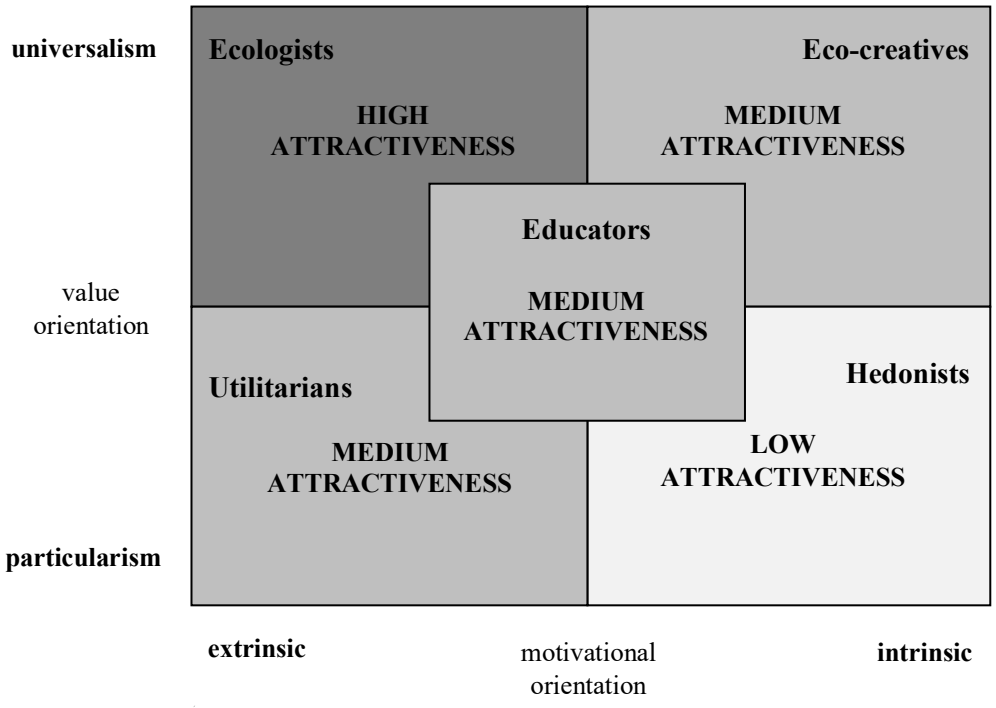

Figure 9 - Attractiveness of upcycler types as potential new market segments to serve

CHAPTER 3

The development of dynamic capabilities for the circular transition. Some evidence from textile and clothing firms

3.1. Overview of the chapter

In the previous chapter we dealt with the transition towards the circular economy focusing on the domain of consumption, through the study of a particular consumption practice. Continuing with a bottom-up approach, in this chapter we will deal with the domain of the firm, through the study of the conduct of some firms. We report the results of an empirical investigation in which the 'micro' perspective is applied to understand the development of dynamic capabilities for implementing the circular economy principles by firms.

Firstly, we present problems, reactions and possible solutions in the specific industry chosen as a research context. Indeed, circular economy represents a potential for sectors like the textile and clothing industry, being considered one of the most polluting but also, in certain countries, one of the most strategic assets.

Then, the chapter continues by exposing the theoretical framework adopted. The research aim is addressed through the integration of the theoretical lenses of natural resource-based view and dynamic capabilities framework, since the former constrains the competitive advantage to environment, offering strategies categories of analysis, and contemplates the dynamic capabilities framework, which offers capabilities categories.

Next, the method adopted is presented. The main characteristics of the Italian context favoring circular economy implementation are described along with the multiple-case study (nine case-firms of the textile and clothing industry) conducted.

The findings are reported, and then discussed, by proposing a natural resource-based view dynamic capabilities framework that is needed for a circular transition. Lastly, possible implications are argued.

3.2. The textile and clothing industry towards the circular transition

Increasing social pressure, significant transformations in several manufacturing industries and the desired transition to a circular economy are making the linear process of 'take, make, dispose' unsustainable. Thus, different approaches to reduce or exploit waste must be explored through new business models and the extension of product lifetimes (Charter and Keiller, 2014). Cutting-edge projects in industries such as the food sector provide alternative methods, which combine production with the minimization of energy and water usage and the reduction/valorization of waste streams (Lin et al., 2014), through university-industry collaboration (Morone *et al*., 2019), improving the efficiency of the food supply chain (Garcia-Herrero *et al*., 2018) or food sharing (Falcone and Imbert, 2017).

On the other hand, other sectors are facing the challenges and opportunities of a transition to the circular economy. The textile and clothing is a complex industry, characterized by a long supply chain (raw material fibre production, spinning, weaving, dyeing, clothing manufacturing, retail, use) (Koszewska, 2018). Along this supply chain

sustainability problems occurs. For this reason, it is considered one of the most polluting. As reported by EEA (2019), clothing, footwear and household textiles is the fourth highest pressure category for use of primary raw materials and water (after food, housing and transport) and it is the second highest for land use and the fifth highest for greenhouse gas emissions. About this, Ellen MacArthur Foundation (2017a) underlines that the industry significantly relies on non-renewable resources. Producing plastic-based fibres for textiles uses a few hundred million barrels of oil every year and the production of cotton requires tonnes of pesticides and fertilisers annually. Chemicals used in the production processes for fibres and textiles, such as dyes or finishing treatments, also account for a significant amount of resource use. Textile production causes 4% of global freshwater withdrawal. Two thirds of them are used to clothes. Cotton and wool production have a high impact on arable land. The increasing demand for land for food production, due to the growing global population, could prevent land for cotton and wool in the future. The greenhouse gas intensity of textiles is high, with the production of 1 tonne of textiles generating 17 tonnes of CO2 equivalent (compared to 3.5 tonnes for plastic and less than 1 tonne for paper).

The intensive use of resources in the production processes has been recognized in the clothing industry (Paras and Curteza, 2018), exasperated by fast changing fashion dynamics that requires rapid acquisition of produced items, more collections per year and their rapid disposal (Todeschini *et al*., 2017).

Ellen MacArthur Foundation highlights that "High volumes of non-renewable resources are extracted to produce clothes that are often used for only a short period, after which the materials are largely lost to landfill or incineration. It is estimated that more than half of 'fast fashion' produced is disposed of in under a year" (2017a, 36). Hence,

clothing is underutilised and after it is used, almost all the value in the materials they are made from is lost (87% of the fibre). In general, the creation of post-industrial, pre-consumer and post-consumer waste is an issue faced (Koszewska, 2018).

Non-profit organizations are increasing the awareness about the negative impacts of the industry. Greenpeace has focused on hazardous chemical use through the Detox campaign. Fashion Revolution, a global movement, has created a campaign to change the way to produce and consume clothes through the Fashion Revolution Week. The 2019 status report by Global Fashion Agenda, a non-profit organization created to accelerate the transition to a circular fashion system, signals a difficulty to achieve the objectives set. It is reported that only 21% of the objectives of the '2020 Circular Fashion System Commitment' (launched in 2017) have been achieved by more than 90 partner companies. The established firms' attention has focused on four issue (Global Fashion Agenda, 2019): implement design strategies for cycling (ciclability design), increase the volume of used clothing collected (collection), increase the volume of used clothing resold (resale), increase the sharing of clothing produced from recycled post-consumer textile fibres (recycling).

Ellen MacArthur Foundation (2017a) has summarized the benefits of circular economy on businesses and the ambitions of a new textile economy. Firstly, it creates additional profit opportunities for businesses through new services. For example, new rental models allow to build long-term customer relationships. Second, firms would avoid the negative impacts of the industry, that expose to a reputational risk and to actions by regulators, which can affect the profits. Third, circular economy represents a new source of innovation, a spur for new ideas that would redirect the focus of innovators, by developing new and improved materials, processes, and services. Fourth, additional

economic growth is possible from circular activities through growing the most restorative and regenerative parts of the value chain, particularly those that make more productive use of material inputs (mainly through higher rates of clothing utilisation and recycling of materials). While some sectors (e.g. the production of virgin materials) could expect reduced revenue, overall income would be expected to increase, which could boost economic growth.

However, the textile and clothing sector is still unfamiliar with the circular economy (Saha *et al*., 2021). One of the first problems identified is the pollution (by waste gas, wastewater with chemical substances) (Hasanbeigi and Price, 2015). Moreover, closing the loop and multiple product lifecycle is pointed out as a logic to achieve a sustainable business model based on circular economy, even though technological limitations are indicated as an obstacle to the full application, due to the difficulty of recycling and separating garments made of mixed fibers (Pal and Gander, 2018). On the other hand, the development of technologies is discussed both for mechanical and chemical and biological recycling processes in closed-loop textile recycling (Ribul *et al*., 2021). However, only the firms economically sustainable can invest in green technology (Saha *et al*., 2021). Socioenvironmental benefits of circular economy in the textile and clothing sector have been little investigated. Baruque-Ramos *et al*. (2017) highlight the potential of reuse and recycling industry for income generation and local creative industry generation.

In the extant literature, drivers, practices, opportunities/challenges have been explored (Aakko and Koskennurmi-Sivonen, 2013; Moorhouse and Moorhouse, 2017; Jia *et al*., 2020; Franco, 2017) and the need of development and application of capabilities concerning circular economy domain has been highlighted both in strategic

management (Urbinati *et al*., 2017; Centobelli *et al*., 2020) and sustainable entrepreneurship (Santini, 2017) domain.

3.3. A theoretical framework: natural resource-based view and dynamic capabilities

A theoretical framework that takes into account the connection between an organization and the natural environment (Hart, 1995; Hart and Dowell, 2011) and that focuses on how to transform business models at the micro level is the natural resource-based view (NRBV), which constrains the competitive advantage to "capabilities that facilitate environmentally sustainable economic activity", rare, tacit and socially complex (Hart, 1995, 991). Hart identifies three key strategies: pollution prevention, product stewardship and sustainable development. Pollution prevention concerns the reduction upstream of emission and effluents during the manufacturing process and not only the control at the 'end-of-pipe'. While this deals with production and operations, product stewardship concerns the reduction of the environmental impacts in the entire product lifecycle, from choice of raw materials and product design to disposition of used materials. As part of this strategy, in addition to product design, the creation of closed-loop processes, where the products return upstream to recover their value, has been proposed (Miemczyk *et al*., 2016) also for clothing firms (Ashby, 2018). On the other hand, González-Torre *et al.* (2010) argued environmentally oriented reverse logistics needs the development of internal capabilities to enable firms to achieve a real competitive advantage. The third strategy was originally sustainable development (Hart,

1995), later distinguished into clean technologies (Hart, 1997) and base of the pyramid (Hart and Christensen, 2002). The former does not reduce negative effects but points to create positive ones through minor consumption and does not concern current products and processes (such as the first two strategies) but the future technologies capable of revolutionizing an industry (Hart, 1997). In the automobile industry, the difference between product stewardship and clean technology has been addressed in terms of incremental versus radical technology innovation (De Stefano *et al*., 2016). Finally, base of the pyramid represents the social dimension of sustainable development (Hart *et al*., 2016) and should be aimed at testing innovations by entering new emerging markets (London and Hart, 2004). Studies have proposed the addiction of other strategies, such as 'local philanthropy', i.e. the support of social issues in local community (McDougall *et al*., 2016; 2019). Moreover, it has been showed that NRBV strategies can be realized in any order, as there is not necessarily a hierarchal sequence of stages, for this reason the need to explore NRBV resources in practice and pertinently to specific firms contexts has been highlighted (McDougall *et al*., 2019). The first three NRBV strategies have been indicated as important practices to achieve circular economy in the textile and clothing industry (Jia *et al*., 2020).

A key insight from Hart (1995) is that the NRBV should incorporate dynamic capabilities (Hart and Dowell, 2011). Teece *et al*. (1997) proposed the concept of dynamic capabilities as "the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environment" (516). Teece (2007) further explicates that dynamic capabilities can be disaggregated in the capacity as "(1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to

maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the firm's intangible and tangible assets" (1319).

Dynamic capabilities have been considered mediating variables between entrepreneurial resources and firm performance (Wu, 2007) and Wu *et al*. (2013) argue that their development and application is essential to achieve firms sustainability. Further, Zahoor and Lew (2021) highlight the mediating role of dynamic capabilities on the combined effect of entrepreneurial orientation (proactive, risk-taking, and innovative behaviors) and alliance orientation (to scan environment for partnering opportunities, coordinate alliance strategies, and learn from alliance experiences) on international performance of sustainable SMEs firms. Khan *et al*. (2020) identify the microfoundations of dynamic capabilities in successful growing-circular business cases. The Lathi *et al*.'s (2018) review points out that the theoretical perspective based on firm capabilities and resources can be among the most fruitful ones for future research on circular economy. Miemczyk *et al*. (2016) underlined there has been little research bringing dynamic capabilities and environmental strategy together, including pollution prevention, product stewardship and sustainable development.

Given the profound environmental problems in the textile and clothing sector and, therefore, advisability in adjusting the circularity of the players with development of capabilities, such a framework seems to be suitable. Moreover, since NRBV focuses both on how to achieve economic and environmental performances, it is applicable to any player, born-circular and growing-circular firms. Finally, circular economy is closely linked to environmental dimension, but a social aspect seems to emerge, thus NRBV takes into account also this element. The figure 10 summarizes the integration

between NRBV strategies and dynamic capabilities as a lens through which to investigate circular economy transition.

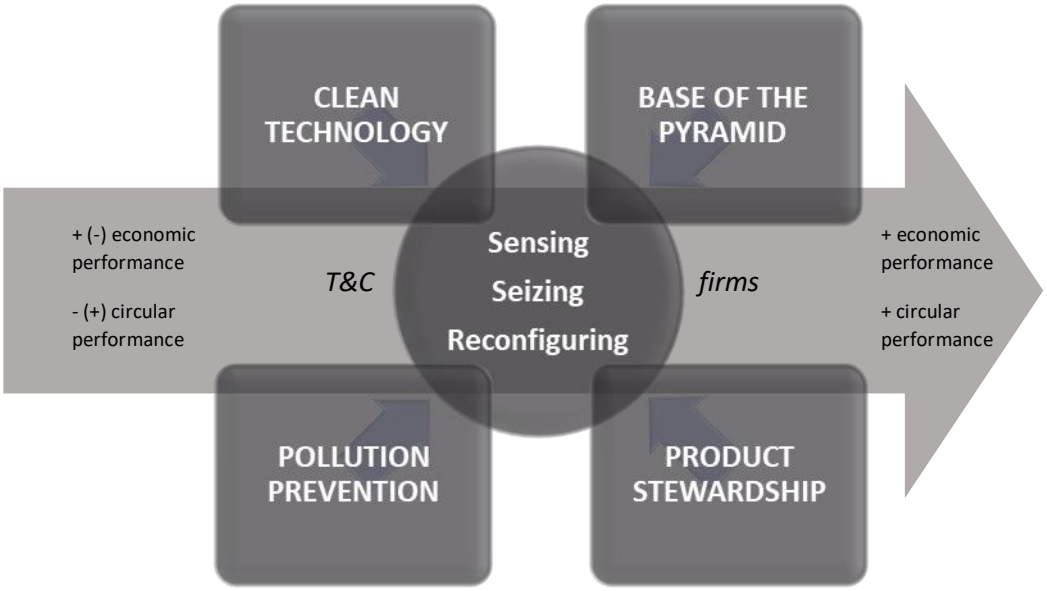

Figure 10 - Circular transition through the integration between NRBV strategies and dynamic capabilities

Thus, our research questions are divided as follows:

RQ1: What are the strategies (of pollution prevention, product stewardship, clean technology and base of the pyramid) in the textile and clothing firms?

RQ2: For each of these strategies, what are the activities to sense and seize circular economy opportunities and what are the resources to be reconfigured to address them in the textile and clothing firms?

The responses to these questions can contribute to both circular economy and strategic management literature, by exploring how textile and clothing firms, born- and growing-circular, are implementing circular economy, that is, what strategies and capabilities these firms are developing to address the circular economy transition. In other words, we aim to explore how they achieve both environmental and economic performances,

thus underpinning their competitive advantage and contributing to the circular transition of the textile and clothing industry.

3.4. Method

To address our research questions, a multiple-case study was adopted. Case study is a method to investigate contemporary phenomena (the cases) in-depth, within their real-world context, relying on multiple sources of evidence (Yin, 2018). Multiple-case study provides more robust conclusions (Herriott and Firestone, 1983) than single-case study and it is based on a replication logic among cases (Yin, 2018). Since our phenomenon is examined through theoretical lens of NRBV and dynamic capabilities, our effort is to explore empirically 'how' textile and clothing firms embrace circular economy, namely, explore if there are and what are the case firm positions about strategic capability categories and how it is concretized. Case study research consents a deeper investigation, able to bring out capabilities that can be tacit. This would have been more difficult to achieve through quantitative measures.

Research context

The textile, clothing and fashion sector is one of the most strategic sectors of "Made in Italy": 45.000 companies with approximately 398.000 employees and a turnover, in 2018, of 55 billion euros, which represents 30,9% of the European textile, clothing and fashion sector (Confindustria Moda, 2019).

The industry chain is made up of different actors: producers of fibres and yarns, textile manufacturers, clothing manufacturers (which are largely big brands), distribution (Bianchi *et al*., 2001). The Italian context is characterized by a district vocation, defined by a networking nature and a geographical proximity, which are considered ideal elements for implementing circular economy (Mazzoni, 2020). Networking nature can help adopt solutions that a firm alone is unable to adopt, as well as it can influence the sharing of knowledge on environmental issues, for example. Geographical proximity implies sharing of knowledge, learning-by-interacting, that improve the possibility to adopt innovations. Also, implementation of circular economy opportunities in the Italian industry could be favored by a strong competition from recently industrialized countries, which has also generated a significant relocation of production activities and a marked reduction in employment levels (ICESP, 2020). Moreover, recent EU norms on the circular economy (EU directive 2018/851) could have an impact on all European manufacturing in encouraging such practice. Other factors, such as the non-direct availability of natural fibers, which are almost always imported from foreign producers, and significant increase in textile waste due to fast fashion dynamics point out the potential for the recovery of waste and textile products, which would allow the transformation of current business models as well as bringing advantages from an environmental point of view (ICESP, 2020).

A multiple-case study was conducted on nine textile and clothing Italian firms chosen from well-recognized sources that list successful circular economy business cases of Italy. They are a source promoted on Ministry of the Environment website, and that is the Fondazione Symbola's reports: "100 Italian circular economy stories" (2018; 2021), a source indicated by SistemaModaItalia and that is the online platform of Business

Europe (Circulary.eu), the online mapping platform "Atlante italiano dell'economia circolare" (Economiacircolare.com), that lists Italian companies, research centers, associations and public administrations committed to promoting circular products or services and, finally, the Italian Circular Economy Stakeholder Platform's report (ICESP, 2020).

In order to be representative of the textile and clothing sector on the whole, this study is inclusive of Italian firms of any size or position in the supply chain. To identify Italian textile and clothing cases, it was chosen firms that exhibit some experience in the context of circularity (hence, attributable to at least one of the categories of the NRBV, given the difficulty of finding successful examples regarding all categories), favoring, where possible, those that were cited by multiple sources. Moreover, firms representing the two types of market player (born-circular and growing-circular firms) and the two types of material flow were further selection criteria. In the circular economy, the latter are biological nutrients and technical nutrients (Ellen MacArthur Foundation, 2013) and, specifically, case firms concern wool and nylon 6.

Data collection and coding procedures

In-depth interviews to senior managers and secondary data analysis of archival sources, such as corporate sustainability reports and firms' websites (when reports were not produced), were used as sources of evidence (table 1). Sustainability managers were preferred. When not available or present, CEOs and Founders were chosen as a priority because they offer adequate information on the implementation of circular economy strategies thanks to their overall knowledge of the company.

Table 1 - Description of evidence sources (with indication of the number of report/website pages analyzed and duration of the interviews)

Case firms	Evidence sources	Interviewees
A (born-circular)	Interview Corporate website (7pp)	Founder (80min)
B (born-circular)	Interviews Corporate website (18pp)	Founder (30min) Product development manager (80min)
C (born-circular)	Interview Corporate website (1p)	Founder (55min)
D (born-circular)	Interview Corporate website (1p) 2020 Corporate sustainability report (24pp)	Founder (50min)
E (born-circular but not start-up)	Interview Corporate website (11pp)	Head of innovation and sustainability (60min)
F (born-circular but not start-up)	Interview Corporate website (6pp) Integrated supply chain website (3pp)	General manager (40min)
G (growing-circular)	Interviews 2019 Corporate sustainability report (164pp)	Sustainability manager (60min) Environment manager (60min) Product development innovation Manager (52min)
H (growing-circular)	Interview 2019 Corporate sustainability report (24pp) 2019 Non-financial report (100pp) Clean technology brand website (6pp)	CEO (50min)
I (growing-circular)	Interview Corporate website (3pp)	Founder (68min)

The different firms and informants were approached by email or LinkedIn to ask for an interview as well as to set tentative interview dates and times. The aim of investigation was provided, and anonymity guaranteed. The interviews took place between June 2020 and January 2022, they were non-structured (only an interview guide was followed), and generally lasted from 30 to 80 minutes. All interviews were carried out using a videoconferencing software and were recorded and transcribed.

A qualitative analysis took place following an iterative process. Sentences or paragraphs from an interview were grouped into categories in an inductive manner resulting in first-order codes (Corbin and Strauss, 1990). Then, any other interview and secondary data for each case were added to the analysis. It was searched for the strategy categories

(pollution prevention, product stewardship, clean technology and base of the pyramid) that could be supported by data with first order codes and for each of these, the position in relation to the three capability categories (sensing, seizing and reconfiguring activities). These concepts were used to build second-order codes. In some cases (product stewardship and clean technology), data with first order codes were grouped into one intermediate category (e.g., market monitoring) or two intermediate categories (finding strategic partners and closed-loop supply chain approach).

Our reported results were back-translated into English.

3.5. Findings

The findings are described in this section, divided by NRBV strategy. They are summarized in the table 2.

Pollution prevention (PP)

Some pollution prevention sensing activities were noticed. All case firms share a proactive approach to the environment (PP/SENa) represented by desire to recycle or using packaging and logistics more sustainable, improve resource efficiency, but above all by conceptualizing sustainability and circularity:

> «we closed for four days together with a consultant from a company specialized in sustainability and we tried to understand what it could mean for us»

Internal and external environmental audits (PP/SENb, PP/SENc) are used to identify improvement to avoid waste:

> «we are EMAS 14000 and 18000 certified […] every year we have audits carried out by a third party […], for the renewal of the certification or for maintenance. Besides that, we also do internal audits»

Environmental management systems (PP/SEIa) are employed to implement sensed activities about waste materials, water and energy consumption:

> «We also have an integrated environment and safety management system and therefore we have implemented a series of procedures»

Employee training (PP/SEIb) is pointed out as a means to avoid waste, as well as the adoption of initiatives to promote pro-environmental behavior (PP/SEIc) among these:

> «to gradually eliminate disposable plastic products from offices [...] Various initiatives have been implemented, such as the adoption of reusable water bottles, [...]»

The assumption of commitment to the environment (PP/REa) is reclaimed as a reconfiguring activity:

> «there is a very important commitment on the part of the family and shareholders»

It resulted in an organizational restructuring which saw the addition of a dedicated unit (PP/REb):

> «The first thing we did was to create a business unit within the company that began to deal with sustainability and the circular economy»

Such a unit allows a continuous improvement of internal operations (PP/REc):

> «More and more efficient processes. Over the past four years, the Group has managed to significantly reduce its greenhouse gas emissions»

Product stewardship (PS)

Some product stewardship sensing activities were noticed. According to Khan *et al.* (2020) market monitoring (PS/SENa) has a role in learning circular economy opportunities. Competitors' action is focused both for taking inspiration and sensing gaps in their offering.

> «our competitors have been the lever for having built a Re3 [model of circular economy designed by the company]. […] We needed […] a model that was unique on the market. [...] as long as we were promoting recycled materials, well, one of many, but with Re3, there is none»

Public policies are also monitored, both at European and local level, to achieve useful information or incentives.

> «We had this idea in 2014/15 when the first directives of the European Community to create circular economy hubs were born and therefore [...] we drew directly from the regulations»

Moreover, openness to listening to customer needs is fundamental for some of the case firms. Indeed, a case firm monitors the online community of end customers, while business customers transmit upstream requests from the green end consumer, and these constitute the first step in generating ideas.

> «we had an important brand that asked us to create such a platform [certified supply chain]»

> «we monitor […] the requests that arrive from our [business] customers in the field of sustainability, […]. We then go on to segment them according to the type of request, […] from which country they come, how many customers ask for them. This is a very important input, because […] it allows us to know how to behave»

Sharing information or know-how within or between industrial districts does not emerge and the experiential learning (Khan *et al*., 2020) (PS/SENb) occurs only by networking with industry platforms (Euratex, Confindustria Moda, SistemaModaItalia) for knowledge sharing.

> «we are part of the Confindustria Moda sustainability committee. [...] this also gives us the opportunity to deal with entities such as EURATEX and to know in advance what will be the big decisions that are taken at the European level»

Furthermore, experiential learning occurs through life cycle analysis, a tool used to analyze the environmental impact of a product, activity or process along all stages of the

life cycle, by quantifying the use of resources and emissions into the environment. It permits to identify areas for improvement (or improved).

> «[our] products are […] characterized by a complete […] assessment of their raw materials through: […] Life Cycle Assessment […]. [firm's name] commissioned these studies to identify areas for improvement aimed at minimising the environmental impact throughout its product's entire life cycle»

Ideas generation (PS/SENc) takes place envisioning circularity in different ways, pragmatic or puristic: adapting the materials to the product or viceversa, in order to obtain the ideal solution for marketability.

> «we have tried to make choices that are, on the one hand, aware, on the other, not excessively compromising [for a growth perspective]. […] it is impossible to regenerate them [the fibers] if you then have a mixed fiber. [… but] if we only use 100% material, we are not going anywhere. […] women's swimwear […] you can't make them»

> «Normally a collection is studied according to the needs: what material do I need? […] We use the opposite system. I have this sustainable material […]: what products can I make with it?»

The process of ideas generation occurs involving suppliers, to stay up to date on trends in new regenerated or recycled materials or to quickly test new ideas.

> «it is they [suppliers] who come to us and say "we are starting to think about this. What do you think?" They are the ones who propose news to us.»

Also end consumers can be involved in the process, through the testing phase of the idea. One of the case start-ups firms adopts pre-order as a means, which at the same time allows to direct production efforts only on the most welcome garments and avoids overproduction (which would lead to the consequent production of pre-consumer waste). This also offers quality advantages.

> «When we launch a new product, we put it on pre-order to be able to understand the demands of the market and avoid producing more than is necessary. Producing small quantities also allows us to better follow the production of the garment and its quality.»

A sensing activity of the case established firms is involving start-ups (or research centre) to learn innovative solutions and/or internal brainstorming sessions.

> «[We created the] "I think circular" competition, dedicated to start-ups and research centers, to reward innovative ideas in the field of the circular economy»

> «an internal brainstorming is born between the research part and the operational part»

Finally, case firms conduct research for new products (PS/SENd), focusing on design and development, favored by vertical integration, in one case.

> «[to] develop new materials starting from a yarn [...] we do more tests, more tests of different types of products, until we find the one that seems most suitable to us to develop garments or accessories that we believe are right»

> «This is a company that has in hand not only the production process but also what is upstream and what is downstream, [...] All this gives us a movement, at the level of levers, to be able to change the product , which is unique!»

Seizing activities were noticed. One of these is to (re)design business models, e.g. introducing new lines of products. Fundamental is, hence, to acquire recyclable/recycled materials (PS/SEIa), seeking out certifications and accreditations as well as carrying out environmental supplier auditing and selection.

> «we use SEAQUAL™ polyester […] one of the most certified and respectful fibers on the planet. […] ECONYL® regenerated yarn […]. Our shipping bags are biodegradable and compostable and […] certified by TUV AUSTRIA»

> «[the suppliers] are all mapped within the platform that we have […]. Furthermore, we have dashboards that give us feedback, in a rating, of our suppliers.»

By two growing-circular firms, cooperative supply chain was also built through the development of supplier qualification protocols indicating the requirements for achieving specific environmental performance levels, relating to those phases of the production process not controlled by the firm (for example, supply of transport services, raw materials, packaging).

> «[firm name] has started a project to make the supply chain even more virtuous. This is how the "ECONYL® Qualified" qualification was born, attributed to those suppliers […] that stand out for their compliance with specific environmental requirements.»

Beyond that, almost all case start-up firms seize circular economy opportunities designing new business models based on multiple strategies for material/product lifecycle extension, keeping it in use as long as possible at the highest level of value

(Ellen MacArthur Foundation, 2017b): not only by using recycled ingredients in the production process but also reselling or reusing.

For this reason, strategic planning finding strategic partners (Khan *et al*., 2020) plays a key role. It is considered essential to find distributors who act as a collection point for used clothing, as well as companies that are authorized to transport and manage them in order to circumvent the regulatory obstacles. The latter requires treating used clothing only as waste and allows the implementation of different strategies for keeping in use products/materials (donation, second-hand sale and regeneration). Finding traditional firms that have a know-how capable of ennobling the regenerated material is also considered a strategic activity.

> «for the collection of used items, we could not have done it because it is textile waste and, therefore, takes the tour of waste disposal, special transport, storage places required by ARPA for the storage of various materials, etc. [...] We had to find the channel to be able to do it, [...] The only cooperative near us that could do it, and it is the only one in Italy, the [cooperative name]»

> «There was a need for a partner who knows how to make an important beautiful and performing accessory and this is [firm name]»

A closed loop supply chain approach (PS/SEIb) is needed for the two case producers of regenerated fibers/yarns to source used textile products. In particular, involving business customers, namely, clothing manufacturers, in pre-consumer waste sourcing is part of a strategic planning as this also allows to satisfy the demand of growing-circular customers for their direct involvement in the reverse supply chain (to show the end consumer a greater commitment to sustainability, in addition to acquire recyclable/recycled ingredients).

> «[the collaboration with us], on the one hand, allows "brands" to return scraps [...] and, therefore, can declare that their production does not pollute and therefore is sustainable and, on the other hand, by buying [our] end products they can buy products made even with their scraps and thus become circular»

Involving end consumers in take-back programs is another key point in the strategic planning for five case firms. A collaborative circular economy allows to engage green consumers to recover post-consumer waste and guarantee a source of used textile products.

> «There are four players with whom we try to create true circularity, namely, (1) the end customer, who is encouraged to bring the jeans to the stores [...]»

As in the previous case, the same two producers develop collaborative circular economy programs starting from a demand of clothing manufacturing customers.

> «the "brand" needed to involve its end consumer in a circular economy project [...] because it is a natural consequence [...], that is I become circular and I want my customer to become circular»

In addition to the supply chain, a closed loop approach is also experimented at the internal level (McDougall *et al.*, 2016) (PS/SEIc) by a growing-circular firm. Indeed, processing waste is re-incorporated into the production process.

> «the so-called by-products […] are collected, processed and destined for other productions.»

Moreover, for the born-circular firms, strategic planning means, firstly, establishing a strategy for sustainability which consists in the use of local suppliers (PS/SEId), i.e. a short supply chain, in order to reduce CO2 emissions. According to the case firms, this avoids a trade-off between use of alternative materials and pollution prevention.

> «It would not have made any sense to use the materials with the lowest environmental impact available on the market to then produce our garments in Asia, contributing to the production of tons of CO2»

In addition, it allows to follow the supply chain and to do it in a more agile way:

> «this approach allows us to be agile and flexible and to see […] the supply chain with our own eyes. Furthermore, we can thus also produce outside the logic of storage, favoring small quantities and pre-sales»

Some reconfiguring activities were noticed. By collaborating with established small firms characterized by high know-how but low environmental awareness, case start-up firms construct sustainability culture (Khan *et al*., 2020) in the supply chain (PS/REa), while growing-circular established firms construct mutual goals in the supply chain (McDougall *et al*., 2016) (PS/REb).

> «We try to push them [suppliers] to implement processes that they have not had to date ... to make them understand that these are important and to make them understand that they too need to change the way they work, in some cases»

> «In order to be able to create circular supply chains, [...] with its [business] customers and suppliers [company name] establishes solid relationships, based on commitment and the desire to improve together.»

Finally, case firms adapt to best practices. They adopt new business practices (Khan *et al*., 2020) (PS/REc) such as improved transparency by implementing traceability systems. This also through digitalization, able to certify the raw materials from which an end product is made and the destination of a post-consumer waste collected through take-back programs.

> «Digitization, if properly developed, can help, by tracing, for example, products and processes, to generate circularity.»

> «we are trying to give a traceability to this process, […] which is traceable with various systems, such as block chains, and so on.»

Clean technology (CT)

Clean technologies are adopted by two case firms and concern production systems defined as "regeneration" and the development of synthetic fibers from renewable rather than fossil sources (bio-polyamide, bio-polyester). They respond to the second principle of the circular economy ("keep products and materials in use") but also to the first ("design out waste and pollution") and the third ("regenerate natural system") (Ellen MacArthur Foundation, 2017b) with the introduction of disruptive innovations in a circular perspective. A case firm, on the other hand, has developed an enabling software for the selection and cataloguing of waste textile materials, suitable for recycling or product upcycling.

A proactive approach to technology (McDougall *et al*., 2016) (CT/SENa) seems to be a fundamental capability to sense innovations from other sectors to be applied to the textile sector and to be made more efficient:

> «we recognized that we had an opportunity with respect to those who produces other fibers or other polymers. That is, the fact that our fiber, our polymer could be depolymerized.»

Again, market monitoring (CT/SENb) is used to learn market trends and grasp changes in consumer habits in the direction of a more positive perception of products made from waste materials:

> «we had to understand if the market was receptive to this kind of product.»

The development of clean technologies also derives from listening to specific customer requests:

> «this innovation is dependent on market demands, from what the brand partner requires us»

To be inspired by the experience of virtuous customers (CT/SENc) can be an additional sensing activity:

> «our major [business] customer who helped us start our journey [...] began to theorize a so-called regenerative company, which no longer pollutes»

Finally, monitoring the legislative trends (CT/SENd) made it possible to identify potential threats to the survival and solutions that align the firm with the laws protecting the environment:

> «we realized that if we had continued to do what we are doing, the way we once did, we would have had a problem, precisely because [...] the legislator [...] [is changing the] way of legislating, in perspective of preserving our planet»

Relying on externals (CT/SEIa) is dominant to implement opportunities sensed. Indeed, case firms collaborate with research institutions and participate in consortia:

> «The participation and promotion of research projects at national and international level, in collaboration with research centers and leading companies worldwide, is another area in which the Group stands out.»

Internal collaboration (CT/SEIb) is another seizing activity highlighted by firms.

> «every time we get a product to be recycled […] we literally have to invent the technologies to take it apart, […] because very few scraps arrive pure. […] because there are no machines to disassemble products, you have to invent them»

A change of identity and vision (CT/REa), followed by a strong commitment to design out waste (CT/REb), are reconfiguring capabilities detected during the analysis. For example, starting to see waste as a 'treasure', becoming a leader "at the forefront of one's sector", imagining the circular transition as technological innovation-driven not requiring the consumer to change his habits.

> «the first thing we changed was ourselves and then we had to work to create the technologies that could respond to this future»

> «Changing the world by producing new things is not such a simple thing. On the other hand, changing the world by producing today's products in a different way is a little easier»

An organizational restructuring with addition of a unit or with the enhancement of the research and development department (CT/REc) was conducted by two firms.

> «Introduction of the "Energy & Recycling" operating unit which develops and promotes projects, technologies and skills to improve the environmental performance of products and processes»

In a case, a technological upgradation (Khan *et al*., 2020) became necessary through the acquisition of a new plant (CT/REd).

> «With regard to feeding the process using materials [...] recovered at the end of their life cycle, the process involves the implementation of some pre-treatment phases at two newly built plant»

Base of the Pyramid (BoP)

Three sensing categories can be identified. Almost all case firms feel a social responsibility, thus they undertake to "give something back to the community". In fact, three case firms think of themselves as benefit enterprises (BoP/SENa). This promts them to seek social enhancement initiatives.

Another sensing activity consists in listening to the requests of business customers (BoP/SENb), helping them to achieve their sustainability goals:

> «one of our [business] customer [...] wanted to associate a social activity with a [environmental] sustainability activity»

Alternatively, someone exploit relationships or affiliation with charitable or environmental organizations (BoP/SENc) to identify/develop projects to support (McDougall *et al*., 2016).

> «I had contacts with associations in the area and with them we evaluated the possibility of creating projects»

As BoP seizing activity, a holistic approach (circular economy principles combined with social responsibility) is in some cases concretized with a benefit corporation certification (BoP/SEIa) or a legal status of a benefit corporation (BoP/SEIb), which allow reputational and demonstrative advantages for the commitment promised and/or profuse. It is of little surprise for start-ups, being this a key issue in born-circular firms (Zucchella and Urban, 2019), but it emerges also in a growing-circular case firm, where benefit corporation certification represents an evolution of CSR management.

On the other hand, as already noted by McDougall *et al.* (2016) with regard to the UK food sector, even BoP strategies of the textile and clothing case firms are not aimed at testing innovations by entering new markets, that is, they are not socially driven market entry strategies, as instead claimed within the NRBV (London and Hart, 2004). Indeed, only one interviewee speaks of initiatives related to global sustainability. They concern

awareness of the collection of specific waste in areas of Indonesia or Africa through training programs (BoP/SEIc) that, at the same time, create sources of supply of secondary raw materials for the company and support the economies of those areas with the creation of a potential new market.

> «We work with them to show them how to divide the various types of fishing nets, how to pack, weigh and sell them. […] We pay for their work of collecting the nets»

Another interviewee reports that, while not actively operating in global sustainability, the training of their suppliers located in backward areas of New Zealand also has a social function, because it favors the adoption of best practices also by other players characterized by geographical proximity, contributing to an emancipation of the whole area:

> «we go to periodic coaching for all breeders [...] and some of the breeders are promoting others to help them evolve»

BoP strategies are mainly present at a local and not global level, as instead claimed by London and Hart (2004). They are aimed at enhancing the local territory (creating job opportunities, recovering local industrial know-how, supporting local social and environmental causes). Enhance the local territory is achieved through a zero kilometer fashion, that means using only local suppliers (BoP/SEId).

> «We chose this name "KM 0" because it represented the artisans who invented […] the method of regenerating old garments. Furthermore, […] because we "re-do" a craft of [our] tradition that […] was disappearing.»

At the same aim, firms also indicate the importance of creating or maintaining relations with externals (e.g., non-profit organizations, government agencies) (BoP/SEIe) not only to sense BoP opportunities but also to seize local philanthropy (McDougall *et al*., 2016, 2019):

> «The good relational network built allows us to manage [...] events which then find the most complicated part in the management of bureaucratic practices (permits from the municipality, interface with the offices that manage waste locally, etc.).»

Regarding reconfiguring activities, as a result of listening to the requests of business customers, a joint planning with them for social objectives (BoP/REa) is an activity that transforms their relation in a partnership:

> «strengthen collaboration with customers [...] through: [...] involvement in awareness-raising activities on sustainability and the circular economy»

A case firm decided on an organizational restructuring not only by starting relationships with externals but also founding a non-profit organization (BoP/REb) to better contribute to raising awareness of waste issues:

> «we have created a non-governmental organization [...] these are all activities that are not economic but which serve to create awareness of the problem and that there is a remedy»

Table 2 - Summary of findings

	SENSING	SEIZING	RECONFIGURING
PP†	**PP/SENa** proactive approach to the environment **PP/SENb**internal environmental audits **PP/SENc** external environmental audits	**PP/SEIa** environmental management systems **PP/SEIb** employee training **PP/SEIc** initiatives to promote pro-environmental behavior	**PP/REa** commitment to the environment **PP/REb** addition of a dedicated unit **PP/REc** continuous improvement of internal operations
PS†	**PS/SENa** market monitoring ○ competitors' action ○ public policies monitoring ○ business customers' needs **PS/SENb** experiential learning ○ networking with industry platforms for knowledge sharing ○ life cycle analysis **PS/SENc** ideas generation ○ envisioning circularity ○ involving suppliers ○ involving end consumers ○ involving start-ups ○ internal brainstorming sessions **PS/SENd** new products research	**PS/SEIa** acquisition of recyclable/recycled textile materials ○ seeking out certifications and accreditations ○ carrying out environmental supplier auditing and selection ○ development of supplier qualification protocols **PS/SEIb** closed-loop supply chain approach ○ finding strategic partners (used clothing collection points, used clothing transport, high quality manufacturers, business customers/ end consumers to be involved in take-back programs) **PS/SEIc** closed-loop approach at the internal level **PS/SEId** use of local suppliers	**PS/REa** construction of sustainability culture in the supply chain **PS/REb** construction of mutual goals in the supply chain **PS/REc** new business practices ○ traceability systems and certifications ○ digitalization.
CT†	**CT/SENa** proactive approach to technology **CT/SENb** market monitoring ○ market trends ○ business customers' needs **CT/SENc** experience of virtuous customers **CT/SENd** legislative trends monitoring	**CT/SEIa** collaboration with externals (e.g., research institutions) **CT/SEIb** internal collaboration	**CT/REa** vision **CT/REb** commitment to design out waste **CT/REc** addition of a unit **CT/REd** acquisition of a new plant
BoP†	**BoP/SENa** benefit enterprising **BoP/SENb** business customers' and distributors' needs **BoP/SENc** relationships or affiliation with charitable/ environmental organizations	**BoP/SEIa** benefit corporation certification **BoP/SEIb** benefit corporation **BoP/SEIc** socially driven training programs **BoP/SEId** use of local suppliers **BoP/SEIe** relations with externals (e.g., non-profit organizations, government agencies)	**BoP/REa** joint planning with business customers for social objectives **BoP/REb** founding a non-profit organization

† Abbreviations: PP, pollution prevention; PS, product stewardship; CT, clean technology; BoP, base of the pyramid.

3.6. Discussion

The results confirm that pollution prevention is the initial issue identified and addressed in the textile and clothing firms, through the development of capabilities according to a circular rather than linear dynamic (e.g,, a proactive approach to the environment favors the assumption of commitment, but without commitment opportunities are sensed hardly). Capabilities involve not only the internal level. The Italian industrial context has some peculiarities that should favor the development of a circular economy. Historically, one of the districts has some technologies and know-how that meet circularity criteria. This advantage has allowed an enlightened case firm to concentrate their efforts not only on the production of the secondary raw fiber, but also on the development of capabilities for the construction of an integrated supply chain. The division into districts, typical of the Italian context (ICESP, 2020), should favor the sharing of knowledge (Belussi and Sedita, 2012). Their networking nature and geographical proximity are ideal characteristics for implementing circular economy (Mazzoni, 2020). On the other hand, the other results do not reveal a crucial role in belonging to the district in sensing and seizing circular economy opportunities. The results show the important role of the actors downstream of the supply chain, who carry out pull strategies towards the upstream actors, the latter developing listening capabilities. In fact, the inputs start mainly from the former (the clothing manufacturers, or the 'brands') for the need, on the one hand, to co-create with customers, on the other hand, to demonstrate their transparency and, therefore, to be able to trace the final product up to the raw materials used. In line with Jia *et al.* (2020), consumers seem to be one of the main drivers of the circular economy in the textile and clothing sector.

Changes to the culture of the consumer, in the direction of an awareness of the environmental issue, due to government policies and sensitized public opinion, raises expectations for increasingly environmentally friendly products (Siemieniuch *et al.*, 2015). Thus, the results seem to indicate an accentuation of dynamics already underway. The logic of management in the supply chain of the textile and clothing sector increasingly depends on the requests of the end consumer, which go back all the links in the chain, and less on the manufacturers (Bianchi *et al.*, 2001). However, consumers are not only asking to buy more sustainable products, but also to have a more active role in determining the offering. In line with Jia *et al.* (2020), the involvement of the consumer in the reversal loop (from user to manufacturer) contributes to achieving a closed-loop supply chain.

As claimed by Miemczyk *et al.* (2016) and Ashby (2018), closed-loop supply chain approach seems to be a relevant component of the product stewardship. It requires to manage both downstream and upstream relationships. Accordingly, closed-loop processes are fostering a more relational interaction within supply chain focused on trust (van Bommel, 2011). Capabilities such as construction of mutual goals or of a sustainability culture go in this direction. Moreover, these relational resources are considered difficult to imitate and therefore suitable for achieving competitive advantage (Ashby, 2018). Traceability systems and certifications seem to build transparency and, hence, trust. In this sense, acquisition of digital technology is recognized by case firms as a resources reconfiguring activity to improve traceability and transparency, confirming digitalization as an enabler of the circular economy (Antikainen *et al.*, 2018), even further upstream, where it can represent clean technology, by supporting the creation of a closed loop supply chain itself. On the one

hand, it can speed up the process of selecting used materials, on the other hand, it facilitates the meeting between the subjects who supply used materials and those who reprocess them.

Although collaboration with supply chain, as well as with externals (e.g. for BoP strategy), emerges, there is no defined interaction between born-circular start-ups and growing established firms in approaching the circular economy. It seems that it is not recognized as contributing to the circular transition of the industry, there is no mutual evolution. Start-ups pull established firms know-how for adding quality to the circularity. The other way around, established firms pull start-ups innovative ideas to cultivate and develop. In contrast to Hörisch (2015), no push strategies by start-ups are adopted to spread their product to the mass market. This probably depends on an incompatibility of target and price level.

Moreover, born-sustainable firms and their role in sustainability transition are traditionally associated with product innovation (Hockerts and Wüstenhagen, 2010), with the development of clean technology. Actually, it emerges that enlightened start-ups are developing product stewardship capabilities for supply chain management in a closed-loop perspective, to the point of establishing themselves as a 'design company', by delegating manufacturing to companies specialized in using second raw materials and guaranteeing associated certifications. Furthermore, even the growing-circular firms, typically devoted to "weak sustainability" (Schaltegger *et al*., 2016), seem more committed to innovation. They consider disruptive process innovations and product innovations with a not high level of novelty as a way of promoting circular best practices downstream, since they do not require change to other actors. Business

customers can continue to use yarns/fabrics with the same production facilities and the end consumer can use garments with the same consumption behavior.

In the latter regard, one of the elements that differentiates the clean technology of a product from the innovation of product stewardship, namely a radical from an incremental innovation, is the change in behavior that it entails for the consumer (Danneels and Kleinschmidtb, 2001; Gerrard and Kandlikar, 2007). Radical innovation thus concerns discontinuous product innovation, such as the ability to implement take-back programs in order to close the loop. Discontinuity encompasses unprecedented consumption behavior, which incorporates the end-stage of consumption (e.g., the delivery to the store or to the collection points of the used garment). In this case, the active role of consumers (and associated changes in behavior) is necessary to close the loop.

Regarding the base of the pyramid category, none of the case firms seems to have developed capabilities to adopt real strategies in Hart's perspective (development of the social potential of environmental improvements, on a global level). In line with McDougall *et al.* (2019; 2016) the results show a greater attention to social issues at the local level. This suggests a gradual adoption of BoP strategies, from those closest to the NRBV to those closest to the fifth category proposed by McDougall *et al.* (2019), local philantropy. Furthermore, according to Soufani *et al.* (2018) the social dimension seems to be in some way connected to circularity, so that the phenomenon of benefit corporations and benefit corporation certifications, already detected in born-circular firms (Zucchella and Urban, 2019), also emerges in the textile and clothing sector, and particularly in growing-circular Italian firms, where they represent an evolution of CSR management. The legal forms of benefit corporations support CSR as a “step towards

empowering socially committed commercial entities" (Hiller, 2013, 288). Although firms voluntarily choose this legal form, once adopted, they have to comply with specific duties, for example, to engage stakeholders, to comply with specific standards for accountability and transparency, under penalty of losing the status of benefit corporation (Resor, 2012). Similarly, firms with a B Corp certification have chosen to be subject to an assessment that supports responsible decision making (Hiller, 2013). Failure to comply with certain requirements results in the loss of certification or the recognition of a lower level of responsibility (social and environmental as a whole).

3.7. Implications

The results of the study provide managers insights to increase environmental performances of their firms or suggestions to scale up their born-circular businesses. For example, closed-loop supply chain approach as well as pre-order dynamics build a collaborative circular economy. This resonates with Zwass (2010) and his 'sponsored co-creation', namely the activities conducted by consumers in the creation of value, generated on behalf of companies. Thus, firms not only can communicate the adoption of circular principals to their end customers (Urbinati *et al*., 2017) and facilitate environmentally friendly self-production (Coppola *et al*., 2021) but, in this case, in turn, also to involve them in firm circular economy practices to be able to facilitate consumers in eco-friendly value creation.

Indeed, clothing manufacturers push the consumer to be greener with take back programs, on the other hand, these programs are implemented to intercept just consumer demand for engagement and more sustainable products.

Similarly, mutual co-creation dynamics occur throughout the supply chain, also between suppliers and business customers, where there is a 'joint value creation process' (Grönroos, 2011). Thus, it becomes relevant to find partners and interact. Through this, the latter invites the former to co-create: business customer provides information concerning consumers to initiate the development of new solutions together.

Moreover, both business customers and suppliers could become a service provider and not more a product provider, in line with the suggestions of Ashby (2018), according to which this would ensure to achieve continuous flows of return materials/products and, hence, an adequate level of control.

The case study research reveals that the role of proactive approach is crucial to address circular economy. Therefore, firms that want to pursue circular economy business opportunities should build a circular economy culture that starts with including it in the organizational structure (Khan *et al*., 2020) through an additional unit, specialized human resources and a vision.

Another implication regards the conceptualization of circular economy. On the one hand, as McDougall *et al.* (2019) point out, the four NRBV categories do not have a hierarchical position, for example, not all organizations develop clean technologies. On the other hand, a vision of the circular economy by managers cannot separate product stewardship from pollution prevention except to create a trade-off between circularity and environmental sustainability.

Further, the development or adoption of clean technologies should be encouraged by policy makers through policies and funding. In line with Bressanelli *et al*. (2022), circular economy has the potential role of revitalising industrial districts. Indeed, geographical proximity and networking are features that can favor knowledge sharing and creation (Belussi and Sedita, 2012), stimulating eco-innovation, thus removing technological limitations. Local and regional institutions should re-think the role of districts, identifying new trajectories in circular economy, mobilising resources and consensus, incentivizing them (Bressanelli *et al*., 2022). This could promote not only technological eco-innovation, but also the birth of new circular start-ups, creating fertile ground for their scaling up, and local philanthropy through the use of local suppliers and, in general, through a closer relationship with the territory that can lead in the long term to embrace a benefit corporation approach for circular firms.

Conclusions

Summary remarks on the empirical studies

The work explored the circular transition through a bottom-up approach, focusing on some aspects of two domains, consumption and firm.

The valorization (i.e., exploitation, enhancement, upcycling or general re-use) of products at the end-stages of their lifecycle is a key aspect of waste management in most industrialized countries. However, consumer waste reduction through upcycling practices has received little attention in the empirical research. In this work we explored the nature of these practices and the various motivations that drive consumers to this form of product reuse, and link it to other types of self-production practices. Based on the Self-Determination Theory, netnography has been applied to examine a broad range of consumer motivations for upcycling and to identify specific types of upcyclers. Numerous posts and comments from an Italian online community of upcyclers over an eight-year time span has been analyzed via computer-assisted qualitative data analysis software. The findings challenge the idea stated in previous research that environmental issues are the underlying driver, by revealing a wide range of motivations that inspire different types of upcyclers (ecologists, eco-creatives, utilitarians, hedonists and educators). Most upcycling activities thus can be read as an introspective and pragmatic form of resistance to consumerism or as a way to develop problem solving skills and a mindset in which consumer empowerment (competence acquisition, creativity and

autonomy) - especially in a family dimension - seems more prevalent than environmental concerns. Hence, the role of environmental driver is reduced. Types of upcyclers, such as educators and thrift-utilitarians, on the one hand, place the practice outside the circular economy perspective, on the other hand, they have underlying motivations and values capable of mediating the environmental benefit.

In addition to the individual dimension, we investigated the collective dimension of the practice. Digital communication technologies have enlarged information and knowledge opportunities for consumers to self-produce objects in a number of different industries (electronics, fashion, cosmetics, etc.). The second part of the study on the consumption domain has analyzed how upcycling practices are discussed and elaborated in online communities and how these practices are linked to the knowledge sharing, collaboration and co-creation among community members, thus generating self- and co-creation of value. Using the same netnographic approach applied to the same Italian online community, findings reveal that the upcycling represents a practice driven by several different motivations that determine how these empowered consumers carry out these practices in concrete terms. By discussing about their self-production practices, community members share the same language, rituals and the use of specific tools to inform their behavior, thus developing communal ideas, principles and (environmental) pro-social values. Theoretically, the work proposes a model of interaction between online communities and self-production that shows how upcycling practices, generally conceptualized as individualistic behaviors, are upgraded and become collective in online communities through knowledge sharing and creative collaboration.

The proposed typology of upcyclers in the first study leads to an enabling stance towards consumer upcycling by both public policy makers and practitioners. In

particular, in terms of managerial implications, the investigation on individual and collective dimensions of the phenomenon has allowed to develop insights about how different types of upcyclers can be marketed in different ways by addressing them with specific offerings. The studies conducted shed light on an emerging practice in the under researched areas of the end-stages of consumption and consumer waste reduction.

Regarding the firm domain, we have shown that "how" to implement circular economy creating an industrial system that is restorative by design represents a compelling challenge for industries like the textile and clothing sector, being considered one of the most polluting. This study has investigated what strategic capabilities underpin the competitive advantage of growing-circular and born-circular firms in the textile and clothing industry. Through the theoretical lenses of natural resource-based view and dynamic capabilities framework, a dynamic framework of NRBV capabilities needed for the circular transition has been developed. Drawing on a multiple-case study design, the strategies of pollution prevention, product stewardship and sustainable development and, for each of them, the associated capabilities of sensing, seizing and reconfiguring have been investigated. Key issues of the circular economy have emerged, such as internal practices, supply chain management to implement a closed-loop and interactions with externals for developing both clean technology and a social potential of the circular economy. The results contribute to highlight new value creation processes by circular market players through the development of dynamic capabilities. In particular, co-creative processes in product stewardship emerge throughout the supply chain with a key role of the downstream actors to capture needs and transmit insights upstream. Nevertheless, the results of the investigation on the textile and clothing firms suggest that dynamic capabilities to achieve global and not only local

philanthropy should be developed as well as a re-thinking of the role of industrial districts and the co-evolution between born-circular and growing-circular firms for the circular implementation.

The framework of capabilities in the textile and clothing industry also has provided useful insights to managers to both increasing environmental and economic performances of their firms and adopting a strategic management perspective of the phenomenon. Despite the isolated initiative of some firms, the impulses towards circular economy implementation go in different directions (strategies) and come from different parts (different types of players). This can favor a more rapid transition of the textile and clothing sector. The leading role of individual firms can create dynamism, as it stimulates to compete to be the engine of the transition within the supply chain and in local communities or, in any case, favors the transmission of culture and sustainability goals to more traditional actors in the supply chain and in the context of activity.

Limitations and future research

Some key issues emerged from the study that help focus future research directions on product reuse. Research has been conducted to define individual sustainable consumption practices, but comparative studies are lacking. First of all, the motivations have been investigated, but comparing them, especially by comparing those relating to models based on a change of owner/user with those focused on the function of the product, could help to understand how to incentivize the adoption of more practices. In

general, further research could reveal whether those who practice one form of reuse also adopt others and the ways in which this evolution takes place.

The collaborative dimension has also emerged for each practice. The role played by this factor in reuse practices in which the function changes compared to those in which the ownership changes constitute another possible aspect to be investigated in terms of value creation between the individual and collective level.

Further, any interpretation of the results of the netnography conducted should consider the geographical scope of the research, which is limited to Italy. Future research should be conducted in other geographical areas where, for example, some themes may be more prevalent than others.

The nature of the netnographic approach should also be considered. The high level of interactivity and data-richness found in the selected community means that the non-participant observer role we assumed was effective in achieving sufficient involvement and, therefore enabled us to understand the point of view of the group members when exploring the meanings of their practices. However, the use of this qualitative approach means it is difficult to systematically analyze the extent of the phenomenon.

Accordingly, further studies can investigate the frequency of the motivations underlying upcycling, territorial differences (for example, Northern vs. Southern Europe), and the main categories of objects emerging from these self-production practices.

Exploring the coexistence of different perceived benefits within the same upcycling practitioner would also be of interest. The association between those who have grown up upcycling and acquiring life-enabling tools and thus become empowered consumers and those who follow traditional consumption patterns is another potential research direction.

In addition, the socioeconomic characteristics of upcyclers (e.g., levels of education, job type, income) can be investigated, to reveal the possible associations between them and upcycling, and also to consider the potential role of local upcycling hubs in changing mind-sets and promoting virtuous self-determined consumption behavior. Equally interesting would be investigating the specific types of external rewards (monetary incentives, social benefits, etc.) that policy makers or marketers could offer to upcyclers motivated by extrinsic drivers.

Future research could investigate the perceptions of the different categories of upcyclers (ecologists, intrinsically motivated, children learning focused, save money focused, and thrift upcyclers) toward firms that implement or encourage upcycling, as well as the benefits of communicating alternative uses of products.

In this sense, the enhancement of the concepts of diversity and inclusion by the generation Y is a factor that can prefigure a growing positive perception of consumers, not necessarily upcyclers. The relationship between diversity and inclusion, on the one hand, and circular economy, on the other hand, could be explored, more precisely, the coexistence of aspects related not only to the human condition but also to the material world in the concepts of diversity and inclusion.

It would be also interesting to shed light on how different generational cohorts (baby boomers, generation X and Y) relate to upcycling, as well as to gain more insight into the role played by facilitators, such as bloggers. In the present study, blogger plays an important role in eliciting engagement and in stimulating collective learning that leads to an evolution of practice. Thus, how the role of an online community leader (or other type of digital influencer) sustains knowledge sharing and creative collaboration could be a further fruitful research avenue.

On the other hand, upcycling raises the question of intellectual property. In fact, creative consumption involves the difficulty of determining the owner of the rights to the outputs, being these produced from the offerings of firms (Berthon *et al*., 2015). Moreover, as confirmed by the attempt of the community investigated to set regulations in the "Copyright" section, knowledge sharing and knowledge creation through creative collaboration entail the risk of theft and imitation among users. In upcycling context, our work echoes Bauer *et al.* (2016) in identifying the need for future research that investigates when and how user-organized norms are formed and evolved over time in online communities.

Last, the transition towards a circular economy can pass through an empowering process in civil society. Understanding and promoting consumer upcycling as a collective practice may internalize a new, more conscious consumer model that has a positive impact on the spreading of sustainable consumption habits.

Regarding the multiple-case study, it is limited to the data of nine cases. The findings offer useful insights from born-circular and growing-circular Italian firms, but they are not representative of the average textile and clothing (Italian) firm and therefore not generalisable to the textile and clothing (Italian) industry. Future research will be able to extend the number of case firms and the geographic as well as sectoral scope, in a comparative perspective.

Moreover, this research takes into consideration firms that deal with man-made and organic fibers but, among the latter, only wool and not cotton due to lack of response by firms. Further research could investigate the difference on the development of competencies between companies dealing with each of the three types of fibers that characterize the sector.

Similarly, although this study takes into account both born and growing-circular firms, future longitudinal study could deepen the specific capabilities that these two market players are developing and understand the development of the future relationship between them for the purpose of circular transition.

Lastly, the interviews were only conducted with the top management of the case firms. However, as Khan *et al.* (2020) noticed, employees also play a role in the implementation of the circular economy. Thus, further insights could come from employees as informants.

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