

# **Organizational and managerial practices for circular economy business models: The case of an Italian SME in the office supply industry**

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## **Abstract**

Circular economy has become a hot topic for scholars and practitioners as it represents a new industrial paradigm for waste generation, resource scarcity and sustainable economic growth that aims to overcome open systems paradigms, based on the traditional make, take, and disposal process. Whereas this issue has posed a lot of attention to the policies of circular economy as guidelines for policymakers, we still lack of consolidated managerial directions that support companies to implement this paradigm. In other words, although several scientific contributions started to shift the attention from macro (policies) to micro (company) levels of analysis, the issue of which organizational and managerial practices companies have to adopt for circular economy implementation still deserves particular attention. Although this literature gap continues persisting, several scholars have opened up the research stream of circular economy business models, which tries to analyze the business model design choices in the light of circular economy principles. Accordingly, we revise the main scientific contributions that analyze the organizational and managerial practices for circular economy business models. In doing so, we propose in a comprehensive theoretical framework a map of the organizational and managerial practices for circular economy business models that can be adopted at two different company dimensions, i.e., the value network and the customer value proposition and interface. Therefore, we will test the suitability of our framework on a small medium Italian company that adopted a circular economy business model, by looking into the organizational and managerial practices that this company has implemented.

## 1. Introduction

The concept of circular economy as a branch of sustainability science, which is mainly rooted in industrial ecology (Erkman, 1997), Cradle-to-Cradle (McDonough and Braungart, 2002) and cleaner production (Fresner, 1998) research streams, is becoming increasingly debated at political and practitioner level. The recent EU (European Union) Action Plan on Circular Economy rapidly attracted attention as it has been leveraged by means of creating new employment and business growth (European Commission, 2015; Manninen et al., 2018). Similarly, the business environment finds circular economy appealing as it provides opportunities in terms of new ways of value creation, cost reduction, revenue generation, and increased resiliency and legitimacy (Manninen et al., 2018; Park et al., 2010; Tukker, 2013; Urbinati et al., 2017a). Further, the interest of academic journals towards circular economy has grown tremendously by multiplying the number of the publications tenfold through last decade (Geissdoerfer et al., 2017). Yet, it seems scientific research is lagging behind the political and practitioners engagement on circular economy that urges for more academic involvement and collective effort (Korhonen et al., 2018). Scientific research is especially important to guarantee the success of circular economy transition.

In this respect, circular economy encourages people towards more sustainable behaviors and policymakers to establish regulations that address principles of sustainability (Andersen, 2007; Besio and Pronzini, 2014; Haas et al., 2015; Miliute-Plepiene and Plepys, 2015; Schneider, 2015). In particular, this issue has posed a lot of attention to the policies of circular economy as guidelines for policymakers. On the other hand, we still lack consolidated managerial directions that support companies to implement this paradigm. In other words, although several scientific contributions have started to shift the attention from macro (policies) to micro (company) levels of analysis (Geng, Yong; Sarkis, Joseph; Ulgiati, 2016; Su et al., 2013), the issue of which organizational and managerial practices companies have to adopt for circular economy implementation still deserves particular attention. Indeed, circular economy implies profound changes in managerial and organizational practices of companies in a way they use energy, materials and resources more efficiently, and reduce the environmental waste contextually. In this case, companies are called to develop, manufacture, distribute and retrieve products (Geng et al., 2013; McDonough and Braungart, 2002; Murray et al., 2015). Put it differently, companies are expected to maintain mostly the ownership of products, as well as of their components, while customers to become their users (Tukker, 2015, 2004; Tukker and Tischner, 2006). Following this perspective of analysis, several scholars started to revise the broad field of circular economy (Ghisellini et al., 2014; Merli et al., 2017) and have opened up the stream of research of circular economy business models, which tries to analyze the choices of the business model design in the light of circular economy principles. In particular, several contributions have studied circular economy according to a business model perspective (Linder & Williander, 2017; Urbinati, Chiaroni, & Chiesa, 2017; Vermeulen, 2015). These studies have highlighted two main dimensions of the business model on which companies can leverage to implement circular economy as a new industrial paradigm. On one hand, the customer value proposition and interface, which concerns the management of relationships with clients, such as demonstrated by the increasing appeal of pay-as-a-service mechanisms (Tukker, 2015; Williams, 2007). On the other hand, the value network, which mainly concerns the

management of the supply chain and the role in the value creation along the entire supply chain of suppliers, manufacturers and retailers (Parkinson and Thompson, 2003; Vermeulen, 2015)..

In this research, we mostly leverage on the theoretical taxonomy proposed by Urbinati et al., (2017) and revise the main scientific contributions that put emphasis on the dimensions of the value network and the customer value proposition and interface, which the authors have used to build their taxonomy. In doing so, we propose in a comprehensive framework a map of the managerial practices for circular economy business models. Therefore, we will test the suitability of our framework on a small medium Italian company that adopted a circular economy business model, by looking into the managerial practices that this company has implemented.

The paper is structured as in the following. We summarize in the Section 2, the theoretical taxonomy suggested by Urbinati et al., (2017), by highlighting the main managerial practices companies can adopt in their business model to shift towards circular economy business model. Hence, we highlight the research question of our study. In Section 3, we propose the theoretical framework, which will be used as a guide for the following empirical analysis. In Section 4, we highlight the methodology used in the research, whereas in Section 5 we present our study case of an Italian Small Medium Enterprise (SME) operating in the Office Supply Industry. In Section 6, we present and summarize the results of our research and discuss the suitability of our framework. Finally, in Section 7, we report the conclusions and limitations of our study, and advance avenues for further research in the emerging field of circular economy business model.

## **2. Literature Review and Theoretical Framework**

As a reaction to the prevailing economic system of “take, make and dispose”, the concept of Circular Economy (CE) gains traction through last decade both in academia and industry. CE is first introduced by an ecological economist Boulding, (1966)) and according to Ghisellini, Cialani, & Ulgiati, (2014) it is possible find roots of CE in General Systems Theory (GST) (Bertalanffy, 1950)..

Starting from 1970s, there are several sustainability concepts suggested that focus on material flows and utilization of resources (Van Dijk et al., 2014).Circular economy is a new industrial paradigm that encompasses some of the sustainability approaches such as regenerative design, performance economy, cradle-to-cradle, industrial ecology, biomimicry, cleaner production and blue economy. The concept aims to create a restorative industrial system by intention (Geissdoerfer et al., 2017; Geng and Doberstein, 2008)

As a one of the departure points of circular economy, Cradle-to-Cradle (C2C) constitutes a platform and bundle of practices that combines the intentional design, products for industry and chemistry. The philosophy focuses on designing the products from the very beginning in such a way that; whether the materials used in a product will be food (raw material) for the next generation products or these materials will be food for nature. This concept suggests two material cycles namely; biological cycle and technical cycle where the materials are used endlessly. The

framework of C2C comprised of three principles, (i) eliminate waste, (ii) use renewable energy and (iii) celebrate diversity (local production and supply chain). The companies that adopt C2C follows the product level design practices under five dimension namely, (i) material health, (ii) material reutilization, (iii) water stewardship, (iv) renewable energy and (v) social fairness (Braungart et al., 2007; McDonough and Braungart, 2002; Van Dijk et al., 2014)

It is an indisputable fact that the finite resources that the earth accommodates are being aggressively depleted, still we are using more than we can replace (Iranzo, 2005). Consequently, circular economy is considered as a solution for waste generation, resource scarcity and sustaining economic growth (Lieder and Rashid, 2015). Also, it has been pointed out that the concept of circular economy provides opportunities through radically improving the present business model of the companies in accordance with regenerative eco-industrial development and well-being of human and nature (Ghisellini et al., 2014). Regeneration in the concept of circular economy is not only limited with the material and energy recovery but also encompasses the improvement of the community as an integral part of nature (Lyle, 1994). Therefore it requires a systems approach where interdependence and holism are considered as crucial to manage the finite resources. For example, as a part of circular economy, the industrial symbiosis initiatives are aiming to connect industries and companies (normally work as separate entities) to achieve environmental and economic benefits through resource exchange (material, water, energy and byproducts) (Ehrenfeld and Gertler, 1997). In this regards, it has been pointed out that transition to circular economy has just commenced (Ghisellini et al., 2014). CE implementation categorized under three level as such (i) macro, (ii) meso and (iii) micro where the analyses in macro level conducted through cities, in meso level through eco-industrial parks and in micro level through single companies (Ghisellini et al., 2014).

Operationalization of the concept of CE is significant for observing its implementation in companies' processes. The literature regarding the implementation of CE worldwide agrees on three main actions of CE which are named as the "3R principles" (Reduction, Reuse and Recycle) (Ghisellini et al., 2014; Preston, 2012; Reh, 2013; Sakai et al., 2011; Su et al., 2013b; Zhijun and Nailing, 2007). Accordingly, the goal of reduction principle is to minimize the primary resource, energy use and waste generation during the production (i.e., through efficiency) and consumption phases of the products (Ghisellini et al., 2014). The reuse principle is mainly covers the operations that aims to use the material or products again for the same purposed which they are created for (European Commission, 2008; Ghisellini et al., 2014). The recycle principle refers to any recovery operations that reprocess waste materials into new products, materials or substances regardless of for the original or other purposes (European Commission, 2008; Ghisellini et al., 2014).

In addition, new business models (or business model innovation) has been found as a critical part of circular economy. For example, a shift from ownership based business models to performance or "pay-per-use" based business models are suggested for accomplishing CE (Stahel, 2016).

According to Bocken et al. (2016), CE should be coupled with business model innovation for the success of the business. In a similar stance, Tukker (2013) proposes a model of Product Service System (PSS), or in other words the servitization for resource revolution. Stahel (1982) has been pointed out as a pioneer of the PSS concept, which it is believed to be a major part of circular economy.

In the emerging field of circular economy business models, Urbinati et al., (2017) propose a new taxonomy of the degree of circularity, which is aimed at classifying the degree of adoption of circular economy principles at micro-level. In particular, they build this taxonomy by leveraging on the business model perspective (Osterwalder and Pigneur, 2010, 2005; Zott et al., 2011) and identify two major dimensions featuring circular economy business models:

1. The value network, which refers to the degree a company leverages its key resources, activities and upstream partners to enhance the circularity of its products and processes;
2. The customer value proposition and interface, which regards the degree to which a company makes visible to the customers its compliance to the circular economy principles. In particular, the authors consider the variables of price (how much of the price is based on pay-per-use?) and promotion (how much content around the circular economy is promoted through marketing campaigns) to measure this dimension.

As far as the value network dimension is concerned, the main managerial practices (Lieder and Rashid, 2016; Mayyas et al., 2012; Moreno et al., 2016; Zhu et al., 2010) are related to the:

- Energy efficiency-driven practices to reduce emissions and environmental footprint;
- Friendly material usage-driven practices, i.e., natural, recyclable, durable, easy to separate;
- Support of all partners to develop awareness and new skills, hence rendering the business model more viable, i.e. circular, for all the actors involved in the supply chain;
- Establishment of effective communication with suppliers, retailers and end-of-life materials managers, such as the waste industry, as well as with all the actors involved in the supply chain;
- Design for X practices much more related with the management of the product and its components at the end of their lifecycle to reduce the environmental impact, as in the case of the Design for recycling, Design for remanufacturing and reuse, Design for disassembly, and Design for environment.

Regarding the customer value proposition and interface dimension, the main managerial practices are related to the variables of price and promotion. In particular, we refer with the price to the different ways through which the company offers its value to the customers (Tukker, 2015, 2004; Tukker and Tischner, 2006; Williams, 2007). In this case, the main activities are related to the:

- Sale of single products;
- Sale of products with additional complementary assets;
- Leasing / renting activities;
- Pay-per-use.

On the other hand, we refer with the promotion to the different ways the company promote circular economy in its marketing activities (Baxendale et al., 2015; Heerde et al., 2013; Kumar and Venkatesan, 2005). In this case, the main activities are related to the:

- Promotion on company website;
- Advertising and sales personnel in store;
- Customer involvement in circularity initiatives;
- Communication of circularity through all channels.

Accordingly, leveraging on the theoretical taxonomy proposed by Urbinati et al., (2017) and the emerging existing research on circular economy business models, the aim of this paper is to answer the following research question: “Which organizational and managerial practices do companies implement in their business model to shift towards circular economy business models?”.

Hereafter we propose the theoretical framework, which maps the organizational and managerial practices for circular economy business model that can be adopted at two different company dimensions, i.e., the value network and the customer value proposition and interface. In doing so, we position our research in the stream of research of circular economy business models and try to advance knowledge in this field, by testing the theoretical framework in a practical case.

In addition, we take into account the research gap underlined by Urbinati et al., (2017), about “the need for future theoretical and empirical research to analyze the influence of the managerial commitment in formulating and establishing circular-oriented policies and objectives, training internal resources and creating awareness on the need of product design practices among all the actors of the supply chain”. Managerial commitment is especially crucial when the environmental initiatives are concerned (Andersson and Bateman, 2000; KLASSEN, 2001; Lee and Klassen, 2008), thereof it was considered as a base of our framework. Compared to other activities or types of innovation which has profitability at the core, environmental initiatives receive less managerial commitment in companies as it has been considered as less compatible with the *raison d'être* of business (Ramus and Steger, 2000). Therefore, sustainability initiatives generally encountered remarkable organizational resistance (Gattiker et al., 2014; Pagell and Gobeli, 2009) than other strategic change initiatives or projects (Ramus and Steger, 2000). Accordingly, environmental practices requires top management commitment (D'Amato and Roome, 2009). Albeit being very scant, some studies emphasize the role of the CEO's commitment to achieve sustainably goals as environmental practices are realized generally in a top-down manner in a company and CEO has more influence on the resource allocation and setting the strategy (Epstein and Buhovac, 2014; Kiron et al., 2012). Yet, lack of managerial support has been recognized as a barrier in the literature for environmental practices (Zhu and Geng, 2013).

Managerial commitment has been investigated mostly by strategic change, organizational behavior and social psychology literatures (II, 1974; Kiesler, 1971; Lämsä and Savolainen, 2000). As such, II, (1974) stresses that commitment of managers is essential for the well-being of the organization. Commitment is mainly studied under two approach which are categorized as attitudinal

commitment and behavioral commitment (Mowday et al., 1983). Attitudinal approach was introduced by organizational behavioral researchers (Salancik, 1977; Staw, 1974) from the standpoint of the organization that focuses on the alignment of the organizational values and goals with the that of individuals. Attitudinal approach refers to the mindset by focusing on the process of to what extent a manager's (individual's) goal is congruent to that of organization. On the other hand, behavioral approach to commitment was suggested by social physiologists (Kiesler, 1971) which delves into the psychological process of being committed from individual's standpoint . This approach focuses on the extent that the individual identifies himself/herself with a particular behavior (Salancik, 1977). Accordingly, Individual's (manager's) past behavior commits to bind him or her to the object (organization, project, etc.) (Kiesler, 1971). Salancik, (1977) identifies the characteristics of the commitment behavior that binds the individual as the visibility (explicit), the irrevocability, and the volitionally. The mechanism of attitudinal commitment and behavioral commitment works in a self-reinforced cycle in which a behavior leads to the development of congruent attitude that leads further behaviors and so on (Mowday et al., 1983). In consonance with this, Reichers, (1985) defines commitment as "*Commitment is a binding of the individual to behavioral acts that results when individuals attribute an attitude of commitment to themselves after engaging in behaviors that are volitional, explicit, and irrevocable*".

In this respect, internalization of the project goals or values of the company by an individual is essential for the commitment (Mowday et al., 1983). In this respect, Etzioni, (1961) highlight the moral involvement of individuals once they feel the company embarks on a useful societal goal which reinforces the internalization. Accordingly, we consider in our framework the managerial commitment at the base of the organizational and managerial practices which is illustrated in Table 1 below.

Table 1. Research Framework

<b>Value Network</b>	<b>Customer Value Proposition and Interface</b>
Establishment of effective communication with suppliers, retailers and end-of-life materials managers, such as the waste industry, as well as with all the actors involved in the supply chain	Sale of single products
Support of all partners to develop awareness and new skills, hence rendering the business model more viable, i.e. circular, for all the actors involved in the supply chain	Sale of products with additional complementary assets
Energy efficiency-driven practices to reduce emissions and environmental footprint	Leasing / renting
Friendly material usage-driven practices, i.e., natural, recyclable, durable, easy to separate	Pay-per-use
Design for recycling	Promotion on company website
Design for remanufacturing and reuse	Advertising and sales personnel in store
Design for disassembly	Customer involvement in circularity initiatives
Design for environment	Communication of circularity through all channels
Managerial Commitment	

### 3. Methodology and Empirical Analysis

The case study methodology is preferable when there is a new phenomenon to be explored and also for allowing serendipity of findings in such situations (Eisenhardt and Graebner, 2007) . In our case, since the transition to circular economy just started and the impacts of these process in organizations yet to be explored, we employ in depth case study approach to have a comprehensive understanding of the phenomenon. In depth case study analysis is consistent with the goal of the paper for two reasons, (i) studying a single firm in depth allows to develop an intimate familiarity that helps better grasp the insights from data, (ii) the complex and multidimensional nature of our analysis requires a comprehensive investigation that is more likely possible within a single entity standalone (Dyer and Wilkins, 1991).

Case selection is based on theoretical convenient sampling strategy (Siggelkow, 2007). We believe testing our framework to investigate the managerial and organizational practices for circular economy business models in a company where the skills and resources for circular economy are established would be the best strategy. However, circular economy is a quite new phenomenon for academicians and practitioners as literature points that transition to circular economy has just begun (Ghisellini et al., 2014). Fortunately, we have come across an organization which originally

born circular and has an extensive history of circular economy since 1994. After a meticulous investigation based on secondary data and in comparison to other possible alternatives, the case stands out as a unique case as an early adopter, which strengthens the rigor of our methodological approach. To the best of our knowledge, the case company was found out to be the only small medium enterprise (SME) in Italian office supply sector that operates fully based on circular economy at core.

Accordingly, in depth case study approach is acclaimed to be stronger in terms of the scientific discoveries/evidences (Yin, 2003). Moreover, exploratory in depth case study is convenient for theory building, especially testing a hypothesis or suggesting propositions. The use of qualitative case studies in a deductive way, as we did in our research, is mainly for either confirmation or falsification of “appropriateness of a theory” (Barratt et al., 2011; Bonoma, 1985; Johnston et al., 1999; Yin, 1994). Accordingly in this paper, we strive for testing our framework with in depth single case.

Based on the framework suggested, the research protocol has been developed. Yet we have conducted a semi-structured interviews to not to limit the interviewees and possible serendipity of any more evidence that can be used to revise or strengthen our research. To ensure methodological rigor and overcome researcher bias, all three authors involved in the analysis of the data through periodic meetings and discussions (Dubé and Paré, 2003). We clearly set our unit of analysis as “managerial and organizational practices” to draw boundaries of extant literature and theory we are using (Barratt et al., 2011).

Our data sources mainly consists of semi-structured interviews, interview notes, observations, archival sources, published academic works about the company and secondary data which is obtained through the company and other related websites. Using multiple sources allows us to triangulate the data (Choi and Hong, 2002; Eisenhardt, 1989), which increases the reliability and reinforces the substantiation of the constructs (Benbasat et al., 1987; Eisenhardt, 1989).

The interviews have been transcribed. We started the analysis of the data by creating within case analysis with the case write-ups. As we have a clear and well defined framework with the constructs, the quotes that are associated to particular construct/s identified.

*The Case Company* Alisea has been founded in 1994 by an entrepreneur who is a female lawyer and has a sales background. The CEO used to manage a sales network of 40 or more people in her previous job at a well-known Italian publishing company. Alisea is located in a small town in northern Italy and operates in office supply industry by creating custom corporate communication objects by re-using and recycling. The industry back at 1990s was facing huge Chinese competition that makes the competitive production at Europe almost impossible. The company has 9 employees (5 for office works and 4 for production) and turnover more than 1 million Eur in 2016. The company and one of the suppliers have been visited to gain more insights through observations. Majority of the employees were met in person. The daughter and son of the CEO were accompanying her during the visit as they are actively involved in the company activities. The CEO feels more accurate to speak in Italian even if we had some conversations in English. Accordingly, the daughter of the CEO took the responsibility of interpreting the conversations as she was advanced

in English language due to her education background in England. Following the company visit, one of the waste/scrap material supplier of the company -which is in 20 km distance- also has been visited together with the CEO to have a closer look at the process and routines that Alisea had.

The detailed information regarding the case is given below in Table 2.

Table 2. Case Information

Company	Alisea
Country	Italy
Interviewee	CEO – Founder, Innovation and Business Development Manager, son and daughter of the CEO (part-time unofficial members of the company)
Background of Interviewee	Lawyer, Entrepreneur Previously Sales woman
Number of interviews and duration	Two interviews (3h in total) Company and supplier visit, observation (1 working day)
Secondary material	Frim website, brochures, audio materials – TEDtalk of the CEO –, documents shared by company, Bachelor and Master Thesis  Fortuna, A. (2016). How is Alisea gaining competitive advantage by practicing sustainability through sustainable-innovation? (master’s thesis) Regent’s University, London, UK  Fortuna, G. (2013). What makes Perpetua a pleasurable product? (BA Hons thesis) Ravensbourne College of Design and Communication, London, UK
Number of employee	9 employees (5 for Office, 4 for Production site)
Industry	Office Supply
Founding year	1994
Revenue in 2016	1 Million Euro
Products	Recycled graphite pen, notebooks, pencil, custom design objects

#### 4. Results and discussion

Based on our theoretical framework, the case has been analyzed under three main pillars namely, (i) Value Network, (ii) Customer Value Proposition and Interface, and (iii) Managerial Commitment..

##### *i. Value Network*

The emergence of the Company originates from the will of the CEO who pursues something different than everyone else because there was a huge competition from China that time back in 1990s. As the CEO reports, she asked herself “*How can I be different than anyone else?*”. Accordingly, the CEO referred two events that made her mind up to start a business that has

circular economy at the core. The first one, she remembered when she was travelling in 1982 in the train, she overheard a conversation between two university professors regarding the need for recycling industry will be huge in the future and someone needs to take action. The second event that shapes her future business was that she recalled an intriguing gift, a notebook made of recycled paper that she received as a present. Accordingly, circular economy business model helped company differentiate from competitors and generate revenue (Manninen et al., 2018; Park et al., 2010).

In the late 90s, when the majority Italian and other European companies were not aware of circular economy business model and the CEO sensed a big opportunity on it. She started the business by going door to door to talk to the companies and asking what they are throwing away or whether she can utilize their waste. Alisea currently has 15 fixed suppliers that the company works always together with as the CEO states. Besides, based on the project or what the client wants they are finding and collaborating with new ones.

The CEO argues that Alisea is started with a circular economy business model by stating “*We are an example of how you can build a company entirely based on circular economy*” because according to her everyone is talking about circular economy theoretically, but they are the ones doing it every single day. She summarizes the vision of her company as “*To light the path for younger generations on how Innovation, waste materials and community together can lead to a more sustainable economy and to a future world where things can be done differently and where everyone can benefits*”.

Regarding the communication with the waste material suppliers that in some cases the client itself, and actors involved in supply chain, the CEO emphasizes the role of Alisea as a bridge and facilitator by mentioning “*Big part of the work is functioning as connection between all different parties that all want to participate in (circular economy), but they wouldn't know how and where to start. So Alisea is what connects everyone*”. By doing so, an effective cooperation and communication across value chain has been realized as indicated by previous research (Ghisellini et al., 2014; Zhu et al., 2010).

For example, one of the collaborations Alisea made was with one of the Italian SME (supplier) that produces sun shade and one client which is a well-known Italian stationery. The stationery company wanted to produce a product that is made of recycled material but they could not manage it. After the stationery company contacted Alisea, a collaboration started between those 3 parties leaded Alisea. The CEO says they received the waste sunshades that is a scrap material in different sizes from their supplier without paying for it. She claims the material is worth 28 Euro/meter if it would have been bought as virgin raw material. The motivation for supplier to give its waste for free originates from the goodwill as the CEO indicates “*They are sure that something good will be done out of it*”. The CEO underlines her perception of waste as something to be shared without an economic benefit by saying “*If I am paying for it, it is not waste anymore*”. As it has been stated by several authors, circular economy facilitate the reduction of the cost (Murray et al., 2015; Park et al., 2010).

According to the CEO, circular economy business model is viable for all value chain as she remarks “*CE kind of fits everyone*” because “*The client does not pay the cost of disposing the waste material*” and also she outsources the work to the manufacturers, whose work has been influenced negatively by the competition from China and asks them “*Together with what you are producing, why do not you also produce this*”. She emphasizes her projects are win-win for everyone as it has been also stressed by Geng et al., (2012). Yet, the CEO mentioned the bureaucracy related challenges they had to pursue on their circular economy business model as she posits, “*We cannot get all the waste company produce because of Italian laws*”. The Innovation and Business Development Manager explicates the difficulties they have caused by the dissonance of the law in supporting circular economy business models as he urges upon “*Recycling of graphite is not so easy in Italy because there are different guidelines and laws which are not up to date*”. Lack of government support and effective legislation have been widely addressed as a salient barrier towards the uptake of sustainable practices. In addition, a study conducted in China among 157 firms showed that even if there is a good understanding of circular economy, there is a huge gap between the awareness and actual behaviour due to the cultural and contextual factors (Liu and Bai, 2014). We should also note that, one should consider each geography might have its own characteristic dynamics in terms of up-taking the circular business model. For example, while in China circular economy adoption is mostly top-down (command and control) manner, in Europe it relies on market based approach (bottom-up) (Ghisellini et al., 2014)

Besides, the CEO underlines the important of the trust by stating, “*It is a system that strongly founded on trust*”. They trust in this collaboration that everyone will do what they are supposed to do and act fairly. She said, “*I believe without the trust, all thing just would not work*”. The CEO gives an example of the waste graphite supplier for their pen and textile dye production and she says despite couple of companies wanted to buy the waste graphite from the supplier, they did not sell it. Even if Alisea does not pay for the waste, the supplier informed companies that demanded the waste as it is only reserved for Alisea. According to CEO, this gesture originates from strong communication and relationship based on trust. In addition, the supplier sees a much bigger value on becoming a part of circular economy than just selling their waste as the CEO reports. It has been found out through the case that shared values and trust are the critical variables in terms of their developing effective collaboration and communication. In supply chain studies, we can observe multiple forms of trust as such it is conceptualized as “a belief or confidence in another’s reliability, integrity, credibility, honesty, truthful benevolence” (Ajmal et al., 2017; Doney and Cannon, 1997). All the components of the trust in one way or another have been observed through the effective communication development part of the framework.

In terms of the support of all partners to develop awareness and new skills, the CEO reports that it is a learning process as she notes, “*Every time we do something, it is never the same. It is new manufacturing process for every single objects (from waste). What makes it possible is the strong bonds I have with the producers and I have been building it over 20 years*”, and continues as “*We all learn and get trained (on circular economy) together every single day by working on it*”. We can see some parallels with the literature as lack of technical and technological knowhow hinder companies to shift towards a circular business model (Liu and Bai, 2014).

The CEO claims that they become an expert on the material graphite and they have found out a way to use with the waste graphite as ink to dye the fabric. She added they are getting a patent for it. She stated that now they are working with a sustainable fashion brand which demanded the solution Alisea developed. *“These guys came over and explain what their idea was so I pass on the innovation about graphite to them. So again working together”*. The CEO also emphasizes the significance of collaboration and says, *“It is all about giving to others what you know and getting back what they can provide you”*.

Accordingly, the company’s argumentation around this specific dimension of our framework is consistent with the literature as capabilities and skills for circular economy at infancy phase and needs to be collectively developed (Ghisellini et al., 2014) In this respect, the case verifies the literature as technology is addressed as an crucial factor of realizing the CE since advancement of technology is seen pre-requisite to implement CE practices (Su et al., 2013a). Accordingly, new solutions for environmental problems or more efficient use of resources utilize a more CE. Also Geng & Doberstein (2008) address technical skills a key component of circular economy for China by illustrating how circular economy can benefit from the development of technology such as eco-design, environmental and cleaner production technologies.

Having analyzed the energy efficiency-driven practices to reduce emissions and environmental footprint that Alisea realized, they are mostly certified by third parties, as the CEO believes it brings credibility to their process and product. The CEO focuses on local production and supply as a part of reducing the environmental footprint as claims that she has a contract for recycling all the waste graphite disposed in the territory of the company. She mentioned that her company is getting calls from research and development sector and companies that wanted to involve in and give their thoughts regarding new ways of using all waste graphite they have.

The CEO affirms that all the materials used have Remade in Italy label as an indicator of their achievement on energy efficiency and environmental footprint as she refer it as *“The label describes the sustainability characteristics of the material, the product, and the production process in terms of savings in raw materials, energy and CO2 emission reductions.”* (Fortuna, 2016)

For example, the achievements regarding the environmental performance of the textile dyeing technology that uses waste graphite reduced the energy consumption and CO2 emission by 90% and water consumption by 99%. Accordingly, the case company informs our framework in this dimension the third party verification or certifications may add extra credibility. In similar fashion, Park et al., (2010) addressed the certifications (e.g. ISO 14000) and regulatory requirements as a source of legitimacy and reliability that make companies at the same time more resilient.

As far the environmental friendliness of the materials concerned, that is also verified by certifications and compliance with the regulations, Alisea puts emphasis on it since it is the fundamental part of their material upcycling process. To illustrate, the majority of business relies on the upcycling of waste graphite. As a crystalline allotrope of carbon, graphite is non-toxic and natural carbon based mineral and it is odorless and tasteless. In addition, graphite is a natural lubricant as it provides an innate advantage when used as dyeing technology solution in textile industry, especially for denims that the company finds out. Alisea holds three patents on the use of waste graphite. For the pencil (entirely composed of graphite powder mixture) they produce out

of it, the product and process is patented. For the dyeing technology based on graphite solution, the paint is patented.

Compared to traditional pen and its production process, the pen Alisea produced is not using any tree or non-renewable material, on the contrary the pencil is made of waste graphite and the rubber (eraser) part by upcycling waste tires. Compared to traditional pencils, to pair the body of pencil and eraser, the company is not using the metal collar (ferrule) and glue as they find a way to join them together during the molding process. By eliminating the use of some materials the company is doing more with less as a part of material stewardship. Unlike traditional pencil, the CEO indicates environmental friendliness of product by stressing *“There is no glue (in pencil) so it is 100% non-toxic”*

In addition, as an alternative to conventional fabric dyeing that relies on the use of synthetic chemical pigments and fibers (PVA) for sizing, the patented technology Alisea developed relies on chitosan (natural polymer extracted from food waste) and graphite. The CEO summarizes motivation on that as *“After experiencing what innovation in this economy (circular economy) can do we are just focusing entirely on that so we are now able to dye- use the (waste) graphite as ink. Because ink is the worst pollutant worldwide”*. The denim products produced with graphite based solution process also passed the technical performance tests for market. Also based on the documents provided by the CEO, tests conducted on graphite solution painting technology revealed that the product contains no hazardous constituents following EU Directive Exposure to Chemical Agents and Chemical Safety 1999/45/EC and/or Regulation (EC) 1272/2008 and it is not considered dangerous to human health and the environment following Directive 67/548/EC and / or Regulation (EC) 1272/2008. The company’s approach in friendly material usage-driven practices dimension is in compliance with the toxicity and upcycling research in circular economy (Braungart et al., 2007).

Once we look into the DfX approaches that company follows, it can be clearly observed that, based on the previously mentioned evidences, the company embraces design for recycling/upcycling (McDonough and Braungart, 2002; Vezzoli and Manzini, 2008), design for reuse, design for environment. Also the company uses design for product attachment and trust (Bhamra and Lofthouse, 2007; Bocken et al., 2016a), design for reducing material/resource use (Ashby and Johnson, 2003) products as a strategy to slow the loops and resource conservation (Bocken et al., 2016a).

## ***ii. Customer Value Proposition and Interface***

It is noteworthy that the objects Alisea is producing are mostly corporate communication design objects (average costed gadgets, equipment, etc.) that are made to last or consumables products (pen, pencil, graphite solution paint, etc.) that requires ownership at core. Accordingly, sale of products with additional complementary assets (maintenance, financing, take back program) (Tukker, 2004), leasing or renting (Tukker and Tischner, 2006) and pay-per-use model (Stahel, 2016) would not be feasible. Therefore, Alisea fits the *“Sale of single products”* (Williams, 2007) segment of our framework. Departing from this, we can argue that the product specifications

(whether complex or simple) and the scope and structure of the industry might effect on aforementioned price features in other words the way of offering value to the customer.

The company put emphasis on the promotion on company website as communication of circular economy through design is crucial for them. For example the statements in the website *“Perpetua the pencil loves the planet. No tree has been cut down to produce it”*, *“Lets recycle together by writing”* and *“To date, together, we were able to recycle writing 11693067(live counter) grams of graphite”* that shows each purchase of their pencil helps recycle 15 grams of graphite are the solid evidences of companies promotion of their circular economy business model online. The website also includes up-to-date news part that shows the company’s involvement in circular economy activities.

As the CEO reports, the B2B companies that are selling their products in stores were given instructions about how to convey the value that the products have by leveraging on the circular economy related transformation story of the product. The instructions video that has been provided in company website has been also observed. Yet, CEO criticizes the companies on their ability to communicate the products by saying, *“One of the issue that a lot of the time I see companies that get the final product (from Alisea) are not communicating it strongly enough. I give them all the guidelines how you should communicate this product. But then most of the time companies don’t really follow the ways it should be communicated so that’s when it kind of start losing values”*.

By looking at the role of the customers and their involvement in circularity initiatives, the CEO finds it essential as she tells, *“It is not most of the time we found out ourselves (what to do with waste), it is the client that contributes with the knowledge they have with all different materials”* and continues as *“It is a group work”*. She explains her perspective on customer as making them more inclusive *“I consider the clients as investors in my projects rather than merely clients because they are people who believe what I do and have the same mentality to do the business in a more sustainable way”*. Likewise, circular economy literature indicates the critical role of the customer for enabling the transition (Geng and Doberstein, 2008; Zhu et al., 2010)

The customer is the crucial part of circular economy according to the CEO whether it is B2B or B2C. For example in B2C market, they communicate the message to the customer as such *“This pencil used to be underground and by writing with it, you are disposing a non-renewable material”*. Once the customer uses the pencil which is made of 80% re-cycled graphite (no-wood or glue is used), the pencil fades away and there is nothing left after the product. Therefore the company developed the term “self-cycling” for such products. As the CEO underlines, *“Customer wants to feel (being) part of something bigger by having something that has a value, a story that went through a process to become something new”*. The behavior the company adopts towards involving customer in this dimension of the framework is also emphasized by Geng & Doberstein (2008) who addressed the active public participation as indispensable for the success of CE implementation by portraying the impact of one billion of Chinese customers can make. Yet, the case company realized it as also part of value creation by emotionally attaching them.

The CEO emphasizes communicating to customer the proper message as such, *“What you do really matters; you personally can make the difference by the choices what you buy”* to make them feel

their contribution to the process and involving them in circular economy is crucial. According to Alisea, the strong communication is crucial when creating the objects from waste. For example, they write, “*I was a car reflector*” on the pen they created out of waste car reflector. According to CEO, by doing so it becomes more than a pen and starts communicating values. The products (communicating objects) “*Communicate Alisea’s story and the client’s story together and the desire to create something better for future*”.

The case company shows a stringent involvement to the promotion activities as they are aware of the impact of conveying the values in a right way pays back. The behaviors of the company in terms of promotion is compliance with the argumentation of Heerde et al., (2013) and (Kumar and Venkatesan, 2005).

### ***iii. Managerial commitment***

It is imperative to note that commitment is a physiological state in essence which depicts the interaction of an individual with the object (organization, project etc.) by having implications on the decision to sustain the association to the object in question (Lämsä and Savolainen, 2000; Meyer et al., 2002). From organizational perspective the attitudinal commitment and from individual perspective, the behavioral commitment were sought in the given settings of the case as a part of our framework.

Considering the case company is relatively small and the founder is the CEO of the company, the values and goals of the company are mainly determined by the CEO. That implies a higher authority on decision making (compared to bigger organizations) that might result in tendency to believe in and engage more with the path chosen by oneself. Salancik, (1977) describes this situation as “*individuals adjust their attitudes to fit the situations to which they are committed*”.

Accordingly the attitudinal commitment of the CEO to circular economy business model in the case, from organizational perspective can be described as identification of the self with the values and goals of the organization by having willingness to maintain the membership to the Circular Economy based business. We can observe the affective nature of the commitment (Meyer et al., 2002) by departing from the emotional attachment developed towards the business of the company focusing on Circular Economy since the managers became sympathetic to doctrine of the company. Accordingly they have internalized the core idea of their business and put extra effort to reach the goal as the CEO states “*they are all doing something that has a more profound meaning than just doing business*”. In parallel with this, Etzioni, (1961) underlined that if the business is associated with the useful societal goal by the managers or employee, the moral involvement of the individuals can be realized that reinforces the internalization of the values of the company.

The CEO claims that as she thinks her company is unique in terms of operating entirely based on circular economy concept in relevant sector, the philosophy of circular economy should be adopted by all employee in the company by dictating, “*who answers the phone has to have the same philosophy*”. Subsequently, the commitment of the managerial level led the commitment of the employee as the CEO reports “*It is all started with my intuition, but then it is the people working*

*in this office were ready to invest their time, dedicate. It would not have worked without the support of other people around". The daughter of the CEO underlined the personal traits on gaining the commitment from employee by stating " it really revolves around this feeling of trust, of respect towards one another, of being able to connect all of these people and being confident in talking with all of them, making sure they jump on board in the project. So huge part of it is her personality her ability".*

Regarding the behavioral commitment of the managerial level from individual standpoint, the pursuit of the CEO implies a binding to her acts that can be linked previous actions. The CEO states that the financial attractiveness of the business does not come at the first place but the values. For example, she reported that they tried not to be involved in politics and when political parties wanted to use Alisea's products as their gadgets, they declined their demand even if those were huge orders. The CEO says they did not want to be associated with a specific political party or parties because their products are for everyone but not limited specific group. The CEO reports by saying no to huge orders from political parties, "*(now) we are selling more than we would, if we would have accepted to sell it (to the political parties)*". She accentuates that, "*If a client would come up with a project they (themselves) don't believe in or recognize the values in, I wouldn't take the client because being small, flexible and agile give (us) the possibility to do that*". If the CEO refuses to change the circular business model even if the new possible business model -that might contradict the values of the company- would offer more profitability, we may interpret it as a result of irrevocable nature of the commitment (Reichers, 1985; Salancik, 1977). The membership of the company on the same circular economy business model by transforming waste into value-added goods for more than 20 years might indicate the irrevocability as well as the volitionally (Salancik, 1977) of the action. The purposive striving of the managerial level indicates the will on maintaining the engagement. The CEO intends to continue on the same circular business model for the company even after she leaves the company.

In accordance with Reichers, (1985), the behavioral commitment is explicit as we can judge it from the communicating objects which leverage on Circular Economy as a core value and the visible involvement of the company, particularly the CEO's, in circular economy related activities as such; public talks, university seminars, fairs and exhibitions, green contests.

The managerial commitment in circular economy is also approached by limited number of the studies and it reveals that especially for SMEs, the CEO/Manager of the company as an owner has a significant say over that facilitate the shift towards circular economy business models (Rizos et al., 2016). Previous research also stresses the significant role of environmental champions (top management level) who can persuade the organization and enable it to transform sustainability challenges to opportunities and innovations (Andersson and Bateman, 2000; Lee and Klassen, 2008) as we have witnessed through the case. Therefore, we can argue that managerial commitment is essential for the implementation of circular economy business models both in value network and customer value proposition and interface dimension.

## 5. Conclusions and limitations

The paper presents the consolidated managerial and organizational practices for circular economy business models by testing the feasibility of our framework that incorporates those practices. The framework was created by building on previous work of Urbinati et al. (2017), circular economy business models research as well as the research by organizational behavior scientists and socio-psychologists. We believe that an interdisciplinary approach is essential to investigate circular economy considering the multifaceted and complex nature of it. The framework is comprised of three main pillars namely, (i) Value Network, (ii) Customer Value Proposition and Interface and (iii) Managerial Commitment. The framework is tested on an Italian Small Medium Enterprise in office supply industry that has been operating based on circular economy business model more than 23 years.

We have found out that our framework is useful especially for supporting the companies that are willing to adopt circular economy business model or for the companies that are seeking ways to enhance their degree of circularity. Through the analysis of the practices on Value Network, we have observed the nature of the relationship of the case company with the suppliers, which is based on shared values and trust and how the company organize the internal activities and the design strategies followed. The investigation of the practices of Customer Value Proposition and Interface reveals the positioning of the company against competitors by the way it creates value with circular economy business model. It also shows the scope of communication and the degree of customer involvement as a way of capturing value.

In terms of Managerial Commitment that constitutes the base of our framework, as it describes the authenticity of the circular economy initiative, we have found it crucial to support above mentioned two dimension. Yet, we can argue that managerial commitment has significant impact on the shaping of the circular business models; in particular the practices as consistent line of activity. Commitment is indispensable as managers would face trade-offs between the profitability and circularity of the business in short term. Manager's self-identification with the goals and values of the company which helps internalization of what the company stands for facilitates reaching intended goals. The volitional, explicit and irrevocable behaviors of the managers towards circular business identifies the degree of the commitment which bind individual to his acts. We also argue based on the evidence in our case that, managerial commitment is a necessary condition employee level adoption of the circular economy philosophy especially in SMEs. It has also have a strategical significance in terms of aligning the resources with the objectives of the company.

Besides, we have observed the possible effects of contextual factors on shaping circular economy business model, as such the size and age of the company, industry and geography. The contextual factors can present meaningful opportunities as the case company leveraged on circular economy business model to overcome market competition from China and lower the cost. Further, the technical challenges to overcome based on the industry membership can result in patented product and process innovations. The age of the company might have an effect in terms of the established experiences, skills and relationships that can facilitate uptake of circular business model. On the other hand, administrative burden and lack of governmental legislative support /bureaucracy might hamper realization of circular business model as the case informs. Therefore Italian government

and at large government of European countries can proactively encourage especially SMEs by reducing the administrative burden and through amendments at concerning laws.

One of the limitations of our study is addressing a specific case in a particular geography yet we believe based on our in-depth examination suggested framework will be feasible under different settings. Therefore we invite researchers and practitioners to test and revise-improve our framework. As a further avenues for research, we suggest to test our framework in larger samples by applying multiple qualitative and quantitative methods. For example, it might be worthy to test whether or why is there any trade-off between the managerial and organizational practices of our framework. We also believe that more contextual factors and their influence on shaping circular economy business models should be investigated. Moreover, studying the circular economy business model configurations based on the suggested dimensions and detailed practices might be promising.

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