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Managerial Practices for Designing Circular Economy Business Models: The case of an Italian SME in the office supply industry

Abstract

Purpose – The purpose of this paper is to investigate the managerial practices that companies can implement in order to design a circular economy business model and how companies can create and capture value from a circular economy business model.

Design/Methodology/Approach – The paper adopts a single case study methodology with semi-structured interviews and company, supplier, and manufacturing site visits, conducted in a small-to-medium-size Italian company operating in the office supply industry.

Findings – The theoretical setting maps a set of managerial practices for a circular economy business model and sets the research gaps and question in a research framework designed along three main dimensions: (i) value network, (ii) customer value proposition and interface, and (iii) managerial commitment. Then, through an empirical analysis, the findings reveal that the proposed dimensions are interdependent and reinforce each other. Moreover, the managerial commitment as moderating factor between the value network and the customer value proposition and interface dimensions is identified as essential for reaching the intended goals of circular economy business models.

Research limitations/implications – This study maximizes the depth of the phenomenon under investigation by leveraging a single case study methodology, which ideally helps in a theory-testing approach as in the present case. Future research opportunities could be found in qualitative and quantitative studies to increase the generalizability of the findings of this paper.

Practical implications – The paper presents a set of relevant managerial practices for circular economy business models that can be used by managers who have the will to embrace in practice circular economy principles to support the design, change, or upgrade of the business model of companies within which they operate.

Originality/Value – An interdisciplinary approach that integrates the research streams of circular economy, social psychology, organizational behavior, and business model design has been pursued to test the theoretical setting and the research framework for circular economy business models in a real-world context.

Keywords – Sustainable production, Green operations, Supply chain management, Small- and medium-sized enterprises, Circular economy, Business model, Value creation, Value capture.

Paper type – Research paper.

1. Introduction

This paper examines the managerial practices that companies can implement in order to design a circular economy business model and how companies can create and capture value from a circular economy business model.

The concept of a circular economy can be considered a branch of sustainability science, which is mainly rooted in the industrial ecology (Erkman 1997), cradle-to-cradle (C2C; McDonough & Braungart 2002), and cleaner production (Fresner 1998) research streams. The concept is undoubtedly becoming increasingly debated at the political and practitioner level. The recent EU (European Union) Action Plan on Circular Economy rapidly attracted attention, as the action plan aims to create new employment and business growth through circular economy (European Commission 2015; Manninen et al. 2018). Similarly, the business environment finds the circular economy to be a means of value creation, cost reduction, revenue generation, and increased resiliency and legitimacy for companies (Park et al. 2010; Tukker 2015; Manninen et al. 2018; Urbinati et al. 2017). More interestingly, the interest of academic journals in the circular economy has also grown tremendously, with the number of publications multiplying tenfold through the last decade (Geissdoerfer et al. 2017). Yet, it seems that scientific research is lagging behind compared to the political and practitioner engagement on the circular economy, and this urges for more academic involvement and collective effort (Korhonen et al. 2018).

The circular economy encourages people towards more sustainable behaviors and encourages policymakers to establish regulations that address principles of sustainability (Andersen 2007; Besio & Pronzini 2014; Miliute-Plepiene & Plepys 2015; Schneider 2015; Haas et al. 2015; Schaltegger et al. 2016). In particular, the issue of sustainable development has brought much attention to adopting policies that support the circular economy. On the other hand, we still lack the consolidated managerial directions that would support companies in implementing this paradigm. In other words, although several scientific contributions have started to shift attention from the macro (that is, cities, regions, or nations are the units of analysis) or meso (that is, eco-industrial parks are the units of analysis) levels of analysis to the micro (that is, the company is the unit of analysis) level (Geng, Yong; Sarkis, Joseph; Ulgiati 2016; Su et al. 2013), the issue of which set of managerial practices companies must adopt to implement the circular economy still deserves particular attention. Indeed, the circular economy implies profound changes in the managerial practices of companies; for example, in the way they can use energy, materials, and resources more efficiently, and reduce their environmental impact. Companies, essentially, should design, develop, manufacture, and distribute but also retrieve products (McDonough & Braungart 2002; Murray et al. 2015; Geng et al. 2013), maintaining the ownership of products, as well as of their components, while customers become their users (Tukker 2004; Tukker 2015; Tukker & Tischner 2006).

Following this perspective of analysis, several scholars started to revise the broad field of circular economy (Merli et al. 2017; Ghisellini et al. 2014) and have opened up the research stream of circular economy business models, which tries to analyze the choices of business model design in the light of circular economy principles. In particular, several contributions have studied the circular economy according to a business model perspective (Linder & Williander 2017; Urbinati

et al. 2017; Vermeulen 2015). These studies have highlighted two main dimensions of the business model that companies can leverage to implement the circular economy as a new industrial paradigm. One dimension is the value network, which mainly concerns management of the supply chain and the role of value creation along the entire network of suppliers, manufacturers, and retailers (Vermeulen 2015; Parkinson & Thompson 2003). The second dimension is the customer value proposition and interface, which mainly concerns the capture of value through the management of relationships with clients, such as demonstrated by the increasing appeal of pay-as-a-service mechanisms (Tukker 2015; Williams 2007).

However, these studies must be deepened, as they still lack sufficient empirical investigation. In this research, we mostly leverage the theoretical taxonomy proposed by Urbinati et al. (2017), and we advance a comprehensive research framework of managerial practices for designing circular economy business models. We test the empirical suitability of our theoretical underpinnings on a small-to-medium-size Italian company operating in the office supply industry that has purposively designed a circular economy business model.

Our contribution will provide relevant theoretical and managerial implications. From a theoretical perspective, the paper confirms – through applying a theory testing approach – the reliability and validity of the proposed research framework. As such, this paper shows a holistic approach towards value creation and capture in circular economy business models by presenting a set of managerial practices that are interdependent and span firm boundaries. Considering that previous research is mostly focused on single practices dealt with in a rather isolated manner, this research contributes to a comprehensive and theoretical understanding of circular economy business model design, as well as to the mechanisms of value creation and capture. In addition, the paper adds to the literature important research directions that embrace several theoretical fields, such as social psychology, organizational behavior, and business model design. From a managerial perspective, the paper provides a map of relevant managerial practices that companies can implement to design their own circular economy business model. In particular, managers who are willing to embrace circular economy principles can leverage the managerial practices ensuing from our research to allow the transition of their companies towards a new and more sustainable industrial paradigm.

The paper is structured as follows. Section 2 summarizes the literature review on the circular economy in light of the managerial practices that companies can implement in their business model to design a circular economy business model. Hence, we extend the theoretical taxonomy suggested by Urbinati et al. (2017) on circular economy business models in order to propose a new research framework that will be used as a guide for the following empirical analysis. In Section 3, we highlight the methodology used in the research, and briefly present our study case of a small-to-medium-size enterprise (SME) in Italy operating in the office supply industry. In Section 4, we summarize the results of our research, emphasizing the empirical suitability of our research framework and theoretical setting. Finally, whereas Section 5 discusses the theoretical and practical implications of our study, Section 6 draws the conclusions and limitations, and advances avenues for further research in the field of circular economy business models.

2. Literature Review, Research Framework, and Research Question

2.1. Literature Review

As a reaction to the prevailing economic system of "take, make, and dispose," the concept of a circular economy has gained traction through the last decade both in academia and industry. Ecological economist Boulding (1966) first introduced the circular economy, and according to Ghisellini et al. (2014), it is possible to find roots of the circular economy in general systems theory (GST; Bertalanffy 1950). Accordingly, interdependence, holism, and complexity have been identified as important premises of the circular economy that relate to systems theory. Starting in the 1970s, several sustainability concepts have been suggested that focus on material flows and utilization of resources (Van Dijk et al. 2014).

The circular economy is currently regarded as a new industrial paradigm that encompasses some sustainability approaches, such as regenerative design, performance economy, cradle-to-cradle (C2C), industrial ecology, biomimicry, cleaner production, and blue economy. The concept aims to create a restorative industrial system by intention (Geissdoerfer et al. 2017; Geng & Doberstein 2008). In this respect, the circular economy, similarly to C2C, focuses on early phases of product design to determine the material cycle in which the product will be involved. As such, the C2C concept suggests two material cycles, namely the biological cycle and the technical cycle, where the materials are used almost endlessly. The concept of C2C is based on three principles: (i) eliminate waste, (ii) use renewable energy, and (iii) celebrate diversity (local production and supply chain). Companies that adopt C2C operate according to five key directions, namely, (i) material health, (ii) material reutilization, (iii) water stewardship, (iv) renewable energy, and (v) social fairness (McDonough & Braungart 2002; Braungart et al. 2007; Van Dijk et al. 2014). By adopting these principles and directions of the circular economy, some companies are trying to minimize their negative impact on the biosphere.

It is an indisputable fact that the finite resources of the earth are being aggressively depleted; we are using more than we can replace (Iranzo 2005). Consequently, the circular economy is considered a solution for waste generation, resource scarcity, and sustaining economic growth (Lieder & Rashid 2015; Geissdoerfer et al. 2018; Murray et al. 2015). According to Murray et al. (2015), "a true circular economy would demonstrate new concepts of system, economy, value, production, and consumption" (p. 373) for sustainable development. As an alternative to the neoclassical economy both from the theoretical and practical vantage points, the circular economy suggests operation according to the laws of nature by considering the constraints imposed by the biosphere (Ghisellini et al. 2014). In addition, the circular economy is a dynamic, multidisciplinary, evolving concept that pursues the decoupling of economic growth from resource use and social impact (Merli et al. 2017). As such, a sustainable supply chain has been recognized as an essential part of a circular economy (Geissdoerfer et al. 2018; Bocken et al. 2018). In terms of theory and practice, a circular economy is derived from environmental economics and industrial ecology (Ehrenfeld & Gertler 1997) with a focus on technological innovation (Ghisellini et al. 2014; Klewitz & Hansen 2014). Consequently, new strategies have been developed – such as product service systems – to facilitate the transition towards the circular economy (Tukker 2015).

However, all the above antecedents of the circular economy deserve holistic attention and a systems approach if studied according to the lens of strategic management and business models (Pauchant & Mitroff 1990; Murray et al. 2015). This fact has encouraged scholars to point out that the concept of a circular economy provides opportunities for radically changing the business model of companies in accordance with regenerative eco-industrial development and the well-being of humans and nature (Ghisellini et al. 2014). Regeneration in the concept of the circular economy is not only limited to material and energy recovery, but also encompasses the improvement of the community as an integral part of nature (Lyle 1996). Therefore, the circular economy requires a systems approach where interdependence and holism are considered crucial for managing the finite resources that companies use. For example, as a part of a circular economy, industrial symbiosis initiatives aim to connect disparate industries at the large scale, and diverse companies at the small scale (companies that normally work as separate entities), to achieve environmental and economic benefits through resource exchange (material, water, energy, and byproducts; Ehrenfeld & Gertler 1997).

Still, scholars have pointed out that the transition of companies towards a circular economy has just commenced (Ghisellini et al. 2014). This transition plans to focus on circular economy implementation by adopting a micro-level perspective (that is, the company is the unit of analysis), instead of focusing more on the macro level (that is, the cities, regions, or nations are the units of analysis) or on the meso level (that is, the eco-industrial parks are the units of analysis. In particular, operationalizing the concept of the circular economy at the micro level is significant for observing and assessing its implementation in companies.

Extant literature on the implementation of the circular economy in companies has agreed on three main actions of the circular economy, which are named the "3R principles": Reduce, Reuse, and Recycle (Ghisellini et al. 2014; Preston 2012; Reh 2013; Sakai et al. 2011; Su et al. 2013; Zhijun & Nailing 2007). The goal of the reduce principle is to minimize primary resource use, energy use, and waste generation during the production (that is, through efficiency) and consumption phases of the products (Ghisellini et al. 2014). The reuse principle mainly covers operations that aim to use materials or products again for the same purpose that they were created for (European Commission 2008; Ghisellini et al. 2014). Lastly, the recycle principle refers to any recovery operation that reprocesses waste materials into new products, materials, or substances to be used in the production of the same or different products (European Commission 2008; Ghisellini et al. 2014).

Starting from the above premises, new practices for business model design have been found critical to circular economy implementation. For example, a shift from ownership-based business models to performance- or "pay-per-use"-based business models is suggested to accomplish a circular economy (Stahel 2016). According to Bocken et al. (2016), a circular economy should be coupled with business model design for the success of the company. In a similar stance, Tukker (2015) proposes a model of a product service system (PSS), or in other words a servitization model (Visnjic et al. 2018) for resource efficiency. Stahel (1982) is reckoned as a pioneer of the PSS concept, which is considered a major part of a circular economy. The PSS concept has been

adopted by many manufacturers to obtain higher revenues and sustainable performance (Sakao et al. 2009; Martinez et al. 2010).

2.2. Research Framework and Research Question

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

1. The value network, which refers to the degree to which 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 regard the degree to which a company makes visible to the customers its compliance with 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 (Mayyas et al. 2012; Zhu et al. 2010; Lieder & Rashid 2015; Moreno et al. 2016) are related to the following:

- Energy efficiency–driven practices to reduce emissions and environmental footprint

Energy input, especially for the heavy process industry, has been a main topic and has been studied at the core of sustainability research. As such, many scholars attempted to develop indicators to access energy efficiency and conservation in a circular economy (Li et al. 2010; Su et al. 2013). Yet, the main idea that a circular economy suggests is to reduce/minimize energy consumption and diminish leakages in the closed loop system, as the law of entropy suggests that the system will need to be fed with new resources when some portion of the energy is not recovered (Stahel 2013).

- Friendly material usage–driven practices; that is, natural, recyclable, durable, easy to separate

When using the finite resources or materials that the earth possesses, the materials' toxicity and origin (leverage of local resources) must be considered. Manufacturers are encouraged to choose a material or materials for specific products based on predetermined product lifecycle scenarios. This practice could close, narrow, or slow resource flows (Bocken et al. 2016). In addition, the material cycle that the product will be involved in after its useful life, either the biological or technical cycle, should be considered accordingly (McDonough & Braungart 2002). Thus, to make the business plan more viable, the retention and handling of the materials by pursuing ad-hoc

strategies (natural, recyclable, durable, and easy to separate) in the early product development phase is essential.

- Support of all partners to develop awareness and new skills, hence making the business model more viable (that is, circular) for all actors involved in the supply chain

For the industry, the core competencies, skills, information sets, and working methods for circular design of the products and processes are at the infancy phase. Accordingly, several authors call for the "development of new proficiencies" to enable the transition towards a circular economy. A circular economy business model requires innovativeness (Singh & Ordoñez 2016) and thus new skills coming from a network of stakeholders (Antikainen & Valkokari 2016). As such, experimentation is considered essential for the co-creation of value by involving multiple stakeholders (Bocken et al. 2018).

- 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

The nature of the relationship with suppliers has a significant impact on realizing a circular economy business model as a circular economy intrinsically requires a systems approach (Bertalanffy 1950; Ghisellini et al. 2014; Van Dijk et al. 2014) and the involvement of all value chain actors (Lapko et al. 2018; Bocken et al. 2018). The communication through the supply chain network should then be improved by leveraging shared value and trust to collectively reach the intended goal.

- Design for X (DfX) practices much more related to management of the product and its components at the end of its lifecycle, to reduce the environmental impact, as in the case of design for recycling, design for remanufacturing and reuse, design for disassembly, and design for environment

The role of design has been widely acknowledged by many authors as DfX practices are considered a catalyst of the transition to a more circular economy (De los Rios & Charnley 2017; Moreno et al. 2016). Consequently, numerous DfX practices are identified with their contribution to this transition, as listed above. As stressed by De los Rios & Charnley (2017), business models in the pursuit of sustainability call for new design capabilities.

Regarding the customer value proposition and interface dimension, the main managerial practices are respectively related to the variables of price and promotion (Williams 2007; Tukker 2004; Tukker 2015; Tukker & Tischner 2006).

In the first case, which relates to the variable of price, the main practices are related to the following:

- Sale of single products

This way of offering value to the customer is the most basic and is mainstream in linear modes of consumption. The customer owns the product, and responsibility for its use belongs to the customer, as does responsibility to return the product's materials back to the cycle when the product is no longer in use. This second responsibility is sometimes challenging, as a lack of environmental concern by the customer might retain the materials in the closed loop system (Ormazabal et al. 2018).

- Sale of products with additional complementary assets (financing, maintenance, take-back programs)

In the literature, this practice is mainly addressed as extended producer responsibility (EPR; Kunz et al. 2018). The offer of additional assets increases the viability of circular economy business models. For example, take-back systems are realized with a long-term contract between the customer and producer to return and receive the material.

- Leasing/Renting activities

As one of the most common forms of offering value to customers, leasing activities have been noted in the literature as a facilitator towards the circular economy, as less artifacts with an optimized use are required (Tukker 2015).

- Pay-per-use

Stahel (2016) introduced the concept of a performance economy that creates the basis for circular economy business models. Rather than selling a product, selling the use of the product is becoming prominent. Tukker (2015) endorses this model as part of a PSS as the most promising for realizing a circular economy.

In the second case, which relates to the variable of promotion, the company should promote a circular economy in its marketing activities (Heerde et al. 2013; Kumar & Venkatesan 2005; Baxendale et al. 2015) through a number of self-explanatory practices:

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

We propose a research protocol (depicted in Table 1 and described hereafter) that maps the set of relevant managerial practices for circular economy business models described above.

Table 1. Research Protocol.

Value Network	Customer Value Proposition and Interface
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 (that is, circular) for all 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
Environmentally friendly material usage–driven practices; that is, 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	

In the research protocol, we also 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" (p. 496). Indeed, managerial commitment is especially crucial when environmental initiatives are concerned (Klassen 2001; Lee & Klassen 2008; Andersson & Bateman 2000). Compared to other activities or types of innovation that have profitability at the core, environmental initiatives receive less managerial commitment in companies as they are considered less compatible with the *raison d'être* of business (Ramus & Steger 2000). Therefore, sustainability initiatives generally encounter remarkably more severe organizational resistance (Pagell & Gobeli 2009; Gattiker et al. 2014) than other strategic change initiatives or projects (Ramus & Steger 2000).

Accordingly, environmental practices require top management commitment (D'Amato & Roome 2009). Though they are scant, some extant studies emphasize the role of the chief executive officer's (CEO's) commitment to achieve sustainably goals, as environmental practices are generally realized in a top-down manner in a company, and the CEO has more influence on resource allocation and strategy setting (Kiron et al. 2012; Epstein & Buhovac 2014). The literature has recognized lack of managerial support as a barrier to environmental practices (Zhu & Geng 2013). In addition, managerial commitment has been investigated mostly in the strategic change, organizational behavior, and social psychology literature (Buchanan 1974; Lämsä & Savolainen 2000; Kiesler 1971). Buchanan (1974) stresses that the commitment of managers is essential to the well-being of the organization.

Commitment is mainly studied under two approaches: attitudinal commitment and behavioral commitment (Mowday et al. 1983). The attitudinal approach was introduced by

organizational behavioral researchers (Salancik 1977; Staw 1974) from the standpoint that an organization focuses on the alignment of organizational values and goals with those of individuals. The attitudinal approach refers to a mindset; it focuses on the extent to which a manager's (individual's) goal is congruent with that of the organization. The behavioral approach to commitment was suggested by social physiologists (Kiesler 1971), and delves into the psychological process of being committed from an individual's standpoint. This approach focuses on the extent to which the individual identifies himself or herself with a particular behavior (Salancik 1977). Accordingly, the manager's (individual's) past behavior binds him or her to the object (organization, project, etc.; Kiesler 1971). Salancik (1977) identifies the characteristics of the commitment behavior that bind the individual, such as the visibility (explicit), the volitionality and the irrevocability.

The mechanisms of attitudinal commitment and behavioral commitment work in a self-reinforced cycle in which a behavior leads to the development of a congruent attitude, that leads to further behaviors, and so on (Mowday et al. 1983). In consonance with this, Reichers (1985) defines commitment as "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" (p. 468). In this respect, internalization of the project goals or values of the company by an individual is essential for commitment (Mowday et al. 1983). Furthermore, Etzioni (1961) highlights the moral involvement of individuals once they feel the company has embarked on a useful societal goal.

Starting from the above premises, and leveraging the research protocol of Table 1, this paper aims to fill the gaps in the existing research and to answer to the following research question (depicted in Figure 1 as a research framework): *"Which managerial practices can companies implement to design a circular economy business model and how can companies create and capture value from a circular economy business model?"*

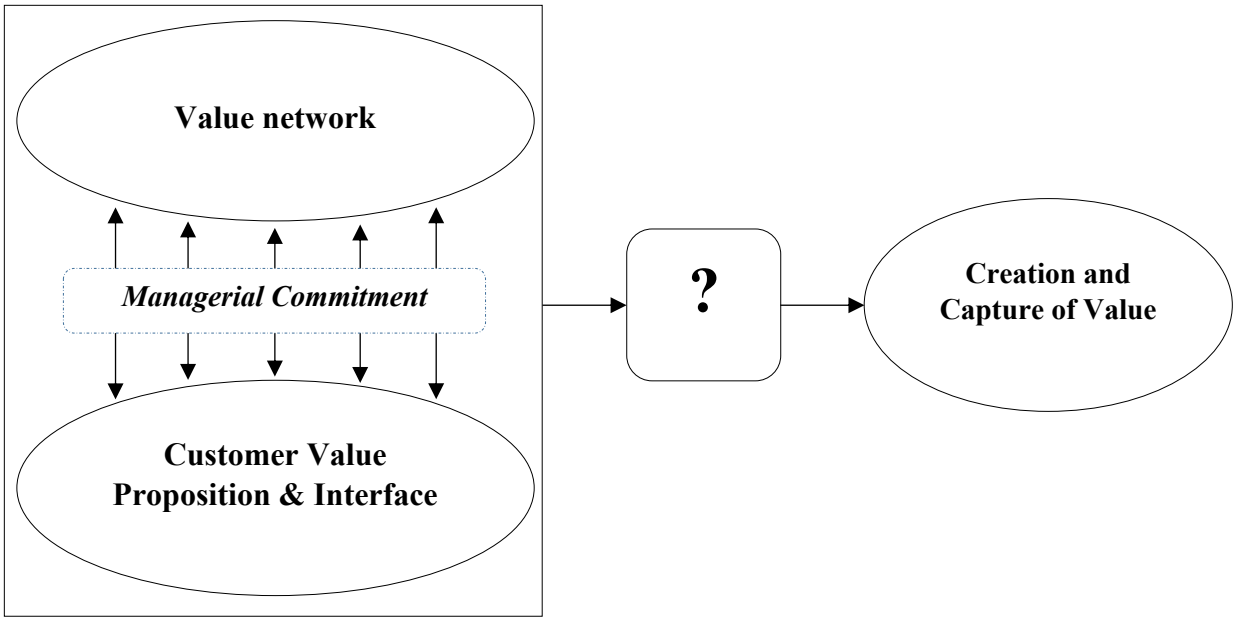

Figure 1. Research Framework.

In doing so, we position our research in the stream of research on circular economy business models and try to advance the knowledge in this field, by testing the research framework and the theoretical setting of our study in a practical case, described in the following section.

3. Methodology and Empirical Analysis

3.1. Using a Single Case Study Methodology

In this paper, we adopt a single case study methodology (Yin 2003; Siggelkow 2007). The case study methodology is preferable when there is a new phenomenon to be explored and also for allowing serendipity of findings in idiosyncratic situations (Eisenhardt & Graebner 2007). In our case, since the transition towards the circular economy just started and the impacts of it in organizations have yet to be explored, we employ an in-depth case study approach to have a comprehensive understanding of the phenomenon. An in-depth case study analysis was consistent with the goal of the paper for two reasons: (i) studying a single firm in depth allows the development of an intimate familiarity that helps us better grasp the insights from the data, and (ii) the complex and multidimensional nature of the analysis requires a comprehensive investigation that is more likely possible within a single standalone entity (Dyer & Wilkins 1991). Furthermore, having an extreme case in terms of the unique, long-term success of circular economy implementation in a particular setting (Italy compared to other European countries in terms of circular economy maturity) calls for deeper attention, which is possible with a single-case methodology. In addition, the selected case provides ample opportunities for learning with a high degree of visibility that informs our theoretical underpinnings to a great extent (Stake 2008; Barratt et al. 2011).

Case selection is based on a theoretical convenience sampling strategy (Voss et al. 2002). We believe that testing our research framework and theoretical setting to investigate the managerial practices for circular economy business models in a company where the skills and resources for a circular economy are established is the best strategy. This is because the circular economy is a quite new phenomenon for academicians and practitioners – as the literature points out, the transition towards a circular economy has just begun (Ghisellini et al. 2014) – and therefore we need to analyze the best practices already implemented and disseminate them for an appropriate reply.

We found an organization that originated as circular and that has an extensive history with the circular economy, since 1994. After a meticulous investigation based on secondary data and comparing other possible alternatives, the case stands out as a unique case of an early adopter, which strengthens the rigor of our methodological approach. In particular, even though Italy is one of the major production and consumption hubs in Europe, the country still lags in terms of realizing a circular economy compared to other European countries. Therefore, the Italian Ministry of Environment and Ministry of Economic Development published a roadmap and strategic positioning document, “Towards a Circular Economy Model for Italy” in July 2017. The report calls for redesigning business models, collaboration through industrial symbiosis, pursuing a regenerative bio-economy, and circular innovation for perceiving the circular economy as an opportunity rather than a need. These premises motivate us to focus on Italy for our case selection.

Compared to other European countries, Italy is the biggest manufacturer of office supply and design objects. Most of the companies operating in this industry outsource the production to China or to Middle Eastern countries due to the lower labor and raw materials costs and the loose regulatory environment, which contradicts the local production with local resources doctrine of a circular economy. The digitalization trend indicates lower rates of dependence on physical office supplies, yet the growth rate of the European office supply market is predicted as 2.4 percent for 2020. Considering the growing demand and the dependence of this particular industry on various types of natural resources (such as energy and raw materials), the industry can benefit greatly from a circular economy as a proper ground for implementation. To the best of our knowledge, the case company is one of the few cases of a small-to-medium-size enterprise (SME) in the Italian office supply sector that fully operates based on a circular economy.

An in-depth case study approach is considered stronger in terms of scientific discovery (Yin 2003). An exploratory in-depth case study is especially convenient for testing theories. Moreover, the use of qualitative case studies in a deductive way, as in our research, is mainly used to either confirm or falsify the "appropriateness of a theory" (Barratt et al. 2011; Bonoma 1985; Johnston et al. 1999; Yin 1994). Accordingly, in this paper, we strive to test our research framework and theoretical setting with a single, in-depth case.

We developed the interview protocol based on the proposed research protocol and framework (see Table 1A of the Appendix). However, we conducted semi-structured interviews to avoid limiting the interviewees and the possible serendipity of any additional evidence that might be used to revise or strengthen our research. The interviews were transcribed, and each author performed a traditional coding process in content analysis to identify the recurrent patterns of relevant information (Weber 1990). To ensure methodological rigor and overcome researcher bias, all three authors were involved in the analysis of the data through periodic meetings and discussions (Dubé & Paré 2003). We clearly set our unit of analysis as "managerial practices" to draw boundaries of the extant literature and theory we used (Barratt et al. 2011).

Our data sources mainly consist of semi-structured interviews conducted with several key respondents; that is, the CEO (and founder) of the company, the innovation and business development manager, the son and daughter of the CEO as part-time unofficial members of the company, and the CEO of a collaborator company. We conducted six interviews, each from one to one-and-a-half hours, for over six hours in total. The CEO of Alisa was present at three interviews as two of them were group interviews. Accordingly, the main interviewee was the CEO, as she was presumed to be more able to provide insights that could inform our investigation. In addition, as the company is relatively small, it was possible to see members of the company – including the CEO – undertaking multiple roles. As is stressed by many authors, this practice is due to SMEs having limited resources by definition and no clear boundaries between senior management, middle management, and shop floor staff (Narula 2004). The company has a horizontal management structure; that is, a flat organization with no level between the executives and employees. Had we interviewed the employees, the nature of the investigation (strategic management) would not have been a relevant to them, and they would not have been able to provide a complete picture of the phenomenon in question. With these caveats in mind and considering the limited resources that the company could allocate to us, interviewing the above-mentioned key respondents was the best research strategy.

We used interview notes and observations as well as informal interactions from visits to the company, supplier, and manufacturing sites (for over eight hours) to enhance the data triangulation. Thus, the information received from the key respondents in face-to-face meetings was triangulated with archival sources (Amankwah-Amoah 2016), as well as published academic works about the company and other internal documents obtained through the company and related websites. Using multiple sources allowed us to avoid post-hoc rationalizations (Eisenhardt 1989; Choi & Hong 2002; Urbinati et al. 2018), and thus to increase the reliability and reinforce the substantiation of the constructs (Benbasat et al. 1987; Eisenhardt 1989). We started the analysis of the data by creating a 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 with particular constructs were identified.

During the development process of our work, we contacted the company regularly, and shared the progress of the paper with the company for verification.

3.2. Brief Presentation of the Case Study

Alisea was founded in 1994. The founder and CEO of the company is a female lawyer with a sales background, who 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 the office supply industry by creating custom corporate communication objects by reusing and recycling. The industry in the 1990s faced huge Chinese competition that made competitive production in Europe very difficult. The company has nine employees (five in the office and four in manufacturing) with a turnover of more than €1 million in 2016. We visited the company to gain insights through observation. We met a majority of the employees in person. Following the company visit, we visited one of the waste/scrap material suppliers of the company – located within 20 km – together with the CEO to have a closer look at Alisea's processes and routines.

Table 2 gives detailed information regarding the case.

Table 2. Case Information.

Company	Alisea
Country	Italy
Interviewees	CEO (and founder) Innovation and business development manager Son and daughter of the CEO (part-time unofficial members of the company) Collaborator company's CEO
Number of interviews and duration	Six interviews for over six hours Two company visits, supplier and manufacturing site visits, observations and informal interactions (over eight hours)
Secondary material	Firm website, brochures, audio materials (TED Talk of the CEO), documents shared by company, bachelor and master theses (see below) 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 employees	Nine employees (five in administrative office, four at manufacturing site)
Industry	Office supply
Founding year	1994
Revenue in 2016	One Million Euro
Products	Recycled graphite pen, notebooks, pencil, custom design objects

4. Results

Based on our research protocol, framework, and theoretical setting, we analyzed the case along the three major dimensions of circular economy business models, namely, (4.1) value network, (4.2) customer value proposition and interface, and (4.3) managerial commitment.

4.1. Value Network

The company originated from the will of the CEO, who pursued something different because there was huge competition from China at the time (1990s). As the CEO reports, she asked herself, *"How can I be different than anyone else?"* Two events made her decide to start a business that had a circular economy at the core. (1) She remembered that when she was travelling by train in 1982, she overheard a conversation between two university professors regarding the huge need for a recycling industry in the future, and that someone needed to take action. (2) She recalled an intriguing gift, a notebook made of recycled paper, that she received as a present.

In the late 1990s, when the majority of Italian and other European companies were not even aware of the circular economy business model, the CEO sensed a big opportunity in it. She started the business by going door-to-door to companies and asking what they were throwing away or whether she could utilize their waste. The will to put into practice the concept of a circular economy helped differentiate her business from competitors and generate revenue (Manninen et al. 2018; Park et al. 2010). The company now has 15 fixed suppliers. Based on a project or on what clients want, Alisea finds and collaborates with new suppliers. The CEO argues that Alisea was started with a circular economy business model: *"We are an example of how you can build a*

company entirely based on circular economy." According to her, everyone talks about the circular economy theoretically, but Alisea is using the model 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 benefit."*

4.1.1. 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

Regarding communication with waste material suppliers, who in some cases are the clients themselves, and with the other actors involved in the supply chain, the CEO emphasizes the role of Alisea as a bridge and facilitator: *"Big part of the work is functioning as connection between all different parties that all want to participate in (circular economy), but they would not know how and where to start. So Alisea is what connects everyone."* Doing so creates effective cooperation and communication across the value chain, as indicated by previous research (Zhu et al. 2010; Ghisellini et al. 2014). For example, one collaboration Alisea made was with an Italian SME (supplier) that produces a sunshade and a well-known Italian stationery company (client). The stationery company wanted to produce a product made of recycled material but could not manage it. After the stationery company contacted Alisea, a collaboration started between these three parties, led by Alisea. Alisea received waste sunshades (scrap material in different sizes) from the supplier at no cost. The CEO claims the material is worth €28/meter if bought as virgin raw material. The motivation for the supplier to give its waste for free originates from 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."* The scrap sunshades has been used to produce several items such as purses, backpacks and the covers of recycled notebooks. As stated by several authors, the circular economy facilitates the reduction of cost (Murray et al. 2015; Park et al. 2010).

According to the CEO, the circular economy business model is viable for the whole value chain: *"Circular economy kind of fits everyone."* This is because *"the client (business-to-business, B2B) does not pay the cost of disposing the waste material."* Alisea also outsources work to other manufacturer stakeholders, whose work has been influenced negatively by competition from China. As the CEO reports, she asks them, *"Together with what you are producing, why don't you also produce this?"* She emphasizes that her company's projects are win-win for everyone, as is true for circular economy projects (see, for example, Geng et al. 2012).

The CEO mentions bureaucracy-related challenges: *"We cannot get all the waste companies produce because of Italian laws."* The innovation and business development manager explains the difficulties caused by the incongruence between the law and circular economy business models: *"Recycling of graphite is not so easy in Italy because there are different guidelines and laws which are not up to date."* Lack of governmental support and effective legislation have been widely addressed as a salient barrier towards the uptake of sustainable practices (Parker et al. 2009).

In addition, a study conducted in China among 157 firms showed that even if there is a good understanding of the circular economy, there is a huge gap between awareness and actual behavior due to cultural and contextual factors (Liu & Bai 2014). And, each location might have its own characteristic dynamics in terms of adopting the circular economy business model. For example, while in China circular economy adoption is mostly top-down (command and control), in Europe it relies on a market-based approach (bottom-up; Ghisellini et al. 2014).

The CEO underlines the importance of trust by stating, *"It is a system that is strongly founded on trust."* Her company trusts that everyone in the collaboration will do what they are supposed to do and act fairly. She says, *"I believe without the trust, all thing just would not work."* The CEO gives an example of the waste graphite supplier for Alisea's pen and textile dye production. When a couple of companies wanted to buy the waste graphite from the supplier, the supplier did not sell it, even though Alisea does not pay for the waste; the supplier informed the companies that the waste was reserved for Alisea. According to the CEO, this gesture is a result of strong communication and a relationship based on trust. In addition, the supplier sees more value in becoming part of a circular economy than in selling its waste. The case shows that shared values and trust are critical variables in developing effective collaboration and communication. In supply chain studies, we observe multiple forms of trust, conceptualized "as a belief or confidence in another's reliability, integrity, credibility, honesty, truthful benevolence, faith that another will meet obligations and the expectation that another will act in accordance with an individual's beliefs" (Ajmal et al. 2017, p. 1100). Conditions of trust have also been studied as part of managerial commitment, which is further elaborated in a following section.

4.1.2. Support of all partners to develop awareness and new skills, hence rendering the business model more viable

In terms of the support of all partners to develop awareness and new skills, the CEO reports that it is a learning process: *"Every time we do something, it is never the same. It is new manufacturing process for every single object (from waste). What makes it possible is the strong bonds I have with the producers and I have been building it over 20 years."* She continues, *"We all learn and get trained (on circular economy) together every single day by working on it."* We can see here some parallels with the literature on the circular economy as the training on technical and technological know-how enables companies to shift more effectively towards a circular economy business model (Liu & Bai 2014).

The CEO claims that the company became an expert on graphite and found a way to use graphite waste as ink to dye fabric. The company is getting a patent for this process. The company is working with a sustainable fashion start-up that requires 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 of Alisea provided the innovation, and the fashion start-up produced textile products and scaled up and has become a long-term collaborator of Alisea. We interviewed the CEO of the fashion company for this study. The CEO of the fashion company describes the unique synergy between Alisea and his company; the pencil and T-shirt made with the reused graphite now sell at stores (fashion stores, coffee shops, stationery stores, etc.) that they would not have

been able to access alone. Indeed, the customers (either B2B or B2C) find the story of how an office supply company works together with a fashion company intriguing and this urges to have them (both pencil and T-shirt) together. Accordingly, each company helped the other company's product to get into new location. As the CEO of the fashion company underlines, *"I needed her – the CEO of Alisea – for the skills and understanding of how to build a brand from a commercial standpoint. She has been fundamental for the innovation side and circular economy."*

The CEO of Alisea also emphasizes the significance of collaboration: *"It is all about giving to others what you know and getting back what they can provide you."* The CEO underlines that, *"For circular economy, innovation is the key component"* because without innovation there would not be a circular economy. She emphasizes, *"Without innovation, circular economy does not really exist in (our company)"* because *"if it does not start from an innovative thought, improving the future and changing how the things are done are not possible."* Even if developing new skills is vital for a circular economy business model, the son of the CEO underlines that some skills for the circular economy are not transferable as they are time and context dependent: *"It is all about connecting the dots. When she (the CEO) has a problem to solve, she sees something (the material to be recycled), she thinks [of] something that happened two years ago, and she recalls that moment to put the things together (to solve the problem). So, you can have as much people (employees), but you cannot transfer this knowledge."* This quote indicates that certain skills and capabilities for the circular economy mature over time through experience.

The company's argument around this specific managerial practice of our framework is consistent with the literature, as capabilities and skills for a circular economy at its infancy phase need to be collectively developed (Ghisellini et al. 2014). In this respect, the case verifies the literature, as technology is addressed as a crucial factor to realize a circular economy, since the advancement of technology is seen as a pre-requisite to implementing circular economy practices (Su et al. 2013). Also, Geng & Doberstein (2008) address technical skills as a key component of the circular economy for Chinese companies by illustrating how the circular economy can benefit from the development of technology, such as eco-design, environmental, and cleaner production technologies. Likewise Ghisellini et al. (2014) stress the need for innovation to support circular economy initiatives.

4.1.3. Energy efficiency–driven practices to reduce emissions and environmental footprint

The energy efficiency–driven practices to reduce emissions and environmental footprint that Alisea follows are mostly certified by third parties, as the CEO believes this certification brings credibility to their processes and products. The CEO focuses on local production and supply as part of reducing the environmental footprint and claims that the company has a contract to recycle all the waste graphite in the territory. Her company gets calls from the research and development sector and also from companies that want to be involved in and give their thoughts on new ways of using all the waste graphite.

The CEO affirms that all the products made have a "remade in Italy" label to indicate the company achievements in energy efficiency and environmental footprint. The products that are certified after audited by the institution can demonstrate this label. In particular, she says, *"The label describes the sustainability characteristics of the material, the product, and the production*

process in terms of savings in raw materials, energy, and CO_2 emission reductions" (Fortuna 2016). For example, the achievements regarding environmental performance of the textile dyeing technology that uses waste graphite reduced the energy consumption and CO_2 emission by 90 percent and water consumption by 99 percent. The company informs our framework in this managerial practice that the third-party certification may add credibility, as shown by previous research (Hansen & Schaltegger 2018; Hansen & Schaltegger 2016). Park et al. (2010) also addressed certifications (for example, ISO 14000) and regulatory requirements as sources of legitimacy and reliability that make companies more resilient.

4.1.4. Environmentally friendly material usage–driven practices

The environmental friendliness of the materials is verified by certifications and compliance with regulations. Alisea emphasizes this practice since it is a fundamental part of the material upcycling process of the company. To illustrate, the majority of the business relies on the upcycling of waste graphite. As a crystalline allotrope of carbon, graphite is a nontoxic, natural, carbon-based mineral, and it is odorless and tasteless. In addition, graphite is a natural lubricant and provides an innate advantage when used as a dyeing technology solution in the textile industry, especially for denims. Alisea holds three patents on the use of waste graphite. For the pencil (entirely composed of graphite powder mixture) the company produces out of waste graphite, the product and process are patented. For the dyeing technology based on the graphite solution, the paint is patented.

Compared to a traditional pencil and its production process, the pencil produced by Alisea does not use any tree or non-renewable material; on the contrary, the pencil is made of waste graphite, and the rubber (eraser) by upcycling waste from the food industry with a "Food Grade 21CFR (Code of Federal Regulations)" certification. To pair the body of the pencil with the eraser, the company does not use the traditional metal collar (ferrule) and glue; instead, it found a way to join the parts together during the molding process. By eliminating the use of some materials, the company is doing more with less as part of its material stewardship. Unlike the traditional pencil, the CEO indicates the environmental friendliness of product by stressing, *"There is no glue (in the pencil) so it is 100 percent nontoxic."*

The pencils last twenty times longer compared to a conventional pencil as they are made entirely of graphite. In addition, the production process uses 20 percent less energy per pencil. The patented production process relies on smart technologies, which decrease the cost of production and increase the efficiency and quality of the outputs. The fully automated production process has been observed through a site visit and interactions with site managers. The capacity of the site has been reported as 400 pencils per hour. Based on the certifications and documents shared by the company, the manufacturer complies with the environmental, social, and economic requirements of Alisea (Winroth et al. 2016; Siong Kuik et al. 2011; Thomas et al. 2012).

As an alternative to conventional fabric dyeing, which relies on the use of synthetic chemical pigments and fibers (polyvinyl alcohol, or PVA) for sizing, the patented technology Alisea developed relies on chitosan (a natural polymer extracted from food waste) and graphite. The CEO summarizes the motivation behind the technology as, *"After experiencing what innovation in this (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 the graphite-based solution process passed technical performance tests for market. In addition, 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 (European Union) 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, using practices driven by the use of environmentally friendly materials, complies with the toxicity and upcycling research of the circular economy (Braungart et al. 2007).

4.1.5. DfX practices

The DfX approaches that the company follows clearly show that the company embraces design for recycling/upcycling (Vezzoli & Manzini 2008; McDonough & Braungart 2002), design for reuse, and design for environment. Also the company uses design for product attachment and trust (Bhamra & Lofthouse 2007; Bocken et al. 2016), design for reducing material/resource use of products (Ashby & Johnson 2003) as a strategy to slow the loops, and resource conservation (Bocken et al. 2016).

4.2. Customer Value Proposition and Interface

4.2.1. Practices related to price: Sale of single products

The objects that Alisea produces are mostly corporate communication design objects (average costed gadgets, equipment, etc.) that are made to last, or consumables (pen, pencil, graphite solution paint, etc.) that requires ownership at the core. Accordingly, the sale of products with additional complementary assets (such as maintenance, financing, and take-back programs; Tukker 2004), leasing or renting (Tukker & Tischner 2006), or pay-per-use (Stahel 2016) is not feasible. Therefore, Alisea fits the "sale of single products" practice of our research framework (see, for example, Williams 2007). The product specifications (whether complex or simple) and the scope and structure of the industry might affect the aforementioned price features; in other words, the way of offering value to the customer.

4.2.2. Practices related to promotion

4.2.2.1. Promotion on company website

The company emphasized promotion on the company website, as communication of the circular economy through design is crucial to them. For example, statements on the website – *"Perpetua the pencil loves the planet. No tree has been cut down to produce it," "Let's recycle together by writing,"* and *"To date, together, we were able to recycle writing 11693067 (live counter) grams of graphite"* – show that each purchase of their pencil recycles 15 grams of graphite are evidence of the company's promotion of their circular economy business model online. The website also includes up-to-date news that shows the company's involvement in circular economy activities.

As the CEO reports, the B2B companies that sell the products in stores received instructions about how to convey the value that the products have by leveraging the circular economy–related transformation story of the product. There is also an instructional video for B2B customers on the company website. Yet, the CEO criticizes its vendors on their ability to

communicate about the products by saying, *"One of the issues 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 do not really follow the ways it should be communicated so that is when [the product] kind of starts losing value."*

4.2.2.2. Customer involvement in circularity initiatives

The CEO finds the role of the customers and their involvement in circularity initiatives essential: *"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."* She continues, *"It is a group work."* She explains her perspective on customers as making them more inclusive: *"I consider the clients as investors in company's projects rather than merely clients because they are people who believe what the company does and have the same mentality to do the business in a more sustainable way."* Likewise, the circular economy literature indicates the critical role of the customer for enabling the transition (Zhu et al. 2010; Geng & Doberstein 2008).

The customer is the crucial part of the circular economy, according to the CEO, in the cases of both B2B and business-to-consumer (B2C). For example, in a B2C market, the company communicates the message to the customer, *"This pencil used to be underground and by writing with it, you are disposing a non-renewable material."* Once the customer uses the pencil that is made of 80 percent recycled graphite (no wood or glue is used), the pencil fades away and there is nothing left. 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 the customer is also emphasized by Geng & Doberstein (2008), who addressed active public participation as indispensable for the success of circular economy implementation by portraying the impact one billion Chinese customers can make. For instance, circular economy requires re-thinking the consumption and needs to be supported with novel consumption activities within the scope of the green purchasing behavior of the customers. Alisea realized that another part of value creation was emotionally attaching customers.

4.2.2.3. Communication of circularity through all channels

The CEO emphasizes communicating to customers the proper message, such as, *"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 involvement in the circular economy is crucial. According to Alisea, strong communication is crucial when creating objects from waste. For example, the statement *"I was a car reflector*" was printed on the pen they created out of waste car reflectors. According to the CEO, printing this on the pen makes it more than a pen and communicates values. The products (communicating objects) *"communicate Alisea's story and the client's story together and the desire to create something better for future."*

Alisea is committed to promotion activities, as they are aware that conveying values in the right way pays back. The behaviors of the company in terms of promotion comply with the arguments of Heerde et al. (2013) and Kumar & Venkatesan (2005).

4.3. Managerial Commitment

Commitment is a physiological state, in essence, that depicts the interaction of an individual with several of the company's dimensions (organization, projects, etc.) by having implications on the decision to sustain the association to the dimension in question (Lämsä & Savolainen 2000; Meyer et al. 2002). From an organizational perspective, attitudinal commitment, and from an individual perspective, behavioral commitment, were sought in the given settings of the case study as part of our framework.

Considering that the case company is relatively small, and the CEO is also the founder, the CEO mainly determines the values and goals of the company. That fact implies a higher authority on decision making (compared to bigger companies) that might result in a tendency to believe in and engage more with the path chosen. Salancik (1977) describes this situation as "individuals adjust their attitudes to fit the situations to which they are committed" (p.70).

The attitudinal commitment of the CEO to the circular economy business model, from an organizational perspective, can be described as identification of the self with the values and goals of the company by being willing to maintain the company's status as a 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 a circular economy, since the CEO and managers become sympathetic to the doctrine of the company. Accordingly, the whole company internalized the core idea of the business and made extra effort to reach goals; as the CEO states, *"They (all the employees) are all doing something that has a more profound meaning than just doing business."* Likewise, as the innovation and business development manager expresses, *"The values of the company and the way of doing the work"* are motivating his commitment to the company. In parallel with this, Etzioni (1961) underlined that managers or employees associate their business with a useful societal goal, a moral involvement by the individuals can be realized that reinforces the internalization of the values of the company. The CEO of the collaborating fashion company sees the CEO of Alisea as *"inspiring… motivating… She just thought it was the smartest way to do things for the environment, for her business, for people."*

The CEO of Alisea claims that, as she thinks her company is unique in its sector in terms of operating entirely based on a circular economy concept, all employees in the company should adopt the philosophy of the circular economy: *"Who answers the phone has to have the same philosophy."* The commitment of the managerial level led the commitment of the employees, 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 CEO's daughter, who has been actively involved in company activities, underlined the personal traits that gain commitment from employees: *"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 (the CEO's) personality and her ability."*

Regarding the behavioral commitment of the managerial level from an individual standpoint, the past behaviors of the CEO serves to bind her to the company. The CEO states that the financial attractiveness of the business does not come first, but values come first. For example, the company tried not to be involved in politics, and when political parties wanted to use Alisea's products as their gadgets, Alisea declined, even though accepting would have meant 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, not limited to a specific group. The CEO reports that 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 continues, *"If a client would come up with a project they do not believe in or recognize the values in, I would not 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 a new business model – that might contradict the values of the company – offers more profitability, we may interpret her behavior as a result of the irrevocable nature of the commitment (Reichers 1985; Salancik 1977). The CEO intends the company to continue with the same circular economy business model even after she leaves. In accordance with Reichers (1985), the behavioral commitment of the company is explicit, as seen by the visible involvement of the CEO in circular economy–related activities, such as public talks, university seminars, fairs and exhibitions, and green contests. In addition, the way the company's products communicate about the circular economy openly by telling the story of the process they went through from waste to a value-added item is an indicator of the visibility of the commitment.

A limited number of studies approach managerial commitment in a circular economy and reveal that, especially for SMEs, the CEO or the top management of the company has significant influence, which facilitates the shift towards circular economy business models (Rizos et al. 2016). Previous research also stresses the significant role of environmental champions (at the top management level) who can persuade the organization and enable it to transform sustainability challenges into opportunities and innovations (Lee & Klassen 2008; Andersson & Bateman 2000), as witnessed in the current case study. Therefore, managerial commitment is essential for the implementation of circular economy business models in both the value network and the customer value proposition and interface dimension.

5. Discussion: Theoretical and Managerial Implications

Several insights emerge for theory and practice from our empirical analysis. Table 3 synthetizes the information collected and mapped on the basis of the research protocol dimensions, that is, (4.1) value network, (4.2) customer value proposition and interface, and (4.3) managerial commitment, and according to the research framework directions.

Table 3. The Circular Economy Business Model of Alisea.

Value Network	Customer Value Proposition and Interface
• Effective trust-based (mostly win-win) collaborations with suppliers and manufacturers, ensuring long-term relationships and their membership in the circular economy • Functioning as a bridge that connects all value chain partners for a common goal of a circular economy • Developing new skills by means of innovating and adoption of new technologies (product innovation and process innovation) • Leveraging the skills and resources of the value chain members to tackle challenges • Use of waste materials that are positively defined (nontoxic) and reliance on the certifications • Using DfX approaches that facilitate the circular design	• Price (the way of offering value to customer) based on the characteristics of the product • Involving and using insights from the customer (B2B or B2C) as a major part of the circularity • Effective storytelling of circular economy achievements (that is, the transformation of waste material to a new product) as a source of creating value for the customer and for customer attachment • Proper communication about the circular economy through all channels: through the product, sales personnel, the company website, advertising, and involvement in circular economy–related fairs, talks, seminars, and activities
Managerial Commitment *"For me the real value is talking about everyone participated in the project as a whole, that's when the value is created" (the CEO)*	
• Manager's self-identification with the goals and values of the company (become sympathetic to the doctrine of the company and therefore internalize the goals) • Managerial commitment ensures that the values and the philosophy of the company outweigh the tendency towards the *raison d'être* of business (profit maximization), which might contradict with the circular economy goals • Managerial commitment is necessary for (i) organizational (employees), (ii) supplier, and (iii) manufacturer commitment, which are critical for maintaining circular economy business models	

From a theoretical perspective, this paper confirms – through a theory testing approach – the suggested research framework in Figure 1 that also extends the previous research and the conceptual taxonomy proposed by Urbinati et al. (2017). In addition, the paper adds to this literature new, relevant research perspectives that embrace several theoretical fields, such as social psychology (Kiesler 1971), organizational behavior (Salancik 1977; Staw 1974), and business model design (Massa et al. 2017). First, the paper adds to the literature on social psychology, as it shows how the moral involvement and internalization of circular economy principles by senior managers mediate a high level of engagement with suppliers (into the value network) and customers (into the customer value proposition and interface) to co-create and co-capture the value as an output that is more meaningful for the whole value chain (Etzioni 1961; Mowday et al. 1983). Second, organizational behavior research benefits from our study as our work highlights how the alignment between the values (doctrine) that are exposed by a circular economy and the behaviors of the individual managers, as well as those of suppliers and customers, facilitates the value co-creation and co-capture process (Steers 1977). Third, the paper contributes to the literature of

business model design (Massa et al. 2017), especially from the point of view of conceptualizing a firm's business model as a system of interdependent dimensions, and by extending the concept of circular economy business model towards a systems perspective (Velu 2016). Indeed, this study emphasizes the importance of simultaneously orchestrating the managerial practices belonging to the value network and the customer value proposition and interface dimensions by leveraging the managerial commitment to balance and support their interaction. Thus, in the same way as Zott & Amit's work (2010), the purpose of this paper is to "encourage the firm in systemic and holistic thinking when designing its business model, instead of concentrating on isolated, individual choices" (p. 223), as in the case of focusing on specific dimensions of the business model or managerial practices. This systemic and holistic view is even more important in the research streams of circular economy business models, when the dilemma of "energy demand, waste management, and greenhouse gas emission to achieve a circular economy system" (Pan et al. 2014, p. 409) has to be simultaneously solved. The multiple theoretical perspectives addressed throughout the paper show how the concept of value in the research stream of circular economy business models is more collaborative (social), holistic (interdependent), and meaningful (symbolically and emotionally).

From a managerial perspective, the paper provides several contributions. First, the theoretical setting maps a set of relevant managerial practices companies can implement to design their own circular economy business model. In particular, managers willing to embrace circular economy principles can leverage the managerial practices ensuing from our research to aid the transition of their companies towards a new and more sustainable industrial paradigm. Second, our findings show that the value network and the customer value proposition and interface dimensions have to simultaneously interact to allow the effective transfer of value from the producer to the customer. The two dimensions must be conceived in a holistic view to be adequately balanced. The transition towards circular economy business models can be supported by the moderating role played by managerial commitment, which proactively allows the managerial practices mapped into our research framework to be adopted in real world settings. Third, managerial practices for a circular economy business model can be useful for both the value chain and the bottom line of companies, who can increase their net earnings, net income, or earnings per share (EPS). Indeed, an efficient use of resources means less costs, and more sustainable practices may mean a growing market share. In this case, policy makers and authorities are called to pay attention to the micro level perspective (that is, the company is the unit of analysis) and not only persist with their historical focus on the macro level (that is, the cities, regions, or nations are the units of analysis) or on the meso level (that is, the eco-industrial parks are the units of analysis; Ghisellini et al. 2014). In particular, policy makers and authorities are called to incentivize companies that are not familiar with circular economy principles or not willing to embrace this paradigm to conceive of waste as a source in a value creation process. Indeed, waste does not necessarily mean destroyed value; on the contrary, it may mean a beneficial resource for other players belonging either to the same value chain or to similar or different supply chains. This incentivization can enhance the transition towards a circular economy paradigm.

Managerial commitment, which constitutes the base of our framework, as it describes the authenticity of the circular economy initiative, was crucial to support the value creation and capture. Managerial commitment significantly impacts the shaping of the circular economy

business model, as it plays the role of moderating factor between value creation and capture in the dimensions of the value network and the customer value proposition and interface. Commitment is indispensable as managers face tradeoffs between the profitability and circularity of the business, in the short term. Managers' self-identification with the goals and values of the company helps them internalize what the company stands for and facilitates reaching the intended goals. The volitional, explicit, and irrevocable behaviors of the managers towards a circular business show the degree of commitment, which binds an individual to his acts. Our study also shows that managerial commitment is a necessary, although under-highlighted, condition for employee-level adoption of the circular economy philosophy, especially in SMEs.

This study also observed the possible effects of contextual factors on shaping a circular economy business model, as such the size and age of the company, the industry, and geography. Contextual factors can present meaningful opportunities, as with the case study company leveraging a circular economy business model to overcome market competition from China and lower its costs. Further, overcoming technical challenges can result in patented product and process innovations, as seen in the literature (Klewitz & Hansen 2014). The age of the company might have an effect in terms of the established experiences, skills, and relationships that can facilitate the adoption of a circular economy business model. On the other hand, an administrative burden, bureaucracy, or a lack of governmental legislative support might hamper the realization of a circular economy business model, as seen in the case study, in line with the literature (Rizos et al. 2016). Therefore, the Italian government and the governments of other European countries can proactively encourage circular economy business models, especially in SMEs, by reducing the administrative burden and through amendments to make relevant laws more business oriented (McDowall et al. 2017).

6. Conclusions, Limitations, and Avenues for Further Research

This paper examines the managerial practices of circular economy business models for value creation and capture by testing the empirical feasibility of the research framework presented in Figure 1. The framework was created by enhancing the taxonomy proposed by Urbinati et al. (2017), and starting from the research streams of industrial ecology, sustainable supply chain, product-as-a-service, cradle-to-cradle design, and cleaner production, to finally address an interdisciplinary approach that integrates the research streams of the circular economy, social psychology, organizational behavior, and business model design. An interdisciplinary approach is essential to investigate the circular economy, considering its multifaceted and complex nature. The proposed framework comprises three major dimensions of circular economy business models, namely, (i) value network, (ii) customer value proposition and interface, and (iii) managerial commitment. The research framework and the theoretical setting were tested on an Italian small-to-medium-size enterprise (SME) in the office supply industry that has been operating with a circular economy business model for more than 23 years.

Our framework is especially useful for supporting companies that are willing to adopt a circular economy business model or for companies that are seeking ways to enhance their level of circularity. Through the analysis of value network practices, we observed the nature of the relationships of the case company with its suppliers, relationships based mostly on shared values

and trust, and how the company organizes its internal activities and designs its strategies. The investigation of the practices of the customer value proposition and interface reveals the positioning of the company against competitors by the way it creates value with its circular economy business model. It also shows the scope of communication and the degree of customer involvement as a way of capturing value.

Managerial commitment has a strategical significance in terms of aligning the resources with the objectives of the company. This alignment, in particular, is reinforced by the interdependency of the research framework dimensions, as once balanced together they can boost the degree of circularity of the company. Mostly, the interdependency of the business model dimensions is a critical issue underlined by scientific research (Zott & Amit 2010), and this interdependency is even more important in the context of a circular economy, where companies are called to build a holistic view of the managerial practices needed for their circular economy business model. Put differently, companies are required to consistently manage the dimensions of (i) value network, (ii) customer value proposition and interface, and (iii) managerial commitment of their business model. Accordingly, this paper presents a theoretical understanding of circular economy business model design as well as value creation and capture in the circular economy business model. By leveraging a specific case, the suggested research framework – which incorporates the literature of the circular economy, social psychology, organizational behavior and business model design– was consolidated.

One limitation of our study is that it addresses a specific case in a particular geography; yet we believe that based on our in-depth examination, the proposed research framework might be feasible in different settings. Therefore, we invite researchers and practitioners to test, revise, and improve our research framework and theoretical setting. As a further avenue for research, we suggest testing our research framework in larger samples by applying multiple qualitative and quantitative methods. For example, it might be worthwhile to test different configurations of managerial practices in our research framework by incorporating the strategy literature. As such, further investigation is required to understand how companies can implement circular economy practices for value creation and capture. This calls for examining the way companies combine scarce resources with circular economy managerial capabilities. The contextual factors and their influence on shaping circular economy business models should also be investigated, considering the higher degree of interdependence to the external environment that circular economy business models call for. Moreover, studying the value creation and capture in circular economy business models from the demand side – the consumer perspective – might be promising, as the research has mostly focused on the supply side – the firm perspective.

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Appendix

Table 1A: Interview Protocol.

Company details

- Turnover
- No. of Employees
- Sector of activity
- Suppliers
- Products
- Patents
- Vision and mission of the company
- Clients (Business-to-Business, B2B) of the company

Dimensions of a Circular Economy Business Model

Value Network

1. How do you collaborate with your value chain actors to implement a circular economy business model?
2. How effective do you think your communication with the value chain actors is?
3. How is your relationship with your key partners?
4. To what extent does your company support the key partners to develop skills and awareness on circular economy or vice versa?
5. Have you taken any initiative in terms of energy and CO2 reduction?
6. Are the raw materials used in production environmentally friendly and recyclable?
7. How do you design your products based on circular economy?
8. Did you receive any recognition or award on your circular economy initiatives?
9. Did you give any training to your employee on circular economy?

Customer Value Proposition & Interface

1. What are the ways of offering value to customer and generating revenue in your company?
2. (How) do you promote your circular economy involvement in your company website?
3. (How) do your advertising and sales personnel in-store promote circular economy?
4. (How) do you involve your customers in circular economy initiatives?
5. (How) do you communicate circular economy and what are the channels you use to communicate?
6. How do you reach to your customers or how do they find you?

Managerial Commitment

1. What are the goals and values of the company that the CEO and (top) management aim to transfer to their employees and stakeholders?
2. To what extent do you think the CEO and (top) management of the company are engaged in circular economy initiatives?

3. To what extent do you think the employees and managers believe in the goals and values of the company?
4. What kind of actions do the CEO and (top) management perform to transfer their commitment (i.e., dedication, engagement) for circular economy initiatives to their employees and stakeholders?
5. How (and in which way) is the involvement of the CEO and (top) management in circular economy initiatives?

Problem and Challenges with the feasibility of a Circular Economy Business Model

1. What are the challenges you faced through your circular economy initiatives?
2. To what extent do you think the geography has influence on circular economy initiatives?
3. What is the impact of regulations on your circular economy initiatives?
4. To what extent do you think the age of the company has impact on circular economy initiatives?
5. To what extent do you think the size of the company has impact on circular economy initiatives?
6. To what extent do you think the industry company operates has impact on circular economy initiatives?