Univerza v Mariboru

Fakulteta za kemijo
in kemijsko tehnologijo

Bachelor thesis

IMPORTANCE OF BUSINESS MODELS IN CIRCULAR ECONOMY

Maribor on June 2022 Raquel Fernández Gómez

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On the basis of Article 330 of the Statute of the University of Maribor (Official Gazette of the Republic of Slovenia, No. 41/2021-UPB13), I issue the following

DECISION ON FINAL WORK

RAQUEL FERNÁNDEZ GÓMEZ, student of 1st cycle ABS study programme Izmenjava UN, has satisfied all requirements and is allowed to compose the final work.

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Supervisors:

doc. dr. DUŠAN KLINAR, univ. dipl. inž. kem. tehnol., supervisor
red. prof. dr. ZORKA NOVAK PINTARIČ, univ. dipl. inž. kem. tehnol., co-supervisor

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The deadline for submission of the final work is 08.07.2022. Final work shall be prepared in line with requirements of the guidelines: *Predloge z navodili za pisanje zaključnega dela* and submitted at the Student Affairs Office. Number of copies: 0. At the same time, a statement from the supervisor is submitted (and possible co-supervisor) on final work adequacy .

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red. prof. dr. Zdravko Kravanja, Dean

To be notified:
- candidate,
- supervisor,
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- archive.

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DECLARATION

I declare that I have written this thesis myself. Amy contributions made by others are indicated separately. I have reviewed the literature in the field of my thesis under the following keywords:

Source: Science Direct (https://www.sciencedirect.com/)

Keyword	**Number of references**
Business Models for Circular Economy	Year and number of references: 2023 (2); 2022 (2,335); 2021 (2,889); 2020 (1,906)
Business Model Canvas	Year and number of references: 2023 (3); 2022 (267); 2021 (381) 2020 (316)
Industrial symbiosis	Year and number of references: 2023 (2); 2022 (986); 2021 (1,216); 2020 (897)

Source: COBISS+ (https://plus.si.cobiss.net/opac7/bib/search/advanced?db=cobib)

Keyword	**Number of references**
Ressource efficiency	1,810
Synergies	460
Sustainable development	12,814

Source: Google Scholar, Google Books (http://scholar.google.com/, http://books.google.com/)

Keyword	**Number of references**
CE in SMEs	Year and number of references: 2022 (13,400); 2021 (15,800)
Circular economy	Year and number of references: 2022 (29,300); 2021 (108,000)
Product sustainable design	Year and number of references: 2022 (19,500); 2021 (385,000)

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Maribor, June 2022 Raquel Fernández Gómez

ABSTRACT

This bachelor thesis studies and analyzes the importance of business models in the Circular Economy. The company studied is an SME, i.e. 10 to 250 employees. The smaller companies are mainly confronted with the problem of resources, and the larger ones with their strategic orientation.

The aim is to generate a guideline or way of doing that serves as a model for the SMEs already created so that the transition from the Linear Economy, which is still predominant today, to a Circular Economy.

The idea is, after the study, a real case study of SMEs working with the premises of CE to establish a market model that follows the same.

To support changes, we have documented the different business models currently in use, choosing the Canvas Business Model for several reasons and making the various changes necessary to make this a sustainable and circular model.

In addition, it is established that the process of innovation and modification must be applied as a continuous cyclical process. If the company wants to be successful, it is a continuous cycle model, which should never stop.

KEYWORDS

Business Models for Circular Economy, Business Model Canvas, Industrial symbiosis, Ressource efficciency, Synergies, Sustainable development, CE in SMEs, Circular Economy, Product Sustainable Design.

UDK: 330.31:502.131.1(034.2)

1. INTRODUCTION

In the presented thesis, a study on the Circular Economy (CE) from a SMEs perspective is to be conducted by developing a guide with a way of doing and managing that can be adapted to the different companies already in existence or that promotes future companies to start their activity according to circular models.

How to notice, understand and develop opportunities connected to changes from the linear economy model that currently leads consumer markets.

It is compiled how companies with these practices can create and capture value from the circular business model.

Although the circular economy is a topic of great importance and is generating a growing interest given the multiple problems induced by the linear economy, it is not yet common practice among different companies.

The main objective is to start thinking and to understand what is necessary for existing companies within the framework of the linear economy to adapt their traditional business models towards a sustainable and circular Business Model (BM), or the new companies to be created are born directly with a form of circular business model management or even based on them.

Emphasizing the determinants to drive such establishment of this sustainable practice, as well as the actions that would be necessary to start changes from the current linear economy model.

To this end, one focuses on the various business models and on their overall innovation toward circular models that serve to establish a circular economy. The benefits this would bring to society, the environment and, specifically, resolve the question of how circular models can contribute to transformation toward CE in business organizations.

To this end, we will focus mainly on medium and large companies, as they have the greatest capacity to adapt to the more distant future.

It is also fundamental to understand the importance of the business models since, in the first instance, the establishment of one or the other will determine the production behaviour of companies and the value offered to the consumer. This means how the

different products and services will be produced and how they will be consumed or used.

The circular economy offers opportunities in the business, social and environmental fields; it has the support of society and governmental organizations; therefore, there is a high possibility that our current system will evolve until its complete establishment.

Methodologically, we will mainly follow an inductive analysis, which can conclude by establishing a series of conclusions.

Starting with fragments of information and a sufficient understanding of the support possibilities of transformation of existing BM toward a new one. Assessed the current situation, based on an actual case study, an Italian SME, and the transformation that the change and adaptation of the linear economy to the circular economy would entail, depending on the modification and adaptation of the business models.

Previously search for information has been done to understand globally how business models work and the necessary components for developing and establishing CE within companies.

As a function of these, the economy takes one character in the way of production and consumption by users based on the offering given.

That is, mainly from where the necessary resources are taken and how to avoid and recirculate the waste generated in production and consumption activities.

The case above study is about a small and medium-sized Italian company whose sector of activity is rather specific, the office supplies industry.

CE and its application to business models are being put into practice in recent years, despite being a concept known somewhat earlier. There is not enough information on implementing CE in companies and why they do not want to share too much of their research and achievements to others. To adjust themselves toward CE, on the other hand, focusing only on a single case study, one can do it in depth, is hard to see the comparison between the more theoretical part of the concept and how it works in practice, with its advantages and limitations.

In addition, the approach is quite broad and interdisciplinary, taking into account: CE, the influence on the design and incorporation of circular business models, the behaviour

of companies and users in the evolution of market models and the change in the mode of consumption (social psychology).

2. DEFINITIONS AND CONCEPTUAL BASIS

This chapter will discuss the theoretical concepts and definitions concerning the project, along with some explanation and analysis. Even more details on the idea of a circular economy and business models, in general, are searched.

In addition, the phenomena that induce the innovation of business models towards more sustainable ones are examined and defined.

2.1 Business models

The consuming nature of society in recent years has generated a change in the relationship between customers and suppliers.

This consumerism is characterized by increased customer needs, the breadth of purchasing options, and transparent supply alternatives.

The development of technology and globalization has had a significant influence on this evolution, as it has enabled companies to work globally.

It is necessary to highlight the influence of the growing increase in the world's population as an important circumstance.

For these reasons, companies must rethink their value creation strategies and how to address customers in a market where so many options make it difficult to stand out.

In other words, how to create a competitive advantage through the help of a business model.

2.1.1 Definitions overview

Although there has been a great deal of development in recent years on business models, finding a clear definition is difficult.

There is often confusion, as there may be references to business model components, operational business models, and change models.

Defining specific business model components is problematic, as they are often only a few small components of a broader concept.

Change models focus on how to keep a company profitable.

In a presented case study, value generation, both for the company and the consumer, promotes development from the current (linear) economy to a circular one. Operational business models contain the actual logic of the organization for the generation of this value.

Another difficulty in finding a clear definition of BM in many fields is its use in numerous publications in different fields. Sometimes the terms business model and strategy are used interchangeably.

A strategy is a plan of action created to achieve an objective, reflecting the business model to be implemented. The same strategy can involve the creation of different business models. Due to the mentioned reasons, it is not easy to find a clear definition of the concept; some of them have been collected below.

2.1.2 Sustainable business models

Traditional business models are based on proposing, creating, and capturing value. The value I am referring to is accounted for, almost uniquely, through economic benefit: return on investment, long-term stability and viability, and financial resilience.

However, the business model must consider economic, social, and environmental principles when implementing a sustainable, circular economy.

In other words, "they must meet the needs of the present without affecting the capabilities of future generations."

In terms of the environment, companies must rely on renewable and recyclable resources, low emissions, avoiding pollution, biodiversity, and numerous practices that ensure sustainable production.

Socially, health, safety, diversity, and equality must precede others.

That is why business models are necessary to incorporate a sustainable economy.

At this point, we can see that innovation in processes and production methods alone does not lead, as such, to sustainable development. Sustainability must be treated as the end of business activity or at least one of the ends. Therefore, it must be a business strategy where profit can be conceived as a means rather than an only end goal.

The innovation of business models toward more sustainable ones could be classified into three groups:

- Organizational innovation

These are modifications in practices and attitudes that affect the company's culture, structure, and routines.

- **Social innovation**

The focus of productive activity should be on social and economic benefits, creating social value.

- **Technological innovation**

It is providing products differently, integrating products and services, implementing innovative processes in existing models, or developing a relatively new model.

A sustainable business model is based on the generation of value through waste utilization, reducing the negative impact of pollution and the reclamation of virgin resources.

It aims to increase the yield of products and resources while reducing costs.

To this end, the circular economy is based on reuse, reduction, and recycling principles.

2.2 Circular Economy

CE has its roots in the study of industrial ecology, focusing on technological innovation and cleaner and more sustainable production, which is why it can be considered a branch of sustainability science.

The first to introduce CE was the ecological economist Boulding. The beginnings of CE can be found in general systems theory.

CE is considered a new industrial paradigm, encompassing several approaches to sustainability: regenerative design, performance economics, C2C, industrial ecology, biomimicry, cleaner production, blue economy, and so on.

The CE aims to generate and implement a regenerative system in the early stages of product design through the use of cycled or recycled materials.

An alternative to the linear economy, CE gives theoretical and practical solutions following the laws of nature together with all limitations.

It is an issue of increasing importance and influence.

There is an EU Action Plan at the political level that seeks, through CE, business growth and the creation of new jobs.

We can also say that at the business level, CE is treated as a means for value generation and cost reduction, with consequent revenue generation and increased business resilience.

The interest in this concept from the media and journals in recent years has been remarkable. More and more scientific journals are focusing their publications on CE, with a tenfold increase in the number of publications in the last decade. CE encourages people to follow more sustainable behaviors at all levels (political, business, social). There is still a lot of work and research to be done since there is a significant lack of clear management directions in which companies find support for applying CE-based market models.

Even though scientific research has focused its efforts on the business approach (micro-level), displacing it somewhat from the macro or mezzo levels of analysis, the uncertainty of the set of practices to be applied by the industry still deserves special attention.

Ultimately, CE seems like a solution to diminish waste generation, resource scarcity, and sustaining economic growth without destroying our planet.

According to Murray (Murray et al., 2017), "a truly circular economy would demonstrate new concepts of system, economy, value, production, and consumption."

2.2.1 Barriers to the viability of the CE

Despite the many advantages of implementing the circular economy, we face difficulties in several areas now and in the long term. Deep-rooted behaviors are persistent in the current system, including manufacturing processes, supply chains,

suppliers, consumers, and end-users. Another complication comes from integration into political, business, and social decisions. All of this is aggravated by today's excessive consumption.

The tipping point for change is how companies and various regulatory policies meet consumer needs.

2.2.2 Implementation of CE in SMEs

The change from the current linear economy to a circular one is not immediate. A transition period is required; within this period, concepts of both systems intertwine. The speed of change largely depends on the adaptability of each company. CE implies profound changes in terms of company management. A clear turning point is how energy and other resources are used and the source from which it comes, as well as how resources are used more efficiently, reducing the environmental impact simultaneously. One of the significant problems to be dealt with, and a point of great interest, is waste generation after using the product or service. Since the resources available to us are finite, their demand is increasing. Companies, as well as designing, developing, manufacturing, and distributing, need to recover products. To apply the recovery, a notable alternative would be to continue to own the products and their components while the customers are users only. Theoretically, CE can be implemented at different levels: macroeconomic, mesoeconomic, and microeconomic.

The first of these, the macroeconomic level, is the most extensive of all, the units of analysis being cities, regions, or nations. It deals with the establishment of the CE at the global level, carried out by governments and institutions.

The mesoeconomic level focuses on industrial symbiosis and closing material loops, as it is about different organizations sharing materials, infrastructure, waste, and by-products. Moreover, industrial symbiosis aims to connect disparate industries on a large scale and diverse enterprises on a small scale, thus achieving environmental and economic benefits through sharing resources. The transition of companies towards a circular economy focuses on applying the circular economy at the microeconomic level (the company as a unit of analysis). The micro-level involves the activities of SMEs in

terms of the design, development, and innovation of their products, generating environmental value.

At this level, one can observe where consumers' impact is most visible since their decision to start using or purchasing a product or service is fundamental. Promoting specific actions and behaviours or others when it comes to the decision-making process in companies. At the business level, two dimensions of the business model stand out.

The first is the value network, which deals with supply chain management and the role of value creation throughout the network of suppliers, manufacturers, and retailers.

The second dimension is where the customer and interface come into play; it is about capturing value through customer relationship management.

The SMEs themselves carry out the research and innovation of the products they offer to generate value both for consumers and economically to continue developing their activity. However, due to their economic and infrastructure limitations, when medium-sized companies find a model with which they can implement the circular economy in their system, or at least one that tends to its implementation. The problems and inconveniences they have encountered along the way, they do not usually share publicly, and that is why there is currently so little information on how to do it. Sharing their experience and information would mean that the rest of the companies would have a starting point and also that they could avoid all the possible problems that this involves.

SMEs are the ones who have made an effort and carry out the research and avoid making development available to other companies and competitors, being themselves pioneers of the change. Actual results in CE's slow implementation and development in the general context. At this point, emphasis should be placed on the environmental and social benefits and on the need to limit and reduce the consumption of virgin raw materials due to the supply problems we will have if this is not the case, as was already mentioned. Although the new strategies support the transition and adaptation towards a circular economy more appliable, the background of CE deserves global attention and a systematic approach. Such a view can also support approaches like implementing energy management and business models (Murray et al., 2017).

2.2.2.1 C2C concept

This concept is based on three principles:

- eliminating waste
- using renewable energies
- Implementing (celebrating) diversity

In this way, the C2C concept suggests two material cycles: biological and technical, in which materials are used almost endlessly. Companies that adopt C2C as a way of doing business operate within five key directions, namely material health, material reuse, water stewardship, renewable energy, and social justice, whereby companies try to minimize the negative impact on the biosphere.

2.2.2.2 Product Service Systems (PSS)

Product-service systems (PSS) comprise different business models that provide cohesive delivery of products and services. PSS models are emerging to enable collaborative consumption of products and services with important environmental outcomes . Many manufacturers have adopted the PSS concept to achieve higher revenues and sustainable performance.

2.2.3 Importance of design

In the traditional linear economy, design is a tool of consumerism.

The development of an attractive product, following the fashion of the respective moment and meeting the consumer's needs, was a priority, leaving in the background the generation of waste and the adverse effects that this would have on the environment and society.

Design becomes a fundamental and essential tool in a system where the economy is circular, where waste reduction, or even eradication, of waste after using the product is a priority. The product's design contemplates its entire useful life, trying to give it a new

use when it has finished. That is to say, from the beginning, its entire life cycle is taken into account, considering it as endless and always in transit, adapting and evolving for different purposes. This way, the rejection of the product can be avoided, which happens when it is conceived for a single purpose, as something that is not adaptable to others.

2.2.3.1 Design Thinking

There is a design concept called "Design Thinking," which we can consider to have been the basis of circular design and whose natural evolution has favoured the birth of circular design. This way of doing defends that use should come before design, finding a balance between the two, but where beauty takes a back seat. The creators of this innovative concept were the design company IDEO. This company was founded in the 70s due to the merger of different companies dedicated to product design. It is a way of work consisting of multidisciplinary teams with people with different specialities.

There is a long list of world-renowned multinationals with which IDEO has collaborated. Coca-Cola, IKEA, The North Face, Toyota, Visa, Microsoft, and many others are some of them. It is worth mentioning the figure of Tim Brown, director of IDEO since 2000 (IDEO, Fact sheet, 2021) and one of the most influential people in terms of the development and innovation of the "Design Thinking" method; he coined this way of working and conceptualized the methodology to be used. He shows great interest in the search for the welfare of people in developing environments. In addition, he advises senior executives and boards of directors of global companies in this field.

The Design Thinking process is based on five phases, which can be switched from one to another at any time and non-consecutive. This work methodology is taken from a non-linear approach. The working process operates as follows: working on a problem, prototype, and test it until the optimal solution comes out. At this point, the next phase follows, possibly iterating backwards with each phase if the project requires it. The process is systematically based on trial and error, which is the best tool to find the solution that best suits the requirements or needs. That is why the leaders of every project follow a phrase: "Fail often in order to succeed sooner."

The five phases or stages can be:

1. **To comprehend**: to understand profoundly and consciously what represents the reason for the problem. Knowing the needs and the environment in which it is necessary to find the solution.
2. ***Define:*** the information gathered in the previous phase is the subject of study, and the information that adds value and allows the creation or development of new perspectives is selected.
3. ***Ideate:*** in this phase, the important thing is to find as many solutions to the problem as possible, to expand the thinking so that the options are multiple and there is a wide range of options.
4. ***Prototyping:*** a prototype is built, making the idea or ideas of the previous phase become a tangible reality, thus visualizing the possible solution and thus seeing where it has succeeded and where it has failed, always favoring improvement.
5. ***Testing:*** in this step, the proposed solution is validated or not; it is tested with real users to see if the proposed solution solves the problem, reiterating until the best solution is found.

One can better understand the weight of "Design Thinking" in CE since it is a methodology that allows reintroducing new materials into the system. After seeing what it consists of, we can get closer to the concept of Circular Design.

2.2.3.2 Ecodesign

Another important concept, which significantly influences circular design, is eco-design. It is intrinsically related to Design Thinking since this concept introduces ideas similar to ecodesign principles. However, it incorporates environmental criteria at different levels during the product or service creation. It has a global vision of the different phases of the product's life cycle, not limiting itself only to the moment of manufacture or when it becomes waste, thus reducing the environmental impacts that the mere fact of production can generate. For this reason, it includes selecting materials (considering their possible exhaustion and whether or not they can be easily regenerated). The

product is considered a system in which all the elements that make it up are considered. The environmental factor is one more factor of the product; not compromising the environment is just as important as its functionality or quality.

Recent studies show the advantages for companies of using eco-design in their products. It favours an increase in its customer base, also favoured by a growing trend towards incorporating the EC in the industry. For all these reasons, ecodesign, together with the ideas of Design Thinking, constitute precedent ideas of circular design (Ellen MacArthur Foundation with IDEO, 2021).

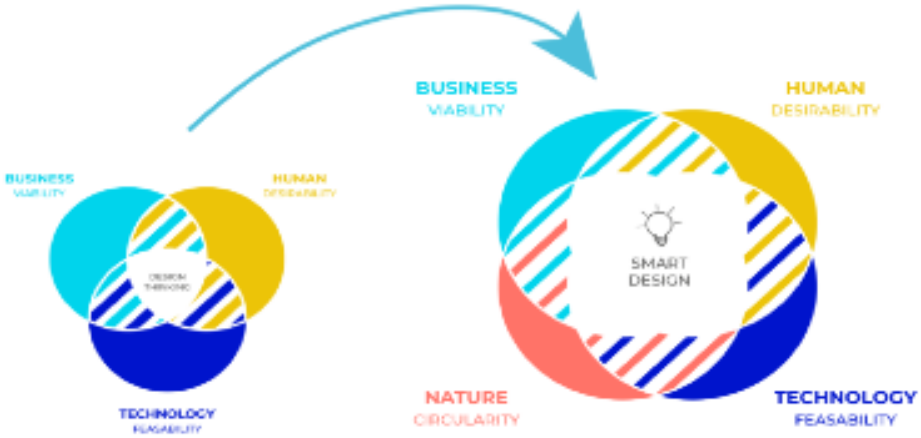

Figure 1 Adding the environmental factor to design thinking (Ellen MacArthur Foundation, 2021)

2.2.4 Circular Design

The Circular Design concept consists of applying the CE principles to design. In this case, the final product and the needs that satisfy the consumer are not the main points of view. In the case of Design Thinking, whose vision is more local, the point of view is the planet. In each design phase product should be conceived as a system. Notions of circularity and waste from its manufacture or use affect the environment and how these can be eradicated. In other words, the search for a regenerative future, in which the design of products or services is carried out with a broader vision, generating a circular and sustainable system. It is essential to highlight the importance of mentality change from the sale (buy) of a product to that of a service. This way satisfies consumers' needs

and favours a significant reduction in the use of resources and energy. The design company IDEO developed the proposed innovative idea with the Ellen MacArthur Foundation (Ellen MacArthur Foundation with IDEO, 2021). This organization works with companies to achieve their transition to the CE.

The circular design guide, proposed by the organizations mentioned above: Ellen MacArthur Foundation and IDEO) divides the phases of Circular Design into four: Understand, Define, Make and Release.

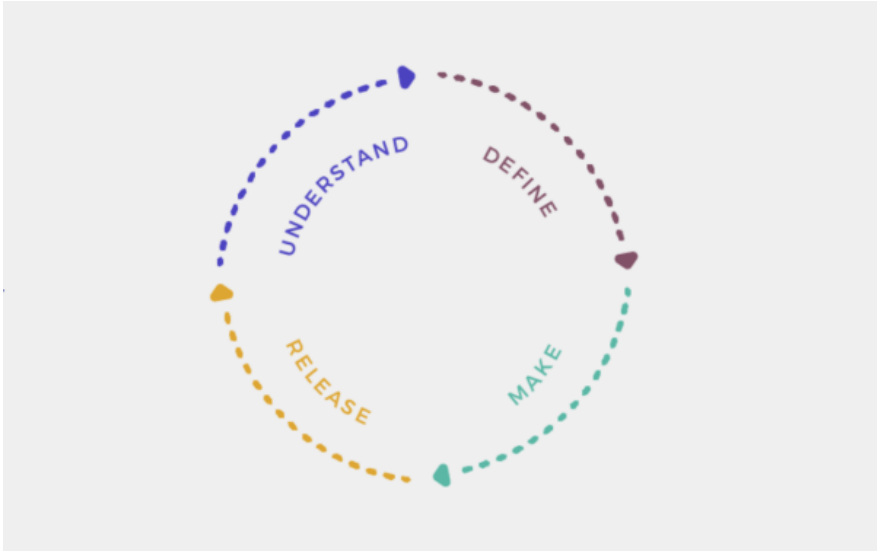

Figure 2: Phases of circular design extracted from the design guide (IDEO,2017)

As mentioned before, Circular Design consists of the evolution and influence of Design Thinking. A remarkable similarity in the phases is seen. Both methodologies have phases in which information converges and diverges so that an idea or concept is reached until the desired final solution is reached. The primary and most notable difference between the two systems is that Circular Design techniques promote the preservation of the environment as the central axis of their way of doing.

In the following, more details will be explained about each of the phases:

- Understand:

In a phase of understanding, both user and SME management are involved. There is a fundamental difference concerning Design Thinking. In this stage, not only is the problem evaluated, but all the interrelationships between the consumer or user and

their environment are considered. Keep in mind that the circular economy needs to consider society, the economy, and the environment. The product must be designed with a regenerative character from an environmental point of view. It is crucial to understand how materials are involved in manufacturing the product. In other words, the ability to design products that can be disassembled into components plays a key role. In this way, there are multiple replacement options, either to repair, innovate, or update each of these parts, ensuring that the product remains entirely usable and meets all needs without becoming obsolete or useless. In the same way, the parts or components that can be or have been replaced can have a second life as part of another product.

- **Define**

In this stage, the design challenge to be faced and the actions to be taken to solve the described problem. All the circularity options that have been proposed as a solution are also taken into account and evaluated. Circular business models based on attracting investors interested in the idea are followed. "Engagement: a technique developed by IDEO to reinforce the circular innovative position.

- **Make**

The Ideate and Prototype phases of the "Design Thinking" method are merged into a single one. Techniques such as "Circular Brainstorming" are used to generate multiple proposals based on the principle of circularity.

How a solution is reached in this stage consists of the knowledge of possible failures that the product may have depending on the material used. The impact these materials have on the development of the entire system and the rapid accessibility of simple prototypes, which can adapt better than the previous prototype, does not compromise the economic benefits.

- **- Release**

It is at this stage that the validation of the solution that has been adopted takes place, both with real consumers and with investors. In addition, the aim is always to increase the system's efficiency, which is why new partnerships are sought, even allowing combining several of the previously proposed ideas that were not adopted. In order to guarantee and achieve continuous improvement, once all the stages have been

completed, the initial stage is started again, adding value repeatedly and reaching a circular process situation. These cycles are called "Continuous Learning Loops." Design is an increasingly important factor in developing new products or services, as it helps make them more economically and environmentally efficient and benefits companies, society, and the environment. In addition, circular design is not only focused on what is designed but also on how the design is carried out, with a broader vision to achieve a product or service whose life tends to be infinite.

2.2.5 7 R's of CE

- **Rethink**

It is about rethinking the business models and the processes at all levels so that not only a fragment of the chain is taken into account, but the total system that is intrinsically related to various points of the product or service. Furthermore, this must occur inside and outside the company to encompass the environment, society, and industry.

- **Reduce**

This reduction purpose does not only encompass extraction, processes, and logistics. By applying the principles of circular design and manufacturing products that are durable and separable into components, making them upgradeable, we aim to achieve a reduction in energy and material consumption.

- **Reuse**

To give new opportunities to products or components whose life cycle, for the specific use for which they were created, has come to an end. The aim is to extend their useful life, ideally making it infinite, as much as possible. It can be achieved either by using more durable materials or changing the user, with the latter's needs being satisfied.

- **Repair**

The design must allow that, at the end of the useful life of the product, instead of being discarded and replaced in its entirety, it can be broken down into components or parts, which by simply replacing the defective or damaged ones, the product is serviceable again, extending its useful life. The product is treated as a system, but in which each

component is independent and can be replaced individually. When the product's design has not contemplated the replacement or repair of parts, this operation is usually costly and complex, being more efficient than the removal of the product and its replacement with a completely new one. As in the previous case, ideally, its useful life will be infinite.

- **Renew**

The recovery and reconditioning of the products are of great importance. With this, an update of the same is achieved, getting them to have the latest version and technology available on the market. A clear example is what has been happening recently with reconditioned electronic devices: cell phones, tablets, computers, etc. A few years ago, the replacement was only possible through a new product. However, now we can access these products that allow us to save on materials and also economically.

- **Recover**

It consists of recovering elements or products considered waste and whose materials can be used as raw material for the production or repair of other products. Also, through specific processes such as combustion or gasification, we can obtain energy recovery from these wastes.

- **Recycle**

Of all the processes, this has to be the last to be taken into account because when a product or material is recycled, it is because it has not been possible to find a solution in any of the other R's, which are much more efficient. This process involves, in the design, thinking about what to do with the components that, after the product's useful life, constitute the waste. It consists of separating the different parts, which constitute a different product waste, so that after proper treatment, they can be disposed of; therefore, the separation will be made according to the material.

2.2.6 Economic Impact of the CE

This chapter will discuss the impact that the establishment and development of the circular economy have on the economy. The CE boosts economic growth and employment generation, thanks to its proposed approach, with the fundamental

distinction compared to other models of environmental preservation as the primary objective. As the sustainability of the materials used for manufacturing and reconditioning products is the central point of its development, economic and resource savings are achieved. One of the critical factors is the importance of recycling processes. In the document "Financing the CE" (Ellen MacArthur Foundation, 2020), we find that a 25% steel cost savings for building construction could be achieved if recycled steel is used. The use of processes such as modular production or 3D printing is also of great importance, being these processes are increasingly used, as they involve an optimization in the use of energy and allow a high degree of reuse or recycling of materials in the phase of deconstruction or decoupling of components. On the other hand, CE has the great objective of achieving a change in the mode of consumption, replacing the purchase or possession of products with the contracting and enjoyment of the service that satisfies the need in question, or favouring the second-hand market. There is a clear example of the transition occurring in the way of consuming, with the second-hand clothing market having an increasing weight and estimated to double the size of the fast fashion market by 2029.

A new type of user demand also emerging.

Estimates from the European Commission predict that CE could generate some 700,000 new jobs (at the European level). It is also necessary to say that due to the application of technology (Industry 4.0) that would take place to establish a CE, there would also be a considerable loss of jobs, so it is necessary to guarantee workers the necessary opportunities to obtain the necessary training to meet the requirements of the jobs in this new field. Due to the expected positive impact of establishing a CE model, private banks, multilateral development banks, and development finance institutions have stepped up their investments in CE activities. In recent years, there has been a tenfold increase in private funds linked to investments in activities intrinsically related to CE. Moreover, according to data from the Ellen MacArthur Foundation, for 2021, assets under management in public equity funds increased fourteenfold.

This financial support is essential, as it encourages innovation and the transition to this model in both public and private sectors.

3. CASE STUDY: ITALIAN SME

The case study I am going to work on is based on the theoretical taxonomy proposed by Urbinati et al. (2017), which are exposed in the selected study article. It is a research framework on the management practices to be adopted by companies to establish a circular business model.

The suitability of the theoretical foundations is put into practice and tested in an Italian SME, Alisea, whose field of work is the office supplies industry and which has studied and designed a circular economy business model. This case study shows a comprehensive approach toward value creation and value capture in CE business models. A series of practices are shown that are intrinsically related to each other, and that encompass the boundaries of the company and why they contribute to a global and theoretical understanding of the design of market models and how they create and capture value.

In general, this study can also help other companies that want to establish a business model based on CE to design their business model since, in such a case, it establishes a guide of the relevant practices to be carried out for such an objective. Managers can adopt the management practices obtained from this research and thus achieve the transition and adaptation from the traditional market model to a sustainable circular one. In addition, several general directions are addressed, covering various fields (organizational behaviour, model design, social psychology, etc.) of global validity.

3.1 Literature review, research framework and research question.

In the emerging field of circular economy business models, Urbinati (Urbinati et al., 2017) developed a new taxonomy of the degree of circularity, in which the degree of adoption of CE principles is classified. They performed this taxonomy from a business model perspective (Osterwalder and Pigneur, 2010) and carried out two dimensions to analyze business models, the value network and the customer value proposition and

interface. The first significant dimension is the value network. The value network considers the degree to which a company leverages its essential resources, activities, and upstream partners to enhance the circularity of its products and processes.
In this dimension, we have the following types of practices:

- **Energy efficiency-driven practices lessen both emissions and environmental footprint, and thus harmful effects on the biosphere.**

Energy has always been an important topic of study in sustainability research, especially in the heavy process industry. There has always been an attempt to develop a series of indicators to access energy efficiency and conservation related to a CE. However, the main idea behind the CE is to minimize energy consumption, which reduces leakage in the closed-loop system. When some of the energy is not recovered, the system must be fed with new resources.

- **Practices of using environmentally friendly materials, natural, recyclable, durable and easy to separate materials.**

The origin of the materials to be used and their toxicity should be considered. If materials are used for specific products, focusing on predetermined life cycle scenarios, resource flows are slowed down, and it is easier to achieve the above.
We must also consider the flow of materials in which the product will be involved at the end of its useful life, whether it is its biological or technical cycle, seeking, as mentioned, decomposition into components for recirculation.

- **Support all partners to develop awareness and new skills. The market model becomes more viable for all involved in the supply chain.**

Several authors call for developing new skills to enable the transition to a circular economy, as a circular economy business model demands innovation capacity. Experimentation and analysis through trial and error come into play, involving various stakeholders in the process.

- Establishing effective communication with suppliers, retailers and end-of-life material managers, as well as with all actors involved in the supply chain.

CE requires a systematic approach and the collaboration of all actors in the value chain.

- Design with X intentionality (DfX), i.e. much more related to the management of both the product and its components, such as the reduction of environmental impact, recycling, manufacturing and reuse, decoupling of components, etc.

If designed with these premises in mind, it will be easy to implement them. DfX practices are identified as a significant contribution to this transition and the establishment of CE. As highlighted by De los Rios and Charnley (De los Rios and Charnley, 2017), business models in the quest for sustainability demand new design capabilities.

The second is the value proposition for the customer and the interface.

This dimension refers to the level at which a company shows its customers its compliance with CE principles. To measure dimensions, we can say that the variables of price and promotion are considered, i.e., what percentage of the price is dedicated to pay-per-use and how much is promoted around CE through marketing.

The most important management practices are related to the price and promotion variables.

Regarding the price variable, the main practices are:

- Single product sales. The most basic form of delivering value, and is the mainstream of linear consumption models.

The customer is the product owner responsible for its use and the return of the product materials when it has lost their usability. The second responsibility mentioned is, in most cases, evaded, due to lack of interest, or lack of information, as far as environmental preservation is concerned.

- Sale of products with additional complementary assets. Theoretically this is treated as an increased product liability. Additional assets increase the viability of CE business models. An example can be long-term return contracts.

- **Leasing/rental activities**. These are a great enabler to implementing circular market models, as they offer a much more optimized use. It is one of the most common ways of delivering value to customers.

- Pay-per-use. Stahel (Stahel, 2016) introduced the concept of performance economics, which is the basis for circular economy business models. This practice is gaining significant importance. Tukker (Tukker, 2015) endorses this model as one of the enablers for realizing a CE within the framework of a PSS.

In the second case, which refers to the promotion variable, it is very important that through its marketing activities, the company promotes a circular economy through the following self-explanatory practices:

- Advertising and dedicated sales staff at the physical sales location.
- Customer participation in circularity initiatives.
- Promotion through the business or company's website.

This chapter also emphasizes some research gaps highlighted by Urbinati (Urbinati et al. , 2017). Need for theoretical and empirical research to catalog managerial commitment in the determination and establishment of circularity-oriented policies and objectives, the generation of internal resources, and the need for product design among all actors in the supply chain. One of the practices for which managerial commitment is lower and therefore often meets with greater organizational resistance is environmental initiatives, as they are seen as less compatible with the business's raison d'être, the success. Managerial commitment is essential for the well-being of the organization, which is studied under two main approaches: attitudinal and behavioral commitment.

The former was introduced by organizational behavior researchers, following the premise of aligning organizational values and objectives of the organization and individuals. It is based on the extent to which a manager's objective is consistent with that of the organization. The behavioral approach, suggested by social psychologists, deals with analyzing the psychological process of the individual's commitment, focusing on the degree to which the individual relates to a particular behavior. Commitment behaviors of the individual such as visibility, voluntariness, and irrevocability. A given behavior leads to a congruent attitude. This attitude gives rise to new behaviors

progressively, with continuous improvement. Internalization of the objectives must develop on the company's part to reach them. Furthermore, for them, the question arises as to what practices are necessary to apply in order to lead the company towards a market model based on CE, i.e. how to create and obtain value in this way.

3.2 Methodology and empirical analysis

3.2.1 Brief presentation of the study organization

The research focus company, Alisea, was founded in 1994. The founder and CEO previously worked for a well-known Italian publishing house and used to manage a sales network of 40 or more people. The company consists of nine employees, of which four are in charge of manufacturing and five are located in the office.
The company is located in northern Italy and operates in the office supplies sector through reuse and recycling.

3.2.2 Single Case Study Methodology

This type of methodology, the single case study, is preferable when the research revolves around a new issue to be explored and is especially recommended for testing theories. Furthermore, that is exactly what is happening in this case since the transition to CE has only just begun, so the impacts and consequences on organizations are still unknown.
In order to have a more global understanding, we studied a single case but in greater depth, allowing for a clearer perception of the data. In addition, due to its multidimensional nature, the analysis requires a more intensive study, which is much more possible if we focus on a single company. We will work with an organization with a considerable track record, given the innovativeness of the concept around CE, which originated as a circular in 1994. Italy, compared to other European countries, is one of the laggards in CE. For this reason, the Ministries of Environment and that of Economic Development, 2017, published a roadmap to succeed in bringing this country to the

transition and implementation of a CE. This publication calls for the redesign of market models, circular innovation, a symbiosis between organizations, and a regenerative bioeconomy, perceiving the CE as an opportunity in which everyone is benefited, not as a necessity. Moreover, Italy also, compared to other European countries, is one of the largest producers of design elements and office supplies.

The increasing digitalization results in lower dependence on office supplies; a 2.4% growth of these materials in the European market is expected in the following years. This industry is highly dependent on natural resources, so implementing CE in this industry is of immense benefit. Most industries in this sector work by outsourcing production to China or Middle Eastern countries since this means lower labour and raw materials costs. These places are also less restrictive in terms of regulations. All this contradicts the CE principle of local production with local resources. Our case study operates entirely based on CE, being one of the few cases of SMEs in this sector to do so. Qualitative case studies are used deductively, which is how a theory's adequacy can be confirmed or falsified. The data source consists of the collection of semi-structured interviews to avoid limiting the interviewees to key respondents.

These key respondents are the CEO and founder of the company, the director of innovation and business development, the CEO's children as unofficial part-time members of the organization, and the CEO of a collaborating company. The data set consists of the collection of six interviews, lasting between one and one and a half hours, for a total of more than six hours. The person who could provide the most information was the CEO, which is why she was interviewed the most. One of the advantages of being a relatively small company is that it was possible to observe how the participants carried out some of their activities.

SMEs have limited resources, and therefore in many cases, there is no clear distinction or limits as to the tasks to be performed by top management, middle management, and plant personnel, which results in a horizontal management structure. However, the choice of interviewees was vital, as the nature of the study did not have the same degree of relevance for all company members. To achieve a better triangulation of the data, in addition to the interviews mentioned above, informal interactions from visits to the

company, supplier, and manufacturing sites were used, together with academic papers published on the company and other internal documents provided by the company itself and through related websites. In addition, a visit was also made to one of the company's waste and scrap materials suppliers. It is necessary to mention that there was continuous communication with the company to share the research progress.
The use of diverse data sources increases reliability.
By having a clear and defined research framework with theoretical constructs, it is possible to relate the quotations associated with specific constructs.

3.3 Results

The analysis of the case is carried out in terms of the three main dimensions of the CE business models, these being: the value network, the value proposition for the customer and the interface, and the management commitment.

3.3.1 Value network

Companys that emerged in the 1990s had a lot of competition from China, and the creator was looking for something different and innovative.
In addition, most companies in Europe were completely unaware of the circular economy business model. Curiously, two events happened to her that made her see the CE as a great business opportunity. The first was a conversation between two university professors who, while travelling by train, heard about the need to develop the recycling industry. She also remembered a gift, a notebook whose pages were made from recycled paper. She started her business by putting into practice her willingness to apply the concept of CE. She started by going from company to company, asking what their waste was or if they could take advantage of it. Today, the company has 15 regular suppliers, in addition to new collaborators that arise from specific needs on the part of customers. In this way, Alisea started from the premises of a market model based entirely on circularity. This way of starting serves as a guide for new organizations in the future, putting into practice the theory of CE that everyone is talking about. It

demonstrates how innovation, waste, and community can achieve a more sustainable economy where everyone can benefit.

3.3.1.1 Establishment of effective communication with suppliers, retailers and end-of-life materials managers.

It is necessary to maintain effective communication with all suppliers, retailers, material, and component managers at the end of the life of the products and with all actors involved in the supply chain. Alisea often connects all parties wanting to be part of the CE but not knowing where to start. The organization is the entity that connects everything and, in doing so, creates practical cooperation and communication throughout the value chain. We can say that the concept of CE is suitable for everyone, i.e. it is feasible for the entire value chain. CE reduces costs, one of the reasons being that the customer does not bear the cost of disposing of the waste material (B2B).

Due to regulatory issues, Alisea cannot purchase all the waste generated by other companies, which often leads to inconsistencies between the law and circular market models. One example is the difficulty of recycling graphite, which is of great importance in this industrial sector due to the lack of updating of different laws and guidelines. This leads to recognizing that the lack of government support and involvement and the lack of adequate legislation are barriers to adopting sustainable practices (Parker et al., 2009).

The gap between knowledge about CE and actual behaviour has also been demonstrated because of cultural and contextual factors. Each site may have its way of adopting the CE business model. Alisea's CEO states that it is a system firmly based on trust, that all members will act reasonably and follow the premises of sustainability. We can capture this in the following example; a couple of companies were buying from the supplier of graphite waste. Even though Alisea does not pay for it, the supplier told the companies that it already had the waste committed to Alisea, choosing to engage in sustainable CE practices rather than profit from the sale of the waste. This gesture is the result of great communication and trust in the relationship. For the sake of trust that trust can take on, they can be observed and conceptualized as a belief in the reliability,

integrity, credibility, honesty, truthful benevolence of another, faith that another will fulfil his or her obligations, and the expectation that another will behave following an individual's beliefs (Ajmal et al., 2017, p. 1100).

3.3.1.2 Support from all partners to develop awareness and new skills, which makes the business model more viable.

The general manager describes their way of doing things as a learning process because each time they manufacture something, it is different, i.e., each object carries a new manufacturing process. In this way, learning and training are continuous, day by day. A parallel line with the theory of CE since this theory defends that technical and technological knowledge is always continuing, evolving, and giving rise to constant innovation, which allows progressive change towards a more permanent establishment of CE. Thanks to the above, the company obtained a patent for utilizing graphite waste due to continuous learning; the company is becoming an expert in this field.

Collaterally, Alisea is working with a sustainable fashion start-up since they could adapt the innovation that our company developed on graphite. Working together, the fashion company has become a long-term partner of Alisea.

Pencils and T-shirts made from the reused graphite are now sold in stores that the fashion company would not have been able to access on its own. It is so curious to customers that an office supply company's product, the pencil, and a fashion company's product, the T-shirt, are related in how they are produced that they often buy them together, resulting in a benefit for both companies.

Without innovation, a CE is impossible; if it does not start from an innovative approach, it is not possible to improve the future and, therefore, to make a change in the way of doing things.

However, some cases of skills within CE cannot be transferred, as they depend on the moment and the context. Therefore, certain capabilities and skills only require experience and time to mature. On the other hand, in this case study, it has been verified that technology is a fundamental factor in the development of a CE. However, in the

same way, technologies benefit from the ecological, environmental and cleaner production design.

3.3.1.3 Energy efficiency-oriented practices to reduce emissions and environmental footprint.

In order to demonstrate credibility in the performance of its processes and products based on energy efficiency, the practices carried out by Alisea are verified by third parties. These practices are aimed at reducing both emissions and environmental footprint. A fundamental practice to reduce negative impacts requires local production and sourcing. After being audited and certified by the institution in question, all manufactured products carry a label indicating "made in Italy," which indicates the company's achievements in terms of energy efficiency and environmental footprint. More specifically, the label describes the sustainability characteristics of the material, the product, and the production process in terms of energy savings, raw material savings, and reduction of CO2 emissions. There was a reduction of around 90% in energy consumption and CO2 emissions and a 99 % reduction in water use, thanks to the environmental achievements in textile dyeing using graphite waste.
In addition to all of the above, certifications and regulatory requirements as sources of reliability make companies stronger.

3.3.1.4 Practices for the use of environmentally friendly materials.

Alisea emphasizes the certificates and regulations to be complied with to verify that environmentally friendly practices are used, as mentioned above.
Most of the business we are investigating is based on graphite recycling. Graphite is a material that has many environmental advantages, as it is a natural, carbon-based material that is non-toxic, odourless, and tasteless. As it is also a natural lubricant, its use in dyeing for the fashion industry is also an advantage. In the case of pencil manufacture, the dyeing technology using recycled graphite is patented. The pencil manufactured by Alisea is made entirely from recyclable materials and does not use any

tree or non-renewable material. It is made from waste graphite, the eraser from food industry waste. The element that joins the two is not the traditional metal collar with glue; this union is achieved in the modelling process. The product is entirely non-toxic, and its manufacturing process uses 20 % less energy per unit. In addition to all the environmental advantages of this product, it lasts about 20 times longer than conventional pencils.

The fully automated production process is based on intelligent technologies that provide efficiency and quality. The production capacity is 400 pencils/hour. As for the fashion industry, the technology developed and patented by Alisea is based on chitosan and graphene for dyeing. Conventional ink is the worst pollutant in the world, in addition to the fact that the products do not contain any elements hazardous to human health, by complying, among other things, with research on toxicity (Braungart et al., 2007).

3.3.1.5 DfX practices

DfX practices clearly show that product design is being adapted for material and energy reduction, recycling, reuse and environmental friendliness, as well as product stickiness and trust for customers. This slows down loops and generates greater resource conservation.

3.3.2 Customer value proposition and interface.

3.3.2.1 Practices related to price: sale of single products.

In the case of the company we are investigating, it is not feasible to use products through leasing or rental (Tukker, 2015), sale with maintenance programs, financing, and return or pay-per-use (Stahel, 2016) since they are manufactured to last or consumables that require ownership.

Therefore their practice is based on the sale of individual products, in which case the price composition is affected by product specifications and the scope and structure of the industry.

3.3.2.2 Practices related to promotion.

- Promotion on the company's website

Promoting the business through the company's website is essential since communicating the circular economy through design is very important to them. There are numerous statements about the sustainable practices they carry out and the positive consequences they trigger on the environment. In addition, the website also includes news items showing the company's involvement in circular economy activities. Also, along with all the above information, there is an instructional video for B2B customers. The CEO criticizes her suppliers because she considers that they do not show or communicate the product strongly enough; this triggers a loss of product value.

- Customer involvement in circularity initiatives

The participation of customers and their involvement in CE practices is considered crucial by the company's CEO. On many occasions, this participation is of great help to the company, since with their knowledge in various fields, they can contribute other points of view. That is why they are considered investors and not mere clients. They believe in what the company does and follow that mentality of making the business more sustainable. The client becomes a fundamental part of that transition and evolution from a linear economy to a circular one.

According to the CEO, the customer is crucial to the CE in B2B and B2C cases. The customer wants to be part of something that has value. Geng and Doberstein (Geng and Doberstein, 2020) listed active public participation as indispensable to the success of CE. They describe the impact and consequences that 1 billion Chinese customers can have. CE rethinks how consumption takes place and requires customers' support for new consumption activities.

- Communication of circularity through all channels

Communication is important to appropriate customer messages, making them aware of their role in establishing and developing CE and sustainable market models. Buy decisions, consuming or treating products at the end of their useful life determine whether the processes are carried out in one way or another. It is also crucial for the

CEO to communicate through the products themselves, i.e., to communicate values through them, so that the objects are more than just objects but also convey values and stories behind their production. For example, a pen made from car reflectors offers the following message: "I was a car reflector". The communicating objects carry the story of Alisea and the customer together and encourage them to continue building a better future. Therefore, we see that the promotional activity is of great importance and rewarding.

3.3.3 Management involvement

In this case study, attitudinal commitment is pursued from an organizational perspective, and behavioral commitment is pursued from an individual perspective. Since this is a small company, and the CEO is the same person as the founder, it is this person who mainly determines the values and objectives of the company, which results in greater authority in decision making, which can lead to a tendency towards significant growth and commitment to the chosen path "individuals adjust their attitudes to fit the situations to which they are committed". This commitment has an affective nature, starting from the emotional attachment to the business, centered on the CE. The whole company internalized the central idea of the business, and all efforts were made to achieve the established objectives; everyone plays a role whose meaning goes beyond that of doing business.

All employees of the company should adopt the CE philosophy.

The following idea is noteworthy. Business participants associate the business with a useful social objective, a moral involvement of individuals can occur, the consequence of which is a reinforcement in the internalization of the company's values. For example, in the case of the fashion company's CEO, he saw Alisea's CEO as inspiring and motivating; he saw this way of doing as the smartest for all parties involved: the environment, his business, and the people. Alisea would not have worked without the support of other people in the environment; the personal traits that get the employees' commitment revolves around the feeling of trust, respect for others, and connecting all parties involved. According to the CEO, values come first, putting them before the

financial attractiveness of the company. For example, when Alisea tried to get involved in politics, but the parties wanted to use the company's products as their gadgets, Alisea refused even though this meant losing many orders. Alisea did not want to be associated with a particular political party or party since its products are for everyone. However, thanks to having refused the politicians' orders, surprisingly, Alisea sold many more products than if it had accepted them.

In all the behaviours and actions taken by Alisea's CEO, one can see the outstanding commitment of Alisea. In addition to how the company's products reflect CE, telling the story of the process from waste to a value-added item, their commitment is also explicitly seen in the CEO's substantial participation. CE-related activities include public talks, university seminars, fairs and exhibitions, and ecological contests that contribute to this picture. Studies show that, especially in the case of SMEs, the transition to CE business models is more feasible since the CEO or top management has a significant influence. In addition, it is important that among these top management participants, or the CEO himself, are environmental advocates so that all their practices are consistent with it. In short, the commitment of senior management is paramount to implementing CE in the value proposition for the customer and the interface.

3.4 Discussion: Theoretical and administrative implications

From a theoretical perspective, it confirms the suggested research framework and the conceptual taxonomy proposed by Urbinati. In addition, the paper adds to this literature other new and essential research perspectives, covering new theoretical fields, such as social psychology, organizational behavior, and business model design. The paper also discusses and extends the literature on social psychology, as it reflects how it affects the moral involvement and internalization of CE principles and the great commitment this produces on the part of managers, suppliers, and customers. The generation of value is more significant for everyone. Numerous benefits in terms of organizational behavior are obtained from this research since it shows a CE from the perspective of individual managers, suppliers, and customers and makes the value generation process easier. In addition, it contributes to the literature on business model design, conceptualizing it as

a system of interdependent dimensions and towards a perspective of intrinsically related systems, utilizing the strong commitment of management to balance and support their interaction.

This research encourages the company to think that this market model can be designed systematically and holistically and not in an isolated or individual way. Value generation is an important activity for all those involved in the system, and understanding it is the main objective. Regarding the theoretical framework, a set of management practices are established so that each company can design the CE model that best suits its activity. Managers who want to implement this type of market model can follow the same management practices and thus achieve the transition to CE, i.e., a new industrial model in which sustainability is a priority, allowing CE management to be proactively adopted in practice.

Furthermore, after this study, it is clear that the network and the value proposition for the customer and the interface must act simultaneously for this value transfer to be effective. These two dimensions must be understood from a holistic view to have the right balance.

A CE market model is beneficial for the value chain, and the income statement since the net profits, net income, or earnings per share of companies will be increased according to this model. Efficient use of resources means that costs will also be lowered, just as sustainable practices increase market share. Both policymakers and authorities must pay attention to the micro-level perspective (company as a unit of analysis) and not only to the macro-level (cities, regions) or meso-level (industrial parks). Their role is to encourage companies to become familiar with CE principles, i.e., to proactively promote CE models, especially in SMEs, by reducing the administrative burden and drafting, modifying, or adapting laws to make them more business-oriented. Waste recovery processes should be understood as a means to generate value and not as a destroyed value. As is written above throughout the analysis, they are a beneficial resource for actors belonging to the same supply chain, whether similar or different.

Understanding the strong commitment on the part of managers is one of the bases for establishing CE. The BM helps to understand their initiative for capturing value.

Commitment plays a fundamental role in the first instance since decision-making will often be compromised between profitability or circularity in the short term, since in the long term, CE will bring greater economic income. This commitment binds the individual to his or her actions. It is, therefore, a necessary condition. However, one that is not given the necessary importance in most cases since the establishment or evolution towards a CE could be treated as a philosophy to be followed, especially in SMEs. In addition, there are also other factors whose importance is notable, such as the size and age of the company and its sector and location. Depending on these factors, significant opportunities may arise.

For example, symbiosis can be established between nearby companies. We also find the case of circularity to overcome competition from the Chinese market. The age of the companies influences the terms of experience, skills, and relationships already established for adopting a CE market model. Most likely, if they are old enough, they will not have implemented the latest technological advances, which is also an important variable to consider; it is important to overcome technical challenges.

3.5 Conclusions, limitations and future research.

The purpose of this document is to serve as a guide for other companies. From the practice and application of the theory of CE to a real case, the way to achieve success in various areas and achieve the sustainability that circular market models advocate. With the test of the empirical feasibility of the research framework presented. All this compilation is done by improving the taxonomy of Urbinati's proposal, following the research lines of industrial ecology, sustainable supply chain, product as a service and not as a property, C2C design, and cleaner and sustainable production. We have a more interdisciplinary approach that integrates CE, social psychology, organizational behavior, and market model design, treating them as intrinsically related and the need for them all to function as one entity. Therefore, an interdisciplinary approach is essential to investigate and study CE, as it is multifaceted and complex. As mentioned above, the proposed framework encompasses three dimensions: the value network, the customer value proposition, and the management interface and commitment, which are

the main dimensions of the models, and which are the main dimensions of the market models.

Research in SME cases presented works with a CE-centric business model for more than 23 years. Therefore, this study is beneficial to support companies that want to implement a circular business model so that they have the necessary guidelines and requirements to achieve it. This research also shows how the company acts vis-à-vis competitors by the way it generates value through CE. It also shows the scope of communication and the extent to which the customer is involved in capturing value. The most strategic importance is management commitment in terms of aligning resources with business objectives. This alignment, in particular, is reinforced by the dependence of all the dimensions under study. This interdependence constitutes a critical issue within the CE. The construction of a holistic vision is being sought in terms of management practices to achieve a circular market model, i.e., companies have to properly manage the dimensions of the value network, the value proposition for the customer and the interface, and the management commitment of their business model. We take advantage of this actual case to consolidate the way of doing with the theoretical part of CE since it incorporates CE literature, social psychology, organizational behavior and management, and business model design. One of the problems we can raise in this case study is that it constitutes a specific case in a specific geography. However, it can be considered that the basis of the study can be applied, in general, to all types of EMS and in different environments, with minor adaptations but without losing the necessary essence, the necessary concepts to establish CE in market models.

Further research is needed, applying qualitative and quantitative methods as new companies emerge following the premises of CE or as companies following a linear model evolve towards a circular one. In this way, there will be more and more documentation on how companies should act to create and capture value. Contextual factors and how they influence the configuration of business models should also be studied, bearing in mind that this implies greater interdependence with the external environment. In addition, it should be noted in this last point that the research has

focused mainly on supply. From the company's perspective, positioning managers as moderators in terms of change or evolution and maintenance of CE models could also be engaging, generating positive changes, to carry out an analysis from the demand side, i.e., from the point of view of users or consumers.

4. CANVAS BUSINESS MODEL

4.1 Presentation of the current Canvas BM.

This business model, designed by Osterwalder and Pigneur (Osterwalder and Pigneur, 2010), is divided into nine components:

- Customer segments
- Customer relationships
- Distribution channels
- Value proposition
- Key resources
- Key activities
- Partners
- Cost structure
- Revenue streams

This model is a powerful visualization tool in which all its components are interconnected. It establishes a comprehensive, direct, and structured understanding, which makes its approach to the company easier. Moreover, it is not only focused on revenue generation like many other models but also on generating value for the customer. Because it is a model designed a few years ago, it is necessary to renew or redesign it around the concepts of CE to establish a circular business model.

Figure 3: Canvas BM template

4.2 Problematics of the current Canvas business model

As described, there are multiple reasons why there is a growing need to implement a circular business model, both in terms of economic interests and from an environmental point of view, due to the depletion of resources and the high pollution and waste generation. The management of companies and the practice of generating their products or services have not considered the harmful effects of their activity, giving importance only to the generation of the economic value obtained from the sale of such product or service. There is an economical way compatible with sustainability and the environment: CE combines ecological and economic potentials. The prerequisite for starting a business rethinking is to establish the connection between economic and ecological interests. It is imperative to promote collaboration between companies to achieve synergy and symbiosis that will ensure positive advantages through value chains.

All this is much easier today since all the technological advances, the ease of communication and transportation, and increasing globalization can be approached positively and within the sustainability framework. It is essential to modify the Canvas business model so that, after its use and implementation, the company can carry out its activity within the circularity framework. The shift towards circular business models requires new business models, which are not yet well developed. Knowing that we have a good working BM, it is opportune to make the appropriate modifications that fit

circularity. Moreover, that can serve as a template for new companies and those who decide to make this transition.

4.3 Necessary modifications to the current model for the CE environment

The Canvas business model is based on developing a template divided into a series of segments mentioned above. Developing for the CE, each of these segments must integrate the principles of circularity, sustainability and maintenance of ecosystems, and the elimination or use of waste. Reuse is an essential factor in this whole process, and we can also find it at different levels, as shown in the Figure 3.

- Direct reuse: revenue stream designs should be valued, in addition to guidelines and relationship with customers.
- Cascading and remanufacturing: it is necessary to readjust the value proposition of the model, as well as the customers' patterns in terms of the value generation process.
- Involvement of other companies: in the case of working with partner companies, it is also necessary to define how these interactions are designed for these remanufacturing or reconditioning processes.

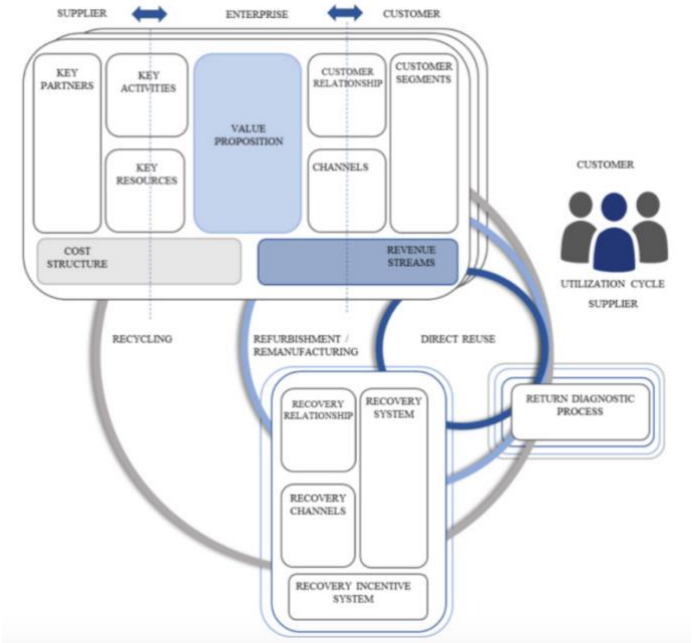

Figure 4: Template to develop Circular Business Models (Anja-Tatjana Braun, 2021)

The future trend, following this transition process, is the generation of much more integrated models.

The models are complemented by horizontal integration.

This generates synergy from cross-collaboration for the use of symbiosis.

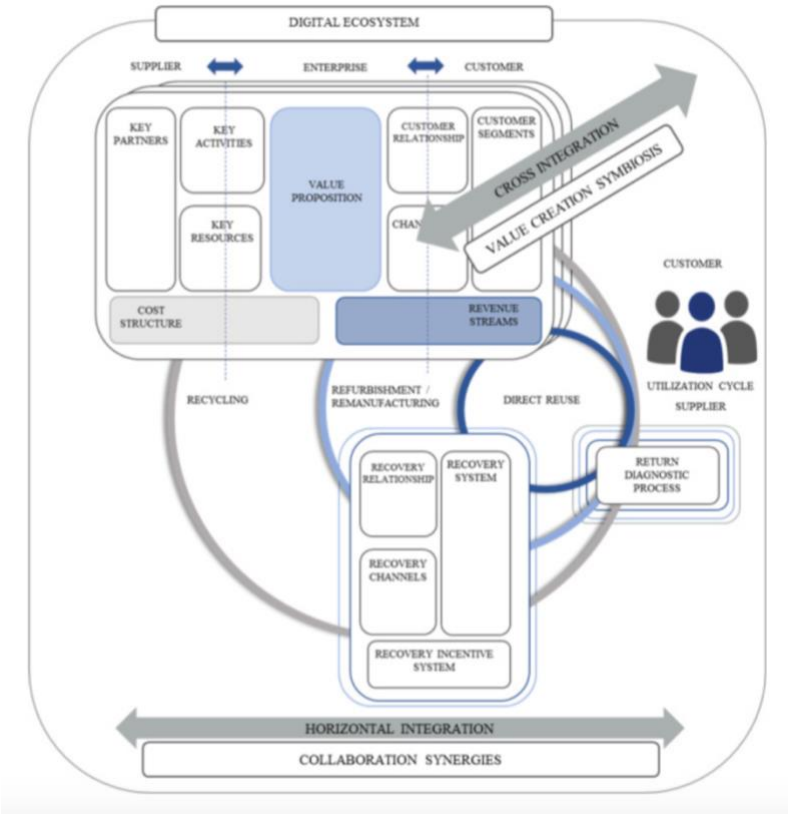

Figure 5:. Digital Ecosystem as an Enabler for the Horizontal- and Cross- integration (Anja-Tatjana Braun, 2021.)

	ORIGINAL CANVAS MODEL	CIRCULAR CANVAS MODEL
CUSTOMER SEGMETS	- Divide customer groups into segments when more than one product or service is provided. - Identify the needs and requirements of each group, and the value the organization derives from them (companies can better target their requirements).	- Divide the customer groups according to how the products can be renewed so that they are always in circulation, and also generate associations of companies to meet their needs. - Identify the needs and requirements of each group, and design the product in such a way that these are satisfied, the

	- Companies obtain a good value proposition, the basis of business being the creation of a primary value defined in the company's mission, which describes the product it sells. - Added value, or "extra value", can be added to the primary value to enhance the significance of the product or service.	main premise being the search for the sustainability of this activity. - The basis of the business is circularity, reducing or eliminating the waste network and generating a product or service that lasts over time. - The added value always revolves around the environment.
DISTRIBUTION CHANNELS	- Distribution, to the different customers, of the products or services generated. - Consider the environment, the location and the immediacy with which these products or services are required or needed.	- Distribution, to the different customers, of the products or services generated. - Considering the environment, the location, and trying to generate local networks to reduce energy consumption and pollution.
VALUE PROPOSITION	- Value proposition as the core of a company's raison for being and a form of customer satisfaction. - Differentiation from the competition: quantity, price, service, speed, delivery conditions and importance of quality (including design, brand status, customer experience and satisfaction).	- Sustainability and environmental preservation are at the core of the purpose of the product or service generation. - Differentiation from the competition: more environmentally efficient, recycled and recyclable product, price, service, speed, delivery conditions and importance of quality (including design, brand status, customer experience and satisfaction).
KEY RESOURCES	- Key resources include tangible resources and intellectual resource. - Tangible resources: production facilities, buildings, vehicles and equipment.	- Key resources include tangible resources and intellectual resources. - Tangible resources: waste and components with a second life, production facilities, buildings, vehicles and equipment.

	- Intellectual resources: brand, knowledge, patents, copyrights, partnerships, customer databases and human resources - staff and managers.	- Intellectual resources: partnership with other companies, sustainable production capacity, product and component utilization capacity, energy reduction capacity.
KEY ACTIVITIES	- Most important activities related to value creation. - Production, product delivery, design, marketing and selling.	- Most important activities based on design and production to obtain a product that never becomes waste. - Production, product delivery, design, meeting customer needs, product recirculation.
PARTNERS	- Strategic alliances to develop business models donde las Companies, authorities, partners, suppliers or most important people who collaborate with the company have to be considered. - The union between different companies is motivated by know-how, technology or even finances. In addition to the impossibility for all companies to have all the necessary resources. - Alliances are necessary for each project to go ahead and for the company to remain stable and tend to grow.	- Strategic alliances to develop business models where companies, authorities, partners, suppliers or the most important people collaborating with the company have to participate in an environment where the generation of waste and waste of energy is practically non-existent. - The union between different companies is motivated by know-how, technology or even finances. In addition to the impossibility for all companies to have all the necessary resources. - Alliances are necessary for each project to go ahead, helping each other and motivating each other in this commitment to a sustainable product.
COST STRUCTURE	- Retribution obtained from production, and the most important costs derived from it. - Necessity to reduce the price of the product and automate production in order to adjust these costs.	- Remuneration obtained from production, and the most important costs derived from it. - Need to reduce the consumption of materials, especially virgin materials, and energy to manufacture the product.

		- Longer lasting products.
REVENUE STREAMS	- To generate resources with the availabilities around you, it is not only necessary to focus on the selling price, but also on the situation of the customers and how much and under what conditions they would pay. - The most commonly used is the sale of goods and services. - Others such as rental and leasing which provides rights to use certain assets; also licensing wich generates revenue from giving customer permission to use protected intellectual property. - Marketing and advertising provides medial areas and also generate value with that.	- To generate resources with the availabilities of the environment, focus on the availabilities of the surrounding area in terms of usable materials, customers who will require the product and/or service and companies with which to collaborate. - Use of goods and services but not possession of them. - The generation of value is always based on the preservation of the ecosystem. - Marketing and advertising provide media areas and also generate value from this.

4.4 Conclusions

It is of great importance to modify and adapt existing business models, encouraging the creation of new ones so that following them, companies work in a circular environment. Having a template or a guide to know how to act is fundamental for this. After the Canvas business model adjustment, the synergy and symbiosis throughout the product life cycle are increased, which is fundamental for eliminating or reducing waste, for a company cannot start circular models independently. The search for value has changed; the focus of the activity is no longer to obtain economic retribution; now, we look for sustainability as the main objective, obtaining with it, of course, economic benefit because it is the reason for the existence of the companies.

All this is more viable if horizontal and cross-integration are implemented. The Canvas model provides an orderly model that facilitates the development of a CE.

There is still a lot to change and a long way to go in this area, but making these modified models available to companies is a good and meaningful way to start.

5. CONCLUSIONS

After gathering information on the current situation of market models and the problems that this entails, we have tried to lay the foundations required to generate a change or transition from the current linear economy to a circular one, which tends to the preservation of our planet. To do this, we have started from the most global to the most particular level, specifying the necessary guidelines for this remodelling.

It was necessary to understand the reason for the linear economy and how we had reached it, as well as to be aware of the great need to stop the generation of waste materials and the enormous waste of energy, stopping the consumerism in which society is currently involved.

It is necessary for a change of mentality on the part of the people from all the points, that is to say, companies, governments, a society that consumes, etc. The tendency to material possession is so internalized that on most occasions, we do not even consider another option as that of being users. In order to reshape the current market models and implement them, companies can base their production on the framework of sustainability and circularity; we have analyzed a case of a real SME.

Once the analysis of the proposed case study, the Italian company Alisea, has been carried out, conclusions have been drawn on each key aspect of the same in terms of its circular business model. With a modified business model, a tangible guide is proposed, taking as a premise the success of the Italian SME as a motivation for other companies to transition to CE or for new ones to emerge already in this field.

It is everyone's task to ensure that these new models are successful and generate benefits for all, both for the environment and companies, consumers and government institutions.

The innovation and implementation of CE is always a continuous process that should never stop; if it stops, something is wrong. After the execution of the investment, the positive results will be seen in the long term, but they will be much more significant for everyone and much more rewarding. If there is no revenue, the cycle must continue.

In addition, we believe that the model we developed is valuable for initiating the circular business model process in SMEs.

This model will be improved based on the experience and results obtained after its use in other SMEs, contributing to having a purer and purer model.

Every SME should consider the possibility of following a continuous improvement process to achieve greater environmental and economic benefits and differentiate itself within its market.

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