Universitat Autònoma de Barcelona

SUSTAINABLE BUSINESS STRATEGIES IN SMEs: Their antecedents and organizational consequences

Francisco Villegas Pinuer

Universitat Autònoma de Barcelona

Doctoral Thesis

SUSTAINABLE BUSINESS STRATEGIES IN SMEs:

THEIR ANTECEDENTS AND ORGANIZATIONAL CONSEQUENCES.

International Doctorate in Entrepreneurship and Management (IDEM)

Department of Business

Universitat Autònoma de Barcelona

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Barcelona, September 2021

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Francisco Villegas is a doctoral candidate in International Entrepreneurship and Management (IDEM) programe at Universitat Autónoma de Barcelona. He holds a BSc in Business Administration and MSc in Marketing from the University of Chile. During his studies from working with SMEs in different courses, they developed an interest in analyzing their social situation. This interest was the first step to the current research line on environmental sustainability and circular economy, particularly their application in SMEs reality. His goal is to extend the current knowledge deepen in different local realities, pursuing the concrete and practical application of environmental themes in SMEs. These research findings can generate strategies at government policies and companies level that improve their performance harmonizing with the environment. From this doctoral thesis, the following articles are published and/or accepted:

1. Villegas Pinuer, F. J., Llonch Andreu, J., Belbeze, P. L., & Valenzuela-Fernández, L. (2021). Waste Management. The Disconnection between Normative and SMEs Reality. Sustainability, 13(4), 1787.

2. Villegas Pinuer, F. J., Llonch Andreu, J., & Belbeze, P. L. (2021). Environmental sustainability and circular economy in SMEs: A qualitative approach from the Spanish experience. *International Journal of Entrepreneurship and Small Business* (accepted).

3. Villegas Pinuer, F. J., Valenzuela-Fernández, L., Llonch Andreu, J., & Belbeze, P. L. Environmental sustainability and their factors in SMEs: A multiple case study of Spain and Chile. *Management Letters* (accepted).

4. Villegas Pinuer, F. J., Llonch Andreu, J., & Belbeze, P. L. SMEs, environmental sustainability and waste management. A comparative empirical study of Spain and Chile. Chapter book of “Handbook of sustainability-driven strategies in practice,” Edward Elgar, UK.(Forthcoming)

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Declaration of Originality

No excerpt from this doctoral work has been submitted to apply for a degree at another university other than the Autonomous University of Barcelona.

Declaración de Originalidad

Ningún extracto de este trabajo doctoral ha sido presentado para optar a un grado en otra universidad.

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PREFACE

“Our destiny depends far more on our wisdom than on our knowledge”.

Georgescu Roegen

ACKNOWLEDGMENTS

The decision to do a Ph.D. program was a complex choice, one that spurred me to quit my job and comfortable life in the desire to pursue new challenges. After three years of commitment, effort, opportunities, and great experiences, I have finally reached this stage -one that could have been hamstringed by the worldwide pandemic-. This achievement would not have been possible without the involvement of different people during this process, and to them I wish to express my heartfelt gratitude for their contributions, companionship, and personal and professional support.

I am deeply grateful to my Supervisors, Dr. Joan Llonch and Dr. Pilar López, whom, from the beginning of the process in 2018, have helped me refine my research theme by providing me with clear and straightforward guidance, advice, and continued support. Their suggestions helped improve the work in every stage and allowed me to grow on a professional level. Joan and Pilar have always allocated their valuable time to improve all the aspects of my research, and their valuable support as great academics has contributed significantly to me during these three years.

I also wish to thank Copenhague Business School for the invitation to realize the doctoral stance; especially to Professor Stefan Markovic, for his guidance, advice, and valuable time to work with me in the quantitative instrument in the first stage and the last article on the second stage. The experience in Copenhague was tremendously important for my research and personal growth in a fascinating academic culture. I wish to also express my gratitude to Cristina Sancha, for their support during the last stage of the doctoral stance with her valuable experience in sustainability aspects.

I would like to thank all Ph.D. Program Professors for their backing, especially to Professor Dr. Jordi Lopez, for his advice and valuable insights to improve my research along these years with gracious goodwill. To my colleagues in the business department, I thank you for sharing the opportunities and experiences with me. I am also grateful to the Ph.D. administrative coordinator Mireia Cirera for their assistance in all administrative aspects and guidance to all my questions that I have had during my period in the program.

From Chile, I would like to thank Dr. Leslier Valenzuela, professor of the Business Department at the University of Chile, and a friend, whom encouraged me to undertake a Ph.D. Leslier's support along these years on my research and the labor opportunities for online teaching in the university program has been invaluable. I truly appreciate their advice tremendously.

I want to do a special mention to Maximiliano Velasco, an incredible friend that supports and motivates me; my "editor" which helped me in the Ph.D. process with their constant English editing. I learned a lot and expected to learn from a great person continuously. I also wish to thank Pablo Lillo for their continuous support and help with the graphic design in the thesis chapters. I would like to thank Rocío, for their important support in the quantitative data collection process.

A big heartfelt thank you to the friends I made during this experience. Yeny, a spectacular person that I met during the Ph.D. program. Her companionship, support, and shared experiences have helped me grow, and I expect to continue with this friendship for a long time. Luis, Cecilia and Constanza, for their support and the good moments shared in Barcelona in the first two years, and when I return, I hope to continue with this great friendship. Thank you Kathy, Paula, and Constanza for the good moments in the city, and thank you, Sabrina for your support and great friendship, one that I expect to continue in Chile.

From my country, I would like to thank my friends. Daniela (Danii), my “life sister” that always supported me for more than ten years, for their motivation to achieve my personal and professional goals, I appreciate your affection. Marcelo, an incredible friend who has always been with me in the good and bad moments, I cherish your friendship and our football conversations. Nicolás, a great and unconditional friend that has also supported me in these many years. Francisco, for their support and motivation. Juan Pablo, for their friendship and personal concern. Pilar and Alvaro, for their support and commitment in the dissemination of my research. Francisca for their support. To my university friends (Lizzy, Daniel, Ricardo, Daniela, Yessenia, Katerin, Ricardo, Miguel, Chifook, Sebastian, Agusto, Niraj). Special thanks to Dr. Ambara and Diego Velasco, whom have always treated me as part of their family.

I also thank ANID (National Agency of Investigation and Development) for sponsoring my Ph.D. Program in these three years. The scholarship paid my tuition and all the living expenses to live in Barcelona. It is with their support that I was able to undertake this opportunity. This program is crucial to improve Chilean research quality and increase the country's human capital. I expect that I can contribute to this human capital and my country.

Special acknowledgments to my family, particularly to my mother, Erica. She has always supported my decisions unconditionally, and constantly encourages me to make my best effort since I was a child; I love you. To my father, Luis. I know that he sees me from heaven, supporting and protecting me at all times in all the years that we share his teachings. Thanks to my brother Jose Luis, who supports and motivates me day-to-day with their advice and conversations, I really appreciate it. Thanks to their family, sister-in-law Patricia, and my special niece Rocío, a motor in my life, whom I have blessedly maintained continuous contact despite our distance. Thanks to my familiars, uncles Edita, Danilo, cousin Cristian, and their family for their never-ending support.

Francisco Javier Villegas Pinuer,

Barcelona, 2021

ABSTRACT

This doctoral investigation addresses Environmental Sustainability (ES) in the Small and Medium Enterprises (SMEs), the principal business entities that generate most of the employment in a nation's economy. The research examines the antecedents and consequences of ES business strategies in the SME context, focusing on the reality experienced by Spanish and Chilean SMEs in a period affected by the COVID-19 pandemic. Principally, this is to understand their reality, thus approaching their factors, conditions, and obstacles that influence ES application in their business activity through in-depth interviews with SME managers -18 in Spain and 29 in Chile-. The qualitative research findings show that SMEs possess limited knowledge on the Circular Economy (CE) practices, where companies have a reactive and non-risk-taking perspective on environmental activities. Furthermore, the lack of client pressure in these topics reinforces this behavior. Another aspect is that the environmental regulation and waste management systems do not adapt to the reality of SMEs. The principal differences between Spain and Chile are: 1) The SMEs level of knowledge of the Circular Economy is higher in Spain and centered in lower circularity CE practices, 2) Spanish SMEs tend to be more environmentally sustainable compared to the more conservative Chilean SMEs, and 3) In Spain, SMEs are limited to comply with environmental regulations; the traceability is the bigger problem (while in Chile, environmental regulation is in the gradual implementation phase). Yet, SMEs do not feel afraid of these regulations due to the historical lack of inspections. Henceforth, this research proposes a model to analyze the relationship between the CE and the learning processes, their organizational consequences during the pandemic context. The model was tested using a Structural Equation Model (SEM) from a data sample of 205 surveyed Chilean SME managers. The results show that Learning Orientation and Organizational Learning positively affect CE adoption, where their age has a moderating effect that requires further research. Additionally, CE has a positive effect on competitive advantages and market performance. However, the results show that CE practices are anchored in the low levels of circularity. This thesis contributes to the literature with a concrete vision about ES adoption factors and consequences in SMEs. This research generates insights for policy-makers and practitioners for their implementation.

Keywords: environmental sustainability, small and medium enterprises, SMEs, customer orientation, entrepreneurial orientation, circular economy, waste management learning orientation, organizational learning, competitive advantages, market performance.

CHAPTER 1:

INTRODUCTION

1. Introduction

1.1 Sustainability development: The importance of environmental sustainability

In regard to society's development, the case of environmental degradation has steadily risen in importance due to its direct link to the concept of planetary sustainability; word and concept that originates in the field of forestry by German scientist Hans Carl Von Carlowitz -in the city of Freiburg in 1713 (von Carlowitz, 2013)- as a response to the dwindling natural (forest) resources. Hans points out that sustainable forestry is achieved when the number of trees cut down (due to economical and social practices) stays level to the number of trees that grow in the same unit of time (Wilderer, 2007). And although this principle was established more than 300 years ago, it demonstrates that sustainability is the essence of a society that can -and wants to- last through the ages.

The aforementioned experience was the first step to arrive at the better known and more common definition of sustainability, which states it as: "*the development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (Brundtland, 1987). This definition establishes the sustainability cornerstone, which describes that every action has consequences in future development. Moreover, this definition paves the way to the prevalent three pillars of sustainability (Kuhlman & Farrington, 2010), which manifests for balanced development. It is in this context that companies become crucial to achieving sustainable development, mainly due to their importance in satisfying the needs of society.

In lieu, the corporate application of sustainability presents diverse perspectives. Schaltegger & Burritt (2005) defines corporate sustainability as contextual integration of economic, environmental, and social themes oriented to business management. Gotschol et al. (2014) consider how environmental management aims to engage in green processes and practices to reduce the firm's activities' environmental impact. Additionally, Dyllick & Muff (2016) add an interesting perspective, where: the establishment of truly sustainable business sustainability is when a company shifts its focus from *minimizing their negative impacts* to *positively impacting* society and the planet. This myriad represents a holistic way for economic and social welfare (Lozano & von Haartman, 2018).

Regarding these perspectives on corporate sustainability, this research approaches the environmental aspects in the companies' development. In this context, environmental sustainability represents a balanced condition between resource-needs and ecosystem protection (Morelli, 2013). Furthermore, the environmental aspects are a multidisciplinary topic, considering elements such as energy, water, and waste (Baleta et al., 2019). This latter -waste management- is a central issue to develop ES in the companies' supply chain (Esmaeilian et al., 2018). Thus, companies are relevant actors in environmental sustainability through their business strategies and operational processes.

1.2 The environmental sustainability in companies: Their development on business strategies

From the environmental perspective, sustainable business strategies are understood as reducing negative environmental impacts of corporate activities while improving -or at least not reducing- the company's economic performance (Baumgartner & Rauter, 2017); represented as the process of incorporating diverse mechanisms to mitigate the environmental impact of waste and pollution, whilst at the same time creating economic value (Gauthier, 2017). This equilibrium becomes fundamental to achieve substantive business contributions to sustainable development (Hahn et al., 2018) and thus approach a reduction in resource consumption (Hristov & Chirico, 2019).

The inclusion of environmental aspects in the aforementioned business strategy has mainly addressed the situation of large companies in incorporating sustainability in their business models, innovation, strategies (Hörisch, Johnson, et al., 2015; Varadarajan, 2017), behaviors (Soto-Acosta et al., 2016), management tools (Falle et al., 2016), practices (Ehnert et al., 2016), performance (Pedersen et al., 2018), and operations & measures (Hashmi et al., 2015). Justification for this focus stems from their high impact on the economy, the environment, and society (Hörisch et al., 2015). Furthermore, this attention implies the existing case of underestimating the reality of Small and Medium Enterprises (SMEs), companies that present peculiarities and strategic differences compared to large firms (Filho et al., 2017). These differences need to be considered in sustainable-business-strategy studies regarding their multidimensionality and extension in the corporate context. Hence, this research covers this gap on the lack of SME literature in environmentally sustainable strategies.

Small and Medium Enterprises (SMEs) are crucial for the global economy and its development. According to the OECD (2015), SMEs represent 50% of the global GDP and 99% of all businesses (European Commission, 2018c). These companies are a direct generator of socio-economic growth and employment (Acs *et al.*, 2012; Audretsch *et al.*, 2008; Davidsson *et al.*, 1995), whilst also being an important source for innovation (Galindo & Méndez-Picazo, 2013). Nevertheless, this relevance is accomplished by their environmental effects. Although SMEs individually have a lower environmental impact, their cumulative impact is considerable due to their total number of firms (Laurinkevičiūtė & Stasiškienė, 2011). Global evidence shows that SMEs represent around 70% of total waste and pollution (Hillary, 2004). For instance, in Europe, the SMEs' environmental impact is between 60-70% (64% on average), and only 2% of these companies can be considered green (European Commission, 2014). Thus, it becomes relevant to understand the technical, empirical, and practical factors that improve these numbers.

Nonetheless, in SMEs, some researchers have addressed sustainable tools in their development. Yet, these have not been considered an integral strategy incorporated into SME management development, and so, these tools are perceived to have a scarce level of implementation (Johnson & Schaltegger, 2016). In this way, Starik & Kanashiro (2013) defines sustainability management in SMEs as "*the formulation, implementation, and evaluation of decisions and actions linked to sustainability through environmental and socio-economic*

aspects, reflecting on financial and non-financial SMEs' performance". Implementing a sustainable agenda in SMEs can bring competitive advantages and more probabilities for survival in the long term (Jansson et al., 2017). Hence, the aforementioned presents a clear theoretical gap in regard to determining the necessary elements and conditions to construct a sustainable business strategy on SMEs, whilst considering the internal and external variables that can interact in this context.

1.3 Environmental sustainability in SMEs. The underlying resources-based capabilities and stakeholder's theories.

When thinking of sustainable business strategies in SMEs, we are required to take a step back and consider their available resources and limitations (Filho et al., 2017). In this sense, an underlying basis for ES development is the Resources-Based theory; one of the most influential in business management (Kraaijenbrink et al., 2010), which understands resources as anything that could be thought of as a strength or weakness of a given firm (Wernerfelt, 1984). Thus, when a company has valuable, rare, inimitable, and difficult-to-substitute resources, they are at the cornerstone to developing sustainable competitive advantages (Barney, 1991), translated as long-live differences in firms not attributed to industry conditions (Peteraf, 1993). Additionally, these become a method to manage and evaluate a company's resources (Lonial & Carter, 2015) and achieve its full potential (Newbert, 2007). This theoretical framework is relevant, considering that the inclusion of environmental aspects on SME business strategies requires the effective use and management of a company's resources (Yacob et al., 2019).

On many occasions, said resources must be obtained with the development of competence. At this point, capabilities theory asserts its important role: a capability is to renew competencies aligned with environmental business changes; adapting, integrating, and reconfiguring their internal and external skills and resources (Teece et al., 1997), thus aligning it with strategic management (Zahra et al., 2006). This reconfiguration contributes to the company's planning and strategic management (Barreto, 2010). For SMEs, capabilities are essentially important in developing their ability to create new competencies to overcome strategic, environmental, and social constraints (Ko & Liu, 2017), consequently improving their performance (Lin & Wu, 2014). Thus, these capabilities can transform and produce great changes in companies (Zahra et al., 2006), as could be the development of environmental topics in SMEs, considering their present weaknesses in resources and competency identification (Rice et al., 2015).

Nonetheless, SMEs develop themselves in an environment and interact with other actors, such as stakeholders. Stakeholder theory explains the "rules of the game" for a company's operation, describing how relevant parties who can be materially affected (Freeman, 1994) can influence the company's nature and their strategic actions (Friedman & Miles, 2002). Hence, this theory presents clear limitations in SMEs, as these companies exploit their relationship with specific stakeholders (customers, suppliers) to improve their operations but are yet still unable to utilize specific managerial tools (non-financial reports, organizational and managerial procedures); tools which might help create long-term value (Russo & Perrini, 2010). Their extension in environmental concerns depends on evaluating mutual value exchanges between

stakeholders and companies (Freudenreich et al., 2020). Therefore, stakeholder theory is a reference frame for the relationship between sustainable business strategies and the development of SMEs.

1.4 The application of environmental sustainability in SMEs: Circular Economy

The underlying theories previously mentioned represent a basis for business strategy environmental sustainability development, where their implementation is a giant step forward to achieve balanced development. In this way, the Circular Economy (CE) emerges as a fundamental issue. However, its conceptualization is broader, depending on the discipline or area of study from which one approaches it. For example, in the chemical area, associated with the flow and cycle of elements (Schlesinger & Bernhardt, 2013), industrial ecology focuses on the material and energy flow (Boulding E., 1966). In retrospect, CE also takes prevalence in the business area, becoming associated with the relationship between production and optimal pollution levels (Pearce & Turner, 1990). From this starting point, CE has been associated with the restorative capacity of an economy (Vinet & Zhedanov, 2011), the life-extension of goods, components, materials (Stahel, 2014; Webster, 2015), natural resources-use (production and consumption), and waste generation (Geissdoerfer et al., 2017). Interestingly, Kirchherr et al. (2017) identified more than 100 definitions of CE in the literature. Their research defines CE as an economic system that replaces the end-of-life concept by promoting reducing, reusing, recycling, and recovering materials in the production/distribution and consumption processes at different levels (product, companies, consumers, city, region, and nations).

Considering this scope, CE becomes relevant for SMEs. Regarding their limited resources, these companies can be benefited from a recursive economic system (Bautista-Lazo & Short, 2013), increasing their resource efficiency, reflecting in material costs and new markets opportunities (Rizos et al., 2015), and improving their brand image and prestige (Ormazabal et al., 2018). However, the literature suggests that possible CE benefits are dependant on different factors such as human resources & technological access (Oncioiu et al., 2018), business experience (Kuckertz & Wagner, 2010), and supply chain processes (Geissdoerfer et al., 2017). Independent of the benefits mentioned above and their considerations, there are some criticisms regarding CE. These point out the difficulties in explaining how CE achieves its many intended purposes for a restorative economy. Rebound effects such as recycling boost lowering the prices of recycled materials, spurring more consumption of products made of these materials (Schröder et al., 2019). Another aspect is how to achieve economic growth while at the same time decoupling resource-use and environmental impact (Lazarevic & Valve, 2017). The lack of a CE measurement framework that integrates the many elements (Moraga et al., 2019) and the diverse perspectives are aspects that the current circular economy conceptualization has not fully addressed.

Considering the different visions, CE application in sustainable business strategy implementation is early and incipient. Thusforth, this research approaches this gap, shedding light on this relationship from the theoretical and empirical perspectives. Additionally, this research focuses on identifying the relevant factors for constructing a sustainable business strategy, the circular economy, and the articulation to generate a better organizational

performance within the scope of SMEs. Understanding how an SME can build a differentiating strategy -while incorporating environmental concerns- (valued by the market), durable over time, has a relevant influence on their development as an agent (of change) at the economic and social levels.

1.5 Research gaps

The research regarding Sustainable Business Strategies is broad (Strand et al., 2015), and approaches mostly their implementation and results in large companies and developed countries (Hörisch et al., 2015). However, environmental degradation is a global issue that indiscriminately and interconnectedly affects the entire world. Therefore, this process generates relevant questions about how sustainability is developed in different countries and companies, especially SMEs -an underestimated sector due to their lower individual impact- (Szilagyi & Mocan, 2018). In this context, the antecedents of sustainable business strategies and their magnitude are still unclear, considering their undefined dimensionality (Klewitz & Hansen, 2014). Thus, a pending and current knowledge gap is how these companies can define, incorporate, and implement sustainable business strategies while considering their limitations, barriers, and obstacles.

Advancement in this essential question requires comprehending the different aspects that influence SME behavior. Moreover, research in environmental sustainability on the needs of SMEs for more specific studies regarding size, sector, and location will not work for all businesses (Bakos et al., 2020); a case where the one-size-fits-all approach is ineffective. In this context, a different approximation is required to increase the knowledge about environmental business strategies in these companies. The studies about public policies in environmental sustainability denote (independent of the region or country development) that the strategies must be tailored to suit individual situations if they are effective (Howes et al., 2017).

Given the knowledge gap and the need to increase the knowledge about environmental development in different regions, this doctoral research compares the situation in Spain, a developed and consolidated economy, and Chile, a less developed country that is part of the OECD since 2010. Spain is under the European Union framework, which establishes solid environmental legislation for the member countries (European Commission, 2018b). In addition, the region has a clear focus to bolster environmental development, reflected in their circular economy strategy and their updates (European Commission, 2015, 2018a, 2020). Chile, the most developed country from the global south, has an environmental framework recently enacted based on waste management (Ministerio del Medio Ambiente, 2016), in a region without a shared environmental framework and exacerbated problems with environmental aspects like pollution and waste management (Betancourt Morales & Zartha Sossa, 2020). Furthermore, the country is on an accelerated environmental track, reflected by having pioneered environmental law like banning plastic bags in commerce (Ministerio del Medio Ambiente, 2018b) and a circular economy country route aimed for 2040 (Ministerio del Medio Ambiente, 2021).

In this context, the cross-country comparison of two countries with 1) different development degrees of their environmental frameworks, 2) specific environmental laws, and 3) different geographical and cultural conditions are relevant to shedding light on SMEs' environmental situation and the factors to develop environmental business strategies in different contexts. Moreover, this research generates insights into the similarities and differences in two different institutional settings to enrich the environmental sustainability understanding in SMEs. Finally, this type of research provides robust evidence of policy implementation at the industrial level (Colovic et al., 2019), critical in SMEs, an undervalued sector in many countries' environmental development.

Thus, it is crucial to understand the relationship between the structural conditions and the SMEs' reality; their attitudes, beliefs, values, and challenges about implementing environmental aspects on their business. Their comprehension provides an effective, practical, and adapted framework about sustainable business strategies for 1) SMEs implementation and 2) policy-maker developers. Exploiting these possibilities can be a contribution to SME development. Therefore, increasing the local knowledge on sustainable business strategies allows taking more integral decisions in this matter.

1.6 Research objectives

The research's main objective is to determine the critical antecedents of Sustainable Business Strategies (SBS) and their consequences in terms of a firm's competitiveness and organizational performance in SMEs at a country level -considering the Spanish and Chilean situations-. This case study provides new insights into the relevant aspects of adopting environmental themes in business strategies. Hence, to address the knowledge gap about SMEs' sustainable business strategies at the local realities, which are still at an exploratory level.

Based on this aim, the specific objectives of the research are:

- To identify the resources and capabilities that SMEs need to develop SBS.
- To distinguish, understand and comprehend the antecedent variables of SBS for SMEs.
- To examine the development of SBS by applying Circular Economy (CE) practices in SMEs.
- To study and comprehend the organizational consequences of SBS in SMEs
- To analyze the influence of antecedent variables and moderators on CE formulation and implementation.
- To assess the influence of CE (practices) in the competitiveness and business performance of SMEs.

1.7 Research structure and methodological approach

The current research adopts a mixed methodology. First, the study develops a qualitative stage investigation in Spain and Chile. Data were obtained through in-depth interviews applied to SME managers. This qualitative data was complemented using public municipal management data about environmental and financial aspects in both countries. The analysis of the qualitative stage was performed using text analysis methods, thematic analysis, and clusterization. Second, findings underwent a quantitative stage in Chile, proposing a model to study sustainable business strategies implementation. The data was collected through a survey applied to SME managers. Third, the model was analyzed using Structural Equation Modeling (SEM) using the Covariance-Based method. The period covered in the thesis is from 2018 to 2021.

1.7.1 Stage 1: Qualitative research in Spain

At the beginning of the first stage, an exhaustive literature review process was undergone to analyze the current state of environmental sustainability. This process considered the potential antecedents of sustainable business strategies: Environmental Orientation, Customer Orientation, and Corporate Social Responsibility. Additionally, an examination of the Circular Economy -as an articulator for environmental themes in business- was performed. The analysis in SBS consequences shows the potential effects on competitiveness and the evidence in SME performance while considering the benefits contrasted with barriers, limitations, and obstacles. Then, qualitative research was performed using a multiple-case study approach elaborated through in-depth interviews applied to Spanish SME managers, specifically from the Catalonian region. The aim is to comprehend their environmental situation, deepen their attitudes and beliefs about environmental sustainability, the challenges and obstacles observed, and the factors mentioned above in the literature review. These in-depth interviews were taken between January and April 2019. From these, valuable data and insights were obtained regarding the relationship between environmental sustainability and the circular economy (Chapter 2), antecedents of environmental sustainability (chapter 3), and the importance of waste management in environmentally sustainable development for SMEs (chapter 4).

1.7.2 Stage 2: Qualitative research in Chile

In this stage, qualitative research in Chilean SMEs was undertaken. Chile was selected to study a different SME reality and considering their environmental normative characteristics. The country had recently enacted a strong and ambitious environmental framework, pioneering laws, which provided a promissory and interesting scenario to analyze the role of SMEs. The development of this stage provides a deeper analysis of environmental sustainability with a more open perspective. The research followed the same basal parameters, considering the lessons learned from the Spanish qualitative research process. Thus, in-depth interviews with Chilean SME managers, specifically from the Santiago region, were undertaken between July and September 2019. The data obtained were compared and complemented using other sources (ministries, municipalities, and governmental public institutions information). This

research stage generated relevant findings in 1) environmental sustainability factors, 2) their incorporation on business strategy, 3) the importance of knowledge and learning processes.

Moreover, the research findings shed light on the role of waste management systems as a structural factor in the reality of SMEs. In addition, the technical knowledge deficiencies affect SMEs' environmental practices. Thus, a comparative analysis between both countries was developed, enriching the individual findings obtained in Spanish SMEs (approached in chapters 3 and 4). From this analysis, the knowledge and learning process appears fundamental in environmental development.

1.7.3 Stage 3: Quantitative research in Chile

After the qualitative stages, quantitative research was elaborated in Chile through online surveys to Chilean SME managers. This stage evaluated a proposed model for sustainable business strategies development, considering previous research lessons and insights. The model considers the influence of Learning Orientation (LO) and Organizational Learning (OL) in the Circular Economy (CE), the implementation of sustainable business strategies, and its influence on competitive advantages (CA) and market performance (MP). Moreover, the moderator effect of SMEs' age on CE development was analyzed regarding the SMEs' development. Unfortunately, the original plan was changed due to the COVID19-pandemic, delaying the data collection process. This global public-health crisis modified the life we knew, affecting all social structures, including companies. Thus, this research could not be indifferent to this situation and include some control variables (incomes and employees reduction) in the proposed model. Hence, the data was collected between October 2020 and February 2021. The research findings reveal the relevance of the learning process for sustainable business strategies development through CE activities.

1.8 Thesis outline

The thesis is organized into six chapters. Chapter 1 (introduction) establishes the concept and role of sustainability and sustainable business strategies in SMEs. Chapter 2 presents the qualitative research in Spanish SMEs about Environmental sustainability, Circular Economy, and their effects on competitiveness. Chapter 3 focuses on a comparative analysis of the antecedents' environmental sustainability factors between Spanish and Chilean SMEs. Chapter 4 investigates the environmental regulation and waste management system. In addition, it provides a structural view of waste management systems and their effects on environmental development in a comparative sense between Spanish and Chilean SMEs. Chapter 5 presents a proposed model for sustainable business strategies in SMEs, approaching the implementation of the circular economy in Chilean SMEs. The last chapter (6) presents and summarizes the main results and findings of the thesis and presents future research lines, taking into account the study limitations. The outline of the research design and its stages are presented in the next figure.

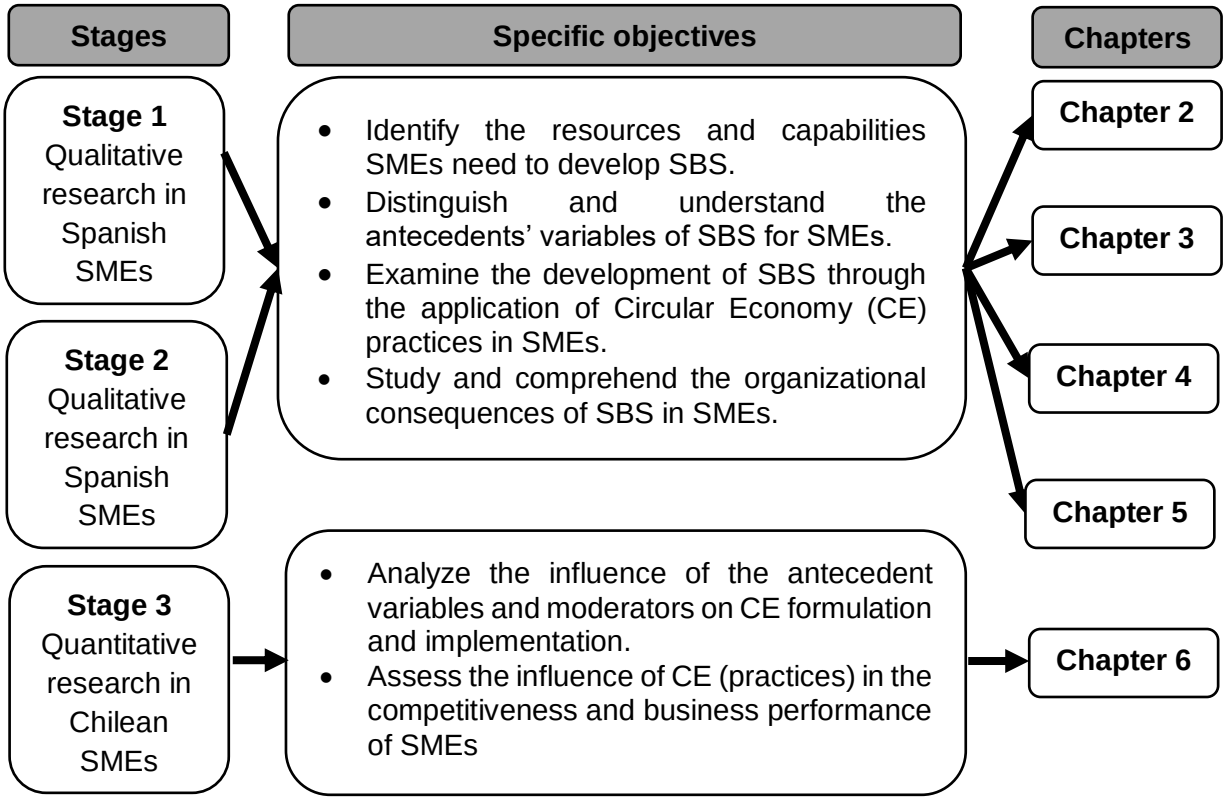

Figure 1.1 Research stages and objectives

CHAPTER 2:

ENVIRONMENTAL SUSTAINABILITY AND CIRCULAR ECONOMY IN SMES: A QUALITATIVE APPROACH FROM THE SPANISH EXPERIENCE

Keywords

Environmental sustainability, circular economy, competitiveness, small and medium enterprises, SMEs

2. Environmental sustainability and circular economy in SMEs. A qualitative approach from the Spanish experience

2.1 Introduction

The accelerated consumption of resources deteriorates the environment, degrading the planet's finite capacity to supply them, crucial for economic and social growth (Mura et al., 2020). In this line, the balance between economic growth and environmental concern has helped sustainability gain increasing importance for society and industrial development (Szopik-Depczyńska et al., 2018). Achieving this equilibrium demands clear responses from the many different actors and stakeholders (government, policy-makers, industry) involved. Nevertheless, the environmental policies (including developed and developing nations) have not achieved the expected results. Instead, the actors that should be helping are constantly deteriorating, a situation where companies should be held accountable and responsible (Howes et al., 2017).

For companies, it is a challenge to tackle their economic growth and development while facing social and environmental pressures (Roxas & Coetzer, 2012). For instance, companies must find ways to develop while maintaining the environment's integrity to use, exploit, and manage resources appropriately. Thus, environmental sustainability (ES) is a way for companies to balance their organizational objectives without causing environmental degradation, ensuring environmental and social stability. Hence, the concept of the circular economy (CE) rises as a way to operationalize ES. Pearce & Turner (1990) explain the necessity to shift from an open-ended economic system to a circular economic system by providing resources, life support, systems, and a sink for waste and emissions. This shift demands a reasonable use of materials and energy to lower economic activities' impact on the natural environment to the smallest possible extent (Haibin & Zhenling, 2010).

Independent of these conceptualizations, the literature's growth does have a unique perspective of CE's conceptual and practical role (Geissdoerfer et al., 2017). Some approaches focus on understanding CE management: adoption phases, costs, and benefits (Moric et al., 2020). Other prospects centered on the government's responsibility for CE development and their role in knowledge development and dissemination to companies and customers (van Buren et al., 2016). Finally, other visions consider that a multi-level approach is necessary to bridge the production and consumption activities (Witjes & Lozano, 2016). Considering these different approaches becomes relevant to measure the process on a macro-scale (framework) and micro-scale (products, businesses, and companies) (Moraga et al., 2019).

At the micro-scale approach, studies regarding environmental issues focus primarily on large companies that apply it in various fields such as management (Hörisch, Ortas, et al., 2015), reporting practices (Ehnert et al. 2016), and supply chain (Formentini & Taticchi, 2016). However, the scientific research in SMEs about environmental sustainability and circular economy is lagging compared to large companies due to groups underestimating their environmental effects (Stekelorum et al., 2020). Nevertheless, SMEs have much to contribute to the subject because 1) SMEs produce 70% of Europe's pollution, with a decisive effect on

the environment (Reyes-Rodríguez et al., 2016), and 2) SMEs represent 99% of all businesses, providing between 65% and 70% of Europe's employment (European Commission, 2018c). Considering the heterogeneity and country variations, according to their structural conditions, it becomes necessary to empirically increase the research scope to understand the SMEs' perceptions about ES and CE to improve the design of framework policies and promote a real CE development (Bassi & Dias, 2019). Therefore, this chapter states some research questions to cover this literature gap:

RQ1: Which are the SMEs' managerial perceptions regarding ES and CE?

RQ2: To which extent have SMEs developed CE practices? How can they improve their implementation?

RQ3: What are the SMEs' managerial perceptions about the relationship between CE and business performance? An important literature gap identified by Ormazabal et al. (2018) research, need to be covered.

To approach these research questions, this study analyzes Spanish SMEs from the Catalonian region, which has a prominent role due to the entrepreneurial activity's importance and relevance to the economy (Ayuso & Navarrete-Báez, 2018). Catalonia is a region with a high percentage (18.5%) of SMEs (Ministerio de Industria - comercio y turismo, 2019) and one of the major contributors to the Spanish GDP -19.1%- (Instituto Nacional de Estadística de España, 2019). The study employs a multiple-case methodology applied to 18 SME managers to approach this theme. Considering the relevance of SMEs in the region and the previous studies in the field, this article helps bridge the ongoing need for empirical evidence on the SMEs' environmental comprehension and development through a representative set of empirical data encompassing different sectors as proposed by Rizos et al., (2016). For this purpose, this research examines the status of ES and CE, as well as their implementation and competitiveness effect from SME managers' knowledge, motivations, and perceptions. These aspects are critical to understanding SMEs' behaviors regarding these concerns (Filho et al., 2017) and enrich the scarce existing ES studies on SMEs regarding location, company characteristics, and size (Bakos et al., 2020).

The chapter is structured as follows: Section 2.2 presents the theoretical background of the main concepts. Section 2.3 develops the methodology used in the research and the sample characteristics. Section 2.4 presents the research results, emphasizing the empirical discourse of interviewees and emerging concepts. Section 2.5 discusses the theoretical and practical implications for SME management and policy-making decisions. Finally, section 2.6 draws the conclusions and limitations, presenting research avenues in the ES field and their implementation.

2.2 Theoretical Background

2.2.1 Managerial aspects of environmental sustainability: The challenges for SMEs

One of the first widely accepted definitions of sustainability is '*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*' (World Commission on Environment and Development, 1987, p. 41). However, sustainability is a multi-disciplinary concept that spans the economy, industry, agriculture, and consumption (Sauvé et al., 2016). From a business perspective, sustainability states the importance of integrating economic, environmental, and social themes in business management (Schaltegger & Burritt, 2005). Regarding the above, an important issue is balancing the three perspectives (economic, environmental, and social) and acting intra and inter-generationally (Geissdoerfer et al., 2017). Therefore, this research focuses on Environmental Sustainability (ES), which considers where resources and the needs meet for current and future generations without compromising the ecosystem's health that provides them (Morelli, 2013).

For companies, ES represents the incorporation of environmental aspects into their business strategy. The business strategy represents a plan, a pattern with a direction or course of action into the future over the business (Ensign, 2008). In the organizational context, SMEs must define and develop their business strategy according to their function and value in the market (Avram & Kühne, 2008). However, SMEs tend to focus on short-term business planning rather than strategic thinking and management (Stonehouse & Pemberton, 2002). Therefore, the challenge for SMEs is to incorporate ES in their business strategy to mitigate their environmental impact (pollution, waste) while creating economic and social value, considering the ecological customer's concerns (Nejati et al., 2011) by using appropriate company resources and capabilities. Said resources (financial, human, and technological) have a strategic role, which must be accomplished by a strategic managerial perspective committed to sustainability (Jansson et al., 2017) and tolerance to accept an entrepreneurial risk level (Leo Paul Dana, 2002).

For example, Reyes-Rodríguez et al.'s (2016) research in Danish SMEs highlights managerial attitudes as a motivator to implement environmental initiatives at a company's strategic level. In retrospect, Sajuyigbe & Fadeyibi (2017) findings in female Nigerian entrepreneurs show their involvement in sustainable economic development and engagement with the community. Hence, combining resources, strategy, and attitudes becomes crucial to apply entrepreneurial strategies with a sustainable approach (Ratten & Dana, 2017). However, it is a challenge for SMEs considering their limitations in resources and capability (Filho et al., 2017).

2.2.2 The application of environmental sustainability: The role of circular economy in SMEs.

The practical development of environmental sustainability can be conceptualized in a nutshell: Circular Economy (CE). The CE was established as an alternative to the linear economy and had many different meanings for society's stakeholders (Kirchherr et al., 2017).

However, one of the most accepted definitions -by the Ellen MacArthur Foundation (2013)- understands CE as an economy that is either restorative or regenerative by intention and design. This precept inspired the practical extension of CE, viewed as '*all economic activities that extend the service life of goods, components, and materials, through reuse and remarketing, repair, remanufacturing and technological updating of goods*' (Stahel, 2014), adding value to products and contributing to waste reduction (Aranda-Usón et al., 2020).

Furthermore, CE implementation has different approaches in the literature. One such is the 10 Rs: refuse, rethink, reduce, reuse, repair, refurbish, remanufacture, repurpose, recycle, and recover (see Potting et al., 2017). This representation is one of the most complete on the topic, establishing different CE actions to implement and showing the broader spectrum from low-circularity activities (mitigate environmental impact) to high-circularity activities (reduce environmental impact). Kalmykova et al. (2018) analyzed 100 international case studies about CE strategy and implementation level; their findings show two main lines: 1) a systemic economy-wide implementation (e.g., at the local, regional, national, and transnational levels), and 2) focus on a group of sectors, products, materials, and substances. Kirchherr et al. (2017) focus on CE activities (reduce, reuse, recycle, recover) as an extension and replacement of the end-of-life concept at different societal levels (product, companies, consumers, cities). Independent of these approaches, CE generates some criticism. For instance, CE generates a relative decoupling as it does not consider: 1) the rebound effect on consumption, 2) increased product obsoleteness, 3) shortened product life spans, and 4) recycle effectiveness (Lazarevic & Valve, 2017). Reused products and recycled materials lower prices, producing a demand rebound while not changing the production and consumption patterns (Zink & Geyer, 2017).

Since CE has gained importance for scholars, practitioners, and governments in recent years, their different visions hold strategic relevance. One such example is the EU's 2018 *Circular Economy Package,* which focuses on waste hierarchy and promoting SME circular practices (European Commission, 2018a). Furthermore, CE creates around 4 million jobs in the EU (Eurostat, 2019). A recent update -the *New Circular Economic Action Plan 2020*- bolsters this dematerialization policy by generating 1.2 million jobs by 2030 (European Commission, 2020). The purpose is to transform the economy towards a more sustainable system, generating a competitive advantage for Europe. In the Spanish case, their Circular Economy Strategy defines the objectives for this current decade. This strategy focuses on reducing the national consumption of materials by 15% and waste generation by 10%, improving water use efficiency by 10%, and reducing food waste in the food chain (50% per capita at the household and retail consumption levels, and 20% in the production and supply chains from 2020). These goals are in line with the Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (Ministerio para la Transición Ecológica y el Reto Demográfico, 2020).

In the case of European SMEs, when analyzing CE implementation, the evidence reveals different issues. At the business stage, the organizational characteristics (Katz-Gerro & López Sintas, 2019; Moric et al., 2020) appear as a conditioning factor for CE development. Moreover, the importance of economic drivers as a cost reduction system directly affects CE's perception in SMEs (Gusmerotti et al., 2019). To these internal factors, different external situations are

added that restrict CE implementation, such as 1) higher initial adoption costs (Aranda-Usón et al., 2020; D'Amato et al., 2020; Rizos et al., 2016; Sandvik & Stubbs, 2019; Zamfir et al., 2017), 2) lack of government support (Long et al., 2018; Ormazabal et al., 2018), 3) difficulties regarding technical knowledge (Franco, 2017; Mura et al., 2020), 4) the role of the regulatory framework (Dey et al., 2020), 5) existence of a collaboration network between SMEs (Aranda-Usón et al., 2020; Oncioiu et al., 2018), and 6) investment in innovation and technology tools (Pizzi et al., 2021; Sandvik & Stubbs, 2019). Additionally, some challenges for companies are implementing CE in waste management (Woodard, 2021) and eco-innovation (Kiefer et al., 2019). Table 2.1 presents the principal studies about CE in SMEs in the EU.

Table 2.1 Circular economy research on SMEs in the EU

Previous studies on the circular economy in the EU				
Articles	**Country**	**Sectors**	**Method and sample size**	**Basic findings**
Qualitative studies				
Rizos et al. (2016)	UK, Netherlands, Estonia	Manufacture, retail, electricity, food	Cases study (n=30)	The 'lack of support from their supply and demand network' and 'lack of capital' as barriers to 'green' SME transition.
Franco (2017)	Austria, Switzerland, Germany, Italy	Circular textiles	Case stories (n=13), interviews, reports	The speed and quantity of C2C products manufactured, depending on the availability of basic materials and parts.
Long et al. (2018)	Netherlands	Food and beverage	Semi-structured interviews (n=14)	Collaboration is required to execute the transition to a sustainable business model successfully. The role of government is a barrier.
Sandvik and Stubbs (2019)	Scandinavian region	Textile	Semi-structured interviews (n=11)	The main inhibitors are limited technology (separating materials). The enablers are the design and use of new materials and collaboration.
D'Amato et al. (2020)	Finland	Packaging, medical devices, biotech,	Semi-structured interviews (n=8)	CE practices focus on renewables energies and recycle.
Pizzi et al. (2021)	Germany, United States, India, South Africa, Canada	Fintech companies (Payment, crowdfunding)	Multiple case studies (n=6)	The fintech, through technologies as (blockchain, AI) can act as an enabler to implement CE practices.
Quantitative studies				

Zamfir et al. (2017)	EU-28 member states	Manufacture, retail, services, and industry	Flash Eurobarometer 441 (n=10,618)	The level of investment in CE influences companies' economic performances for specific categories of SMEs.
Oncioiu et al. (2018)	Romania	Agriculture, forestry, industry, construction	Face-to-face interviews (n=384)	Legal framework, SMEs collaboration, and large companies support, help CE implementation.
Ormazabal et al. (2018)	Spain (Navarre and the Basque country)	All sectors	Survey (n=95)	The environmental issues would increase SMEs profits and competitiveness. Public institutional support is critical to CE implementation.
Gusmerotti et al. (2019)	Italy	Manufacturing	Surveys (n=821)	CE principles are in the infant stage. The economic drivers are effective towards circular business model adoption.
Katz-Gerro and López Sintas (2019)	EU-28 member states	Manufacture, retail, services, and industry sectors	Flash Eurobarometer 441 (n=10,618)	CE activities are associated with the organizational properties and are distributed differently among EU member states and industrial sectors.
Kiefer et al. (2019)	Spain	Industrial	Survey 1 – 2 (n=191, n=430)	Industrial firms eco-innovate, combining different aspects.
Moric et al. (2020)	EU-28 member states	Manufacture, retail, services, and industry sectors	Flash Eurobarometer 441 (n=10,618)	The impact of CE activities on firm performance is dependent on the different phases of the adoption process.
Holzer et al. (2020)	Austria	Trade, services, construction manufacture	Survey (n=183)	The efficient use of resources is critical for CE practices. The study identifies 4 SME clusters based on this aspect.
Mixed methods				
Aranda-Usón et al. (2020)	Spain (Aragón)	Industrial, transport, logistics, waste	Interviews (n=21), surveys, (n=52)	Implementing new CE activities would be conditioned on the investment volume and the collaborative actions between firms.

Dey et al. (2020)	UK (West Midlands)	Manufacturing, machinery, electrical, food	Interviews, focus group, and surveys (n=130)	SMEs need expertise in the regulatory framework, energy, and waste management.
Mura et al. (2020)	Italy	Mechanics, engineering, human services	Interviews, focus group, and surveys (n=254)	CE practices are not as widely applied among SMEs. 84% separate waster collection and only 21% other practices.
(Woodard, 2021)	England	Retail, hospitality, legal services	Semi-structured interviews (n=100) Waste composition analysis	Set up smarter systems to manage waste flows is necessary for CE adoption. It is crucial to enforce legislation and waste awareness.

Source: Own elaboration

2.2.3 The relationship between environmental sustainability and circular economy: The effect on SMEs competitiveness

Regardless of the importance to the academy, policy-makers, companies, and society, the relationship between ES and CE in business is unclear at the theoretical level. For some, CE is viewed as a bottom-up approach with a set of tools to achieve ES (Sauvé et al., 2016). Similarly, Kirchherr et al.'s (2017) research on CE conceptualization shows that CE operates at the micro-level (product, companies, consumers), meso-level (industry), and macro-level (region, nation). Thus, it is possible to find other ranges of difficulties (e.g., strategy definitions) and establish operative metrics (Blomsma & Brennan, 2017); the absence of the social dimension in their effect on the ethical dimension (Murray et al., 2017), the role of CE in the life cycle of any process of a product or service, and its interaction with the environment (Ghisellini et al., 2016). One of the most concrete approximations is Murray et al. (2017) research that suggests a direct link from ES to CE, considering their restorative concept. It is not merely a preventive approach, as optimizing the current systems is in line with the purpose of ES. These different perspectives differ on the role of CE; 1) as the implementor of ES, 2) to represent a path to achieve ES or 3) a set of actions to mitigate environmental impact.

The empirical evidence in SMEs manifests the problem scope of CE implementation. For example, the study performed by Mura et al. (2020) in Italian SMEs suggests that CE practices are not widely applied. It was found that 84% have separate waste collection, while the mean application rate for other practices (recovery, reuse, innovation material, secondary raw materials, among others) is at 21%. In retrospect, Cantele and Zardini's (2018) research on Italian manufacturing SMEs found that the effects of environmental practices on competitive advantages were not significant, as entrepreneurs saw a lack of market commitment to ES. Another similar case is Holzer et al. (2020) research in Austrian SMEs, which identifies four clusters based on CE implementation and their performance: 1) frontrunners (proactive adoption that see no benefit in receive support), 2) fast followers (external pressure adoption; market and legislation driven), 3) late majority (reactive adoption, need to convince about CE

competitiveness potential), and 4) laggards (does not adapt to a CE unless legislative measures force them).

Nevertheless, there are cases where CE is developed without an environmental business strategy. The research of Shpak et al. (2020) in the Ukrainian context show a focus on managing waste and energy efficiency, presenting deficiencies such as: 1) insufficient environmental awareness, 2) lack of a unified system, and 3) actions without a systematic approach. Another example is the research performed by Fonseca et al. (2018) in Portuguese SMEs that found a lack of strategic planning in CE development, becoming an individual effort largely dependent on their background knowledge and business perspectives. In this sense, the different conceptions about CE generate a wide range of actions (with or without an environmental strategy) reinforced by their beliefs and perceptions. Therefore, it becomes relevant to know better the SMEs' conceptions and perceptions about ES and CE to reduce multiple existing nuances.

Moreover, the reality of SMEs is a highly significant concern regarding their competitiveness, which tends to become a critical issue; factors such as production costs, quality, product range, or delivery services are relevant areas for development and improvement (R. Singh et al., 2010). In this way, CE can serve as a possibility to enhance their tools to compete in the market, depending on their scope and organizational objectives. Furthermore, research evidence points to different directions and perspectives. Murray et al. (2017) find that CE may contribute to more sustainable businesses by redesigning processes and cycling materials. Consequently, Geissdoerfer et al. (2017) state that when CE aligns with the supply chain, this can contribute to sustainable development by promoting SMEs' economic, environmental, and social goals. Lahti et al. (2018) suggest that companies interested in circular or sustainable business will have enormous potential to stake a claim on their markets, leading to profits and long-term competitiveness. However, Ormazabal et al. (2018) study on SMEs' implementation of CE affirms that SMEs do not think that CE could help improve their results due to limited resources, short-term vision, and lack of time in daily activities. In this sense, they do not see CE as one of their priorities. Hence, the aforementioned evidence shows and demonstrates different visions regarding the effect of CE on SMEs' competitiveness. Thus, this research approaches this knowledge gap, contributing empirical evidence on CE perception and practice implementation in Spanish SMEs.

2.3 Methodology

This article employs a qualitative research method, appropriate for studying complex issues such as environmental sustainability, and ideal to understand the participant's perspectives in their words and the meanings they give to phenomena (Groenland & Dana, 2019). Their narratives, intentions, and terms of their actions and interactions can bring significant insights into discussing existing concepts and eventually identify new ones (Léo Paul Dana & Dumez, 2015).

In this case, multiple-case study methodology was employed, which is the preferable option in the study of new phenomena (Yin, 2012), and is more compelling in generalizing findings

(Ang et al., 2002) in CE research (Ünal et al., 2019). To achieve this, in-depth interviews were decided as the instrument due to its high potential for obtaining information richness from discussions and insights with the SME managers (Saunders et al., 2009). This instrument is recommended in ES and CE themes (Reinecke et al., 2016) and is utilized to identify the topics and categories on SME discourse (Muñoz & Cohen, 2018).

These in-depth interviews are semi-structured to avoid limiting the interviewees' discourse and capturing additional evidence that emerged during the process (Ünal et al., 2019), thus adopting a holistic-inductive approach. This approach requires a flexible design, states some basic questions, but does not impose a-priori categories or hypotheses, and attempts to understand the SMEs' environment and their managers as individuals (Leo Paul Dana & Dana, 2005). Hence, it is particularly beneficial for generating novel evidence and insights, giving voice to the informants (Eisenhardt et al., 2016).

For the company selection, the SABI database was used (database of Spanish and Portuguese companies). Through this, different firms of various industrial sectors were selected. These were filtered to be firms that had: 1) an annual income below 50 million euros, 2) more than five employees, and 3) more than three years of experience in their field (Appendix A, Table 1). The final selection of interviewees was chosen following an inductive approach, based on their experience and ability, to illuminate and develop a deeper understanding among constructs and processes (Eisenhardt & Graebner, 2007). Thus, a total of 18 SME managers were interviewed for this study. The data was collected from SMEs of different sectors located in Catalonia between January and May 2019; as this region attracts the largest amount of resources for innovation projects in SMEs (Generalitat de Catalunya, 2018). In the sample, 61.1% of respondents are male, while 38.9% are female. The majority are between 35 and 55 years of age (66.6%), followed by those over 55 years (22.3%), with the remaining respondents (11.1%) being less than 35 years of age. Appendix A, Table 1 shows a summary of the SME participants.

The interviews were structured into two sections: 1) The first section focuses on general information regarding the company, its characteristics, and the market., 2) the second section contains open-ended questions regarding ES and their application in business strategy, the CE concept & tool applications, and the potential benefits for SMEs. These topics consider a predefined list of semi-structured questions, allowing interviewees the possibility of broadening answers and expressing opinions (see Appendix A, Table 2), as well as asking on the types of resources used, their importance, the concept of ES, and its relevance & application in business strategy.

Following, a set of images with different CE tools and tactics (see Appendix A, Figure 1) - from the linear to the most circular- was presented to the research participants (Kirchherr et al., 2017; Potting et al., 2017). This exercise aimed to understand which CE tools applied (or did not) in the business, the level of understanding, and their significance in resource circularity from a practical identification of SME managers. Lastly, interviewees were asked about the potential benefits of ES and CE in their companies. Space was left in each section to explore particular aspects of specific industries. The length of interviews ranged from 60 to 90 minutes each, all recorded on audio.

In addition, the interviews were immediately transcribed, considering the possibility of the emergence of new themes during the research. These transcriptions were organized and coded using NVIVO11 software. A theme is a pattern of information that describes and organizes a phenomenon's aspects (Alhojailan, 2012). To identify the main themes and topics from the interview process, the study undertook a thematic analysis method based on the methodology described by Ryan & Bernard (2003) and Alhojailan (2012). The first step of the process corresponds to an exhaustive reading to identify patterns in the codification process's data. Then, these patterns were organized to generate a code set (Salamzadeh, 2020) to associate and connect the different sections of the interviews. The semi-structured character of the interviews and the in-vivo codification process (which generates new nodes immediately after every interview) captures themes that emerged inductively. In the later interviews, no new themes emerged, suggesting the saturation level was reached for the discussed topics (Namey et al., 2016). Consequently, the coding framework, including the themes and subthemes identified in the interviews, can be observed in figure 2.1. From this codification process, some aspects inductively emerge, which are of note. For instance, from the ES theme, the collaboration between companies and educational aspects emerges. Whereas in the case of CE, space for improvement and the reasons to apply the CE tool 'reduce' emerges. These aspects are detailed in the following section.

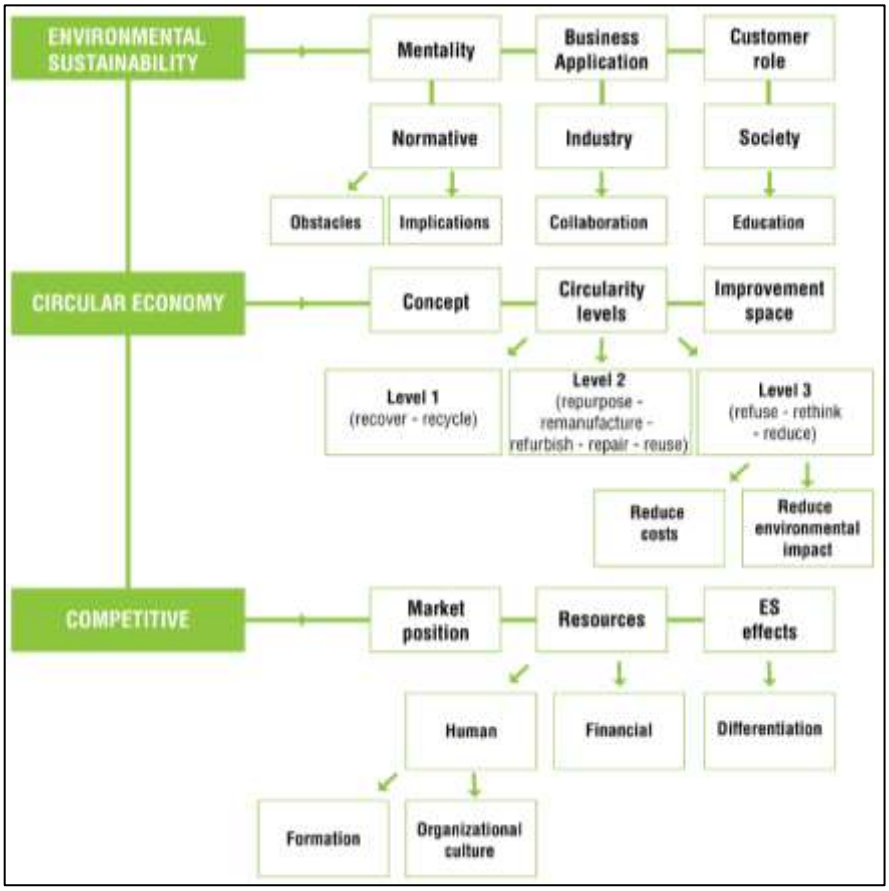

Figure 2.1. Coding framework for thematic analysis

2.4 Results

This section presents the exploratory findings of this research considering the different aspects, factors and insights from SME managers about the ES, CE, and their relationship. Appendix A, Table 1 details the interviewees' ID used in this section.

2.4.1 Environmental sustainability: Differents perspectives and objectives

The first issue discussed with the interviewees is the conception of sustainability in their businesses, recognizing the importance of three relevant aspects: economic, social, and environmental. Firms need to have the capability to adapt for this to be achieved. In this line, the specific perception of ES presents various visions. For example, the owner of a poultry company considers ES as a practice to *"minimize the possible environmental impact of productive process"* (ID: 01). In retrospect, the CEO of a vineyard states that *"ES is improving the quality and agility of productive processes"* (ID: 02). The acquisitions manager of a pharmaceutical laboratory has another perspective, understanding ES as to *"represent a responsibility while being part of business strategy; to produce a minimization in pollution and waste generation"* (ID: 03). Thus, the scope of ES is different, and is strongly associated with their background and independent business visions.

Additionally, in ES development, SME mentality is identified and expressed as the consistency between sustainable life and sustainable business in daily activities. Hence, when people run an environmentally sustainable business, companies usually maintain it as their core value and growth axis. For example, an eco-hostel owner expresses this idea: "*Sustainability, I have incorporated it into the day-to-day, it is within our way of being. On the one hand, it is good for business, and, on the other hand, it is a philosophy of life that I want to integrate into my normal life. I also want to apply it to the business*" (ID: 04). However, this mentality is not by itself enough to keep a business sustainable. The employees' attitude directly relates to developing a firm's sustainability, as personal employee behavior transmits the business message.

Regarding the application in business, there is a wide range of behaviors in which companies apply sustainability in their organizations, most being implemented in the productive processes, mainly in reducing inputs related to water and energy. Thus, two types of behaviors are visualized:

1. The application of ES economically represents a reduction in costs for the company. A textile company owner states: "*The consequence is sustainability, but it is more for the cost than for sustainability; if we consume less gas, we use less electricity because we are more efficient than other energy sources. This means that we pollute less and help the planet*" (ID: 05).

2. Companies that base themselves entirely on ES consider it as their core business essence. They apply ES from the beginning of the production process, as well as during the production cycle. The CEO of the vineyard states: "*To be a sustainable company, you must respect the environment, with a sustainable product for a market that understands this philosophy,*

because otherwise, you have no way out" (ID: 02). These firms visualize ES with conviction -not merely from an economic standpoint- as they see it as a feature that can help them economically in the medium/long term. A textile company manager states: "*For brands like us, it is a value and a philosophy of life that we hope to continue there*" (ID 06b).

Additionally, interviewees recognize that collaboration between companies must be important to achieve ES, as companies are part of an open and interconnected system (collaboration and resource-sharing can be fundamental for long-term ES). They also identify the lack of opportunities in the modern market. A packaging company's marketing director states this concern: "*sometimes we have failed in production and have a surplus of one type of material. What can we do with it? We do not know what to do with it, the material is good, it is new, another company could use it, but contact is difficult. So what other company? Whom do we give it to? What doors do we knock on? A collaboration network is missing*" (ID: 07).

Further diving into ES application, SME managers mention two specific aspects: The normative context and customer role. Regarding the normative aspect, the CEO of an electronic technology company states: "*The norms do not help product innovation or develop environmental processes, they are limited*" (ID: 08). In regard to the customers, there are direct mentions of the influence and relevance of sustainable product pricing in the purchasing decision process. Generally, customers distrust the price differences with standard products. The owner of the poultry company states: "*The community at this time looks at the price, and people are very aware of the environment and sustainability, but when you give them a low price, they forget about sustainability and the environment. The price is key*" (ID: 01).

Thus, interviewees highlight that process change towards sustainable practices is generated slowly due to trust issues. One factor that can affect customer behavior is education. A packaging company marketing director states: "*Education is the main thing for me. It is fundamental, and we are mostly unaware. Who should be responsible for this? The government? Companies? We need a global education policy to improve sustainability*" (ID: 07). Thus, a key factor in ES development can be viewed in two ways: 1) the teachings, values, and learning acquired from home are essential to achieve a sustainable behavior that lasts over time, and 2) formal education, at the primary level, will help raise awareness of ES and have a positive influence on everyday actions, such as waste management, water use, energy consumption, and the preservation of spaces. The administration manager of a plastic confection company states: "*The challenge is that the user culture changes as much as we do, especially at home. It is a matter of education, not in years, but decades*" *(ID: 09).*

In summary, ES represents a multi-dimensional topic for SMEs, which transversely has an inside-out approach regarding ES. As a result, SME managers minimize their environmental effects instead of generating wellness or positive externalities on the planet and society. To analyze the codes generated on ES aspects, we performed a cluster analysis by word, where similarity is presented in the link between more adjacent ideas (Figure 2.2).

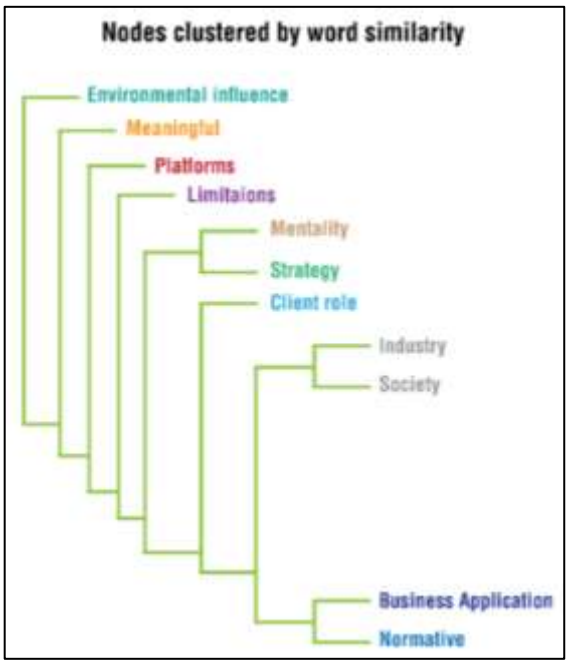

Figure 2.2 Nodes clustered by word similarity for sustainability aspects

The correlation analysis using the Pearson coefficient (linear measurement for two variables) analyzes the relationships and similarities between concepts. Table 2.2 shows the relationship level between different sustainability aspects, distinguishing the importance of relationships among society, industry, normative, business application, strategy, and client, presenting scores over 0.9. The correlation analysis shows from the SMEs managers' perceptions: 1) ES is considered a theme that involves a response from different stakeholders such as the industrial level, company responsibility, society, clients, and the government's role (through normative aspects), 2) These stakeholders need to work collaboratively and simultaneously for the development of ES, 3) The link between requiring an *adequate mentality* and a *predisposition of SME managers* is crucial to incorporate ES within their business strategy. It is to note that these aspects are in accordance to the ES conception of SME managers.

Table 2.2 Correlation between sustainability aspects

Node A	Node B	Pearson correlation coefficient
Society	Industry	0.9595
Society	Normative	0.9551
Industry	Business application	0.9516
Normative	Business application	0.9509
Society	Business application	0.9462
Normative	Industry	0.9426
Strategy	Society	0.9401
Strategy	Business application	0.9385
Society	Mentality	0.9382
Society	Client role	0.9382

2.4.2 Circular economy tools: The difficulties and lack of knowledge

When interviews go in-depth regarding CE as the extension of ES application, understanding the concept and their interpretation is strongly associated with the production cycle and resource use. For example, the operations director of a water treatment company states: "*I believe that we must go to the circular economy. Resources are not infinite; our planet is finite*" *(ID: 10).* The owner of a textile company states: *"It is the idea of a concept that is possible to share resources and grow together. You do not leave people behind and just run ahead*" *(ID: 06b).* Hence, when linking CE with ES, the perception sees them as separate elements centered on the production and consumption cycle, not CE as a tactic of ES. Hence, different CE tactics and tools are not recognized, regardless of being more circular (as the notions are anchored at the beginning of the production cycles). The images were organized from the least to the most circular tools when shown to interviewees, grouping them into levels and revealing the following:

2.4.2.1 Level one (recovery – recycling)

The interviewees of mechanical and chemical industries state that there is a tendency to recover some of the materials used after production, whereas other industries do not practice it. The director of a waste management company states: *"The only thing that we carry for incineration would be our process residues*" *(ID: 11).* When asked about recycling, this occurs in two areas: productive operations and daily internal applications. The CEO of a textile company states: *"It is true that recycling is not circular. For things to be circular, a product must be born to be circular, and the process must be circular*" *(ID: 12).* In this line, the director of a water treatment company expresses: *"We have strived to reduce the generation of waste*" *(ID: 13).* Thus, companies try to apply recycling within their production processes whenever possible, but they depend heavily on employee behavior to follow company directives.

2.4.2.2 Level two (reutilize – remanufacture – restore – repair – reuse)

Regarding reutilize, companies mention the impossible nature of applying it when their productive chains are highly involved in hygienic aspects, such as chemical production, food handling, and pharmaceutical industries. Companies without these restrictions usually do it only when their production is small-scale or a central part of a productive chain. For example, the acquisitions manager of a pharmaceutical laboratory states: *"It is hard to separate materials which are being mixed, complicating reutilization*" (ID: 03).

Remanufacturing is a practice that is not generally applied within industries. The eco-hostel owner points out that: *"it depends on the products. When they are complex, we do not remanufacture*" (ID: 04). The costs of incorporating this tool in later stages of production processes are generally quite high.

Restoration is a practice mainly used when the replacement cost of the product is significantly high. A textile company owner explains: *"We restore if a product has not gone well. To restore it, we take the process, and we see what we can do. Sometimes one is lucky, sometimes not*" (ID: 05).

The role of repair is quite evident within companies; internally, it is significantly related to machinery. This practice is used as purchase costs are usually high. The partner of a mechanical company states: *"Our machines have 15 years because another one would cost one million euros. This makes it improbable to buy another. So there is usually many reparations that we do on our current equipment*" (ID: 14).

Regarding the productive activity, the interviewees mention that repair is usually carried out. However, it depends strongly on the degree of relationship with the client and with *"*bonds" and *"*trust" playing key roles. The quality manager of a chemical company states: *"section cost depends on how the product is. Sometimes we do it to look good in front of the client*" (ID: 15).

Reuse is a practice with low levels of application among companies. There is much confusion between reutilize and reusing as concepts (possibly due to their low application).

2.4.2.3 Level three (reject – rethink – reduce)

The option to reject is understood but not seen as a possibility by companies. Only in rare cases does it apply, as the administration manager of a plastic confection company states: *"We connect a productive phase with the other. Instead of two, the coil leaves without a person, and only one machine does it*" (ID: 09). Generally, the production cycle is already established, and change involves resolving a series of difficult issues.

Rethinking is generally not considered due to the industries' nature and has not been seen as an option. The manager of a business fostering center explains: *"We rethink at times, if it occurs to you that you can think of it. However, if it differs from your main business, the cost is high*" (ID: 16).

Reduce is the most circular tool and is frequently practiced in the productive process. However, is understood as how not to waste resources. The director of a chemical company states: *"Economically it is important, less use means less waste*" (ID: 17). This example is applicable across different industries. Although primary reasons may differ, these are related to the purposes for *"being of the businesses themselves*". One case is the economic benefits of resource reduction, whereas reducing becomes part of the business essence, gaining importance in being sustainable through CE tools (see Figure 2.3).

These results show that SMEs apply CE in their businesses principally at the lower levels of circularity. However, it is more related to production processes and does not integrate as a part of the business strategy. This situation is presented as a gap for SME managers, an indicator of incipient environmental development. In this sense, a space for improvement to exploit is the employees' training and their level of involvement in the business. Approaching this aspect can help SMEs utilize their capacity and apply CE tools in their business strategy.

To deepen the analysis of the relationship between CE tools, the study undertook a cluster word analysis using NVIVO11 software to see the proximity of concepts. Figure 2.3 shows that CE tools such as reuse and repair have a high codification similarity. Retrospectively, recycle, reutilize, and recovery is strongly associated with the CE concept. Moreover, the 'space for

improvement' is associated with the aforementioned tools, which consequently associates CE with low-circularity tools.

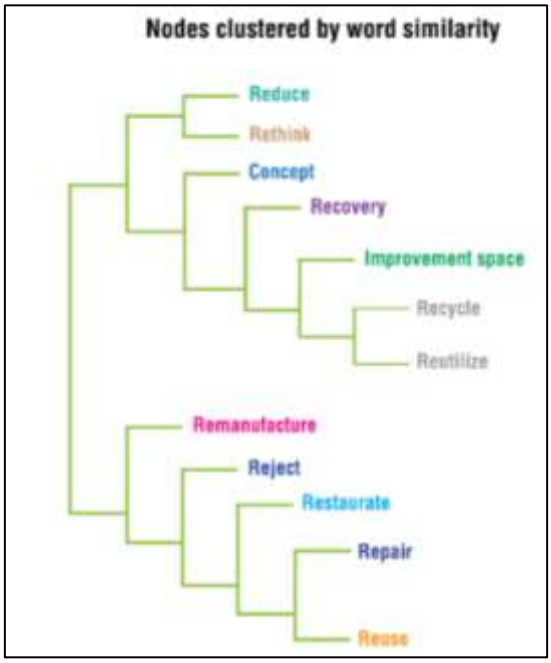

Figure 2.3 Nodes clustered by coding similarity for CE tools

The Pearson's coefficient was employed to identify if SMEs recognize CE tools' conceptual differences. The higher Pearson's coefficient corresponds to reutilize–recycle (0.896), reutilize–rethink (0.863), reutilize-reuse (0.858), rethink-recycle (0.857), and reutilize-repair (0.854). The lowest Pearson's coefficient is the relationship between reject–recovery, which reveals the codification difference between these tools (see table 2.3). This correlation analysis evidences that 1) SMEs perceive high similarity in CE tools, and that 2) SMEs do not clearly distinguish the CE tools' conceptual distinction. Therefore, a strong lack of knowledge about CE tools and their environmental effects is observed, becoming a practical limitation for genuine CE development at a practical level. An explanation of this phenomenon is that SME managers work at the lower CE levels, lacking collaboration between industries to close the resource cycle.

Table 2.3 Correlation between CE tools' similarity coding

Node A	Node B	Pearson correlation coefficient
Reutilize	Recycle	0.896
Reutilize	Rethink	0.8636
Reutilize	Reuse	0.8576
Rethink	Recycle	0.8566
Reutilize	Repair	0.8541
Rethink	Remanufacture	0.6808
Remanufacture	Reduce	0.6756
Reuse	Reject	0.6727
Remanufacture	Reject	0.6433
Reject	Recovery	0.6388

The results show a positive correlation for tools of the same level and a negative correlation for different levels. Interviewees partially confuse various CE tools due to lower CE levels and lacking collaboration between industries to close the resource cycle. Once companies realize that joint effort has higher adoption possibilities, the tools will be widely employed.

2.4.3 SMEs' competitiveness: Concernings and moderate optimism

The importance of resources in business development is crucial to company competitiveness, where human resources have a great impact. A textile company manager states: *"For us, the employees behind are very important; everything starts at the employees" (ID: 06a).* Thus, training takes great relevance due to the required skills. The CEO of a textile company shares his experience: *"We have always thought that the training was basic to develop the company. In recent years, the textile industry has suffered a great crisis, and we have been left with few young people who wanted to be in this sector; therefore, we do in-company training*" (ID: 12). Continuous staff training is imperative for better competitiveness. The administration manager of a plastic confection company expresses this philosophy: *"The issue of training people is basic. This concept that we are talking about leads us to think that the staff has to last — that is, that the turnover rate is very low*" (ID: 09). Hence, competence training can bring advantages.

ES can affect the market position of companies. SMEs state that customers have a good perception of them when their businesses are sustainable. According to a textile company owner: *"The client is much more faithful; that is, I believe that sustainability advantages are more long-term*" (ID: 05). The interviewees state that ES generates a positive effect on competitiveness, which is not directly reflected at the economic level in the short term. The administration manager of a plastic confection company adds: *"Regarding those who do not adapt themselves, sustainability makes us more competitive. The first ones capable of offering these alternatives have experimented with various materials*" (ID: 09). Companies see it as a source of differentiation, allowing them to establish it as a competitive advantage further on. The marketing director of a packaging company states: *"Not only in numbers but in the brand image. This makes you different, and not all companies are like this. This aspect position you as a type of company that cares about the environment, gaining people's* approval" (ID: 07). Yet, changes in society have been progressive and slow, hence moderate optimism.

2.5 Findings and discussion

This study approaches the managerial perception of Spanish SME managers about ES and CE, their conceptualization, and implementation. The empirical analysis of this research shows several empirical insights.

This article analyzes the perceptions of ES and CE from the perspective of SME managers, and when addressing RQ1, ES shows various visions such as minimizing environmental impact into a responsibility. However, as this investigation deepens these conceptual differences, the fundamental distinction is the inclusion of ES as a pillar of the business strategy. In this regard, many SMEs do not consider ES part of their business strategy, instead having an inside-out

approach (minimizing environmental effects). For the ones that do consider ES as part of their business strategy, they have an outside-in approach (maximizing positive environmental effects and generating positive social externalities). Thus, this framework establishes a nuance on the perception of which method works with SME managers.

When analyzing the ES development influencing factors on Spanish SMEs, education comes as a crucial factor toward the process in two ways: 1) First, the teachings, values, and learning acquired at home are essential to achieve sustainable behavior that lasts over time; and 2) Second, formal education from the primary level raises awareness regarding ES (Aikens et al., 2016), influencing everyday behaviors such as waste management, water and energy consumption. These findings reflect the importance of education in its cultural influence in forming a pro-environmental mindset (Outsios & Kittler, 2018) as a basis for environmental knowledge on SMEs. In addition, this supports learning orientation development- although SMEs establish the need for a bi-directional relationship with their clients- where the customer needs: 1) to prioritize environmental aspects in their purchasing behavior, and 2) to have trust regarding sustainable product prices. However, if SMEs can strengthen these two factors, the problem transforms itself into a vicious cycle where client pressure takes a fundamental role for ES development on companies (Nguyen et al., 2020). Furthermore, the literature regarding ES has a strategic focus on business models (Boons et al., 2013) and value creation (Bos-Brouwers, 2010). Thus, this study states some relevant and concrete aspects from the SMEs managerial perspective that can be approached for the public-policies development on these companies.

From this environmental perspective, this article analyzes the relationship between ES and CE in the SME context, considering the development extension of CE practices established in the RQ2. The findings suggest that CE's association is unclear, and that some managers recognize their lack of information about said concepts. Basically, not knowing a conceptual relationship that has been broadly discussed in the literature, yet which has found itself with a limited level of extension at the corporate level (Geissdoerfer et al., 2017; Murray et al., 2017). Within this context, SMEs do not recognize the existence of tools that are more circular than others. This aspect is reflected in the correlation analysis of CE tools and their strong similarity perception, where the results show CE tools as reuse, reutilize, and restoration to be perceived as too similar. Furthermore, tools such as rethink are not widely used by SMEs, which usually use linear model productions. Hence, SMEs do not consider the opportunities in exploring new forms to develop their product or services in related industries (limitation of resource sharing caused by local laws). These findings are interesting to understand, particularly given how CE literature is and is not criticized, thus CE's broader conceptualization brings certain resistance regarding their benefits to the environment due to their possible rebound effects (Korhonen, Nuur, et al., 2018). This point of view highlights that CE practices promote environmentally sustainable goods, keeping consumers doing precisely the same: consuming (Hobson, 2020); in essence, this study partially shares this view.

In retrospect, SMEs apply low circularity practices in their final stages of the production process, such as recycling and recovery, instead of CE practices that do not promote new goods (reuse, reutilize, restorative) or change consumption patterns (reduce and rethink).

Nonetheless, the global effect of CE in consumption patterns requires further detailed research. In this context, an institutional framework that focuses on environmental knowledge and supporting pro-environmental changes in SMEs production patterns (increasing the products and services lifecycle) can improve the implementation of CE practices in SMEs.

Regarding RQ3, CE effects on Spanish SME competitiveness can be summed up in one sentence: challenging to implement while requiring a supportive company culture and an optimistic sensation to potentially generate long-term competitive benefits (Lahti et al., 2018; Rizos et al., 2016). SME managers consider that CE implementation can be a factor to generate lasting competitive advantages in the medium to long term by improving brand image, reputation, and recommendation. However, one of the central topics is the trade-off between the costs in the short term (Ortiz-de-Mandojana & Bansal, 2016). However, these positive feelings regarding CE's potential have a counterpoint; the practical limitations. Interviewed SME managers point out towards: 1) human and financial resource availability, 2) short-term vision, 3) daily activity pressure, 4) the scarce knowledge about environmental themes and the effect of their production processes in environmental degradation. These emerging aspects are in line with Ormazabal's et al. (2018) research that highlight: 1) the problem of insufficient information, 2) the lack of technical knowledge and resource, 3) the lack of support from public institutions, 4) the lack of qualified personnel in environmental management, and 5) the commitment of the organizational leaders as barriers to developing CE. In this nature, SMEs' risk management is critical, where about two-thirds of SMEs show a passive risk-management approach (Brustbauer, 2016).

One prevalent empirical issue in this context is the challenge to develop ES and CE authentically and genuinely. Current CE practices represent an individual and unstructured system based on the personal beliefs of SME managers (who try to mitigate environmental degradation). Thus, the pertaining question is: what are the potential ways to cope with this environmental gap? (in terms of knowledge and degradation).

1) To improve the formative mechanisms on SME managers and employees regarding environmental themes. A potential solution to this problem is the generation of access to public funds, which SMEs can apply to obtain, as well as co-financing programs that can bridge the gap that limits the development of ES.

2) To generate a collaboration network between companies to share experiences, concerns, perspectives, and beliefs. Unfortunately, SMEs tend to feel alone in this process, a case of 'silent abandonment'. This aspect links to the limited cooperation between industrial sectors (Ehnert et al., 2016). Thus, the active role of local entities (municipalities) can satisfy this need for connectivity.

3) SMEs need institutional support to develop a specific environmental agenda, a road map according to the economic sectors, and the production process's characteristics. In this way, the role of public policies becomes crucial, as they must contribute to achieving higher levels of circularity in SMEs to reduce environmental degradation. These aspects can promote CE adoption and generate a strong circularity model

(companies, government, and society), balancing the tensions found between ecological, economic, and social priorities (Johansson & Henriksson, 2020).

Thus, this research provides a holistic vision of the situation of Spanish SMEs regarding ES and CE, their empirical relationship, and their future perspectives. Furthermore, this study also contributes to environmental management literature on SMEs and the location-specific studies -a latent need due to the different contextual factors regarding environmental aspects- (Bakos et al., 2020).

2.6 Conclusions and limitations

This article examines SMEs' managerial perceptions regarding ES and CE practices. The focus is to analyze the relationship between ES and CE, considering the circularity practice levels and their implications in SME competitiveness. A multiple case study approach was used to identify the relevant environmental topics in Spanish SMEs from a managerial perspective.

Furthermore, ES is a concern that has been slowly incorporating into the reality of SMEs. In this context, ES is not a priority for companies. Hence, the reasons for ES adoption in SMEs differ between the economic and/or environmental concerns. In a managerial sense, the range of ES goes from *a consequence of reducing operational costs* to a *firm conviction of their environmental responsibility*. This difference is relevant to understand the given priority of the management of environmental themes in SMEs. Based on the evidence, SMEs show a heterogeneous behavior of ES conception; thus, establishing the conditions to standardize and promote ES between SMEs is crucial in generating an ecosystem for SMEs to share experiences and resources. Hence, the main objective is to collaborate and decrease the overall amount of resources used by SMEs (Oncioiu et al., 2018).

In the practical sense, CE practices in SMEs are anchored at the beginning of the production cycles; some companies apply CE tools for economic reasons, such as reducing energy consumption and raw material use and saving costs. Furthermore, when considering how high initial costs and the lack of technical expertise act as substantial barriers to adopting environmental themes by SMEs (Álvarez Jaramillo et al., 2019), the role of 'the return of investment' becomes considerable (Prieto-Sandoval et al., 2018). In retrospect, other SMEs apply CE practices due to the real concern on the planet's environmental degradation. This aspect reflects the importance of integrating environmental topics in a financially viable manner (Mura et al., 2020), where the mentality and values of SME managers play a relevant role in how a company chooses to go regarding CE. These different behaviors show different approaches -that are not opposed- to CE implementation. Hence, SMEs indeed believe that CE can contribute economically, but only in the medium and/or long term timeframe.

The findings also suggest that policy-makers should consider the reality of SMEs, as these latter show will and motivation to be more sustainable but need integrative public support to include the environmental aspects in their strategic business priorities. Sáez-Martínez et al. (2016) Quantitative research on SMEs in the EU (where 9% of surveyed SMEs view ES as a strategic priority) shows that these do not see ES as a source of competitive advantage (but do acknowledge its potential in the long run). Therefore, the importance of the existence of

enabling conditions can provide a better business environment to develop more sustainable actions by companies, thus allowing the development of ES as a lasting competitive advantage. One such example is Denmark's (Reyes-Rodríguez et al., 2016), where public policies promote environmental education (at all educational levels), managerial attitudes, and company strategy. Also, the mentality of corporate change is crucial in guiding SMEs towards a more environmentally sustainable scenario (Knight et al., 2019).

With all that said, the aim must be to achieve a greater level of circularity and not one based on basal compensation practices such as recycling or recovery (Korhonen, Nuur, et al., 2018). For example, appropriate training is a mechanism to develop ES and implement CE within the SMEs' daily activities. Therefore, this research provides managerial learnings about the environmental reality of SMEs, thus approaching ES and CE concepts from the perspective of SME managers to develop mechanisms to bolster the environmental development of SMEs.

Nevertheless, this research has some and aspects that must be addressed. First, the empirical data was obtained through multiple case-study methods, whose goal is to describe complex phenomenons (Yin, 2012) from a sample of SME managers in a country. This method is limited in identifying causal relationships between emerging variables. Consequently, care must be taken in extrapolating the results to other countries with different cultural contexts and environmental conditions. Second, a specific aspect to consider is the minimal information loss or distortion that might have occurred due to translations. Third, this research examines the SMEs' situation in a general context. Thus, future studies could examine and compare specific industrial sectors to understand their conditions and evaluate their environmental capabilities to provide specific industry insights. Lastly, different industrial sectors have different types of behavior, according to the nature of their production process and the specific regulations that affect their operation. In lieu, it could be interesting for further research to consider a longitudinal approach to identify the evolution of ES and CE patterns in SMEs.

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CHAPTER 3:

ENVIRONMENTAL SUSTAINABILITY AND THEIR FACTORS IN SMES: A MULTIPLE CASE STUDY OF SPAIN AND CHILE

Keywords

Environmental sustainability, customer orientation, corporate social responsibility, entrepreneurial orientation, SMEs.

3. Environmental sustainability and their factors in SMEs. A multiple case study of Spain and Chile

3.1 Introduction

Concern on the planet's environmental situation has become relevant to society, industry, governments, and policy-makers (Sarkis & Zhu, 2018). In this way, the 17 *Sustainable Development Goals* (SDP) establish the *Sustainable Agenda for 2030*, bringing forth the relevance of environmental and social aspects (United Nations, 2015). Moreover, the European Union's (EU) *Sustainable Development Strategy 2020* tackles environmental issues such as sustainable transportation, consumption and production, conservation, and natural resources management (European Commission, 2018).

Hence, companies have a great responsibility as the environment suffers from externalities caused by business operations, such as waste and pollution (Jiménez-Parra et al., 2018). Thus, companies must be capable of balancing their economic, social, and environmental aspects regarding their growth and development (Schaltegger and Burritt, 2005), balancing the use of resources to avoid over-exploitation and ensure their continuity. Over-consumption and environmental degradation have resulted in public calls transitioning towards a more sustainable society and economy (Adams et al., 2016), including Environmental Sustainability (ES) as a decisional factor to enhance sustainable growth (Danso et al., 2019; Roxas et al., 2017). Thusforth, understanding the variables that influence ES adoption is primordial for implementing sustainable strategies.

The literature on environmental topics is broad, and its scope overlaps different disciplines of knowledge due to their multidimensionality (Naegler et al., 2021). However, the literature has grown uneven according to company size in different dimensions such as customer and proposal value (Urbinati et al., 2017), corporate responsibility (Quarshie et al., 2016), production processes (Cohen & Muñoz, 2016), and reporting to stakeholders (Galani et al., 2012). These engagements with large companies are sustained by 1) resource availability (Hörisch, Johnson, et al., 2015) and 2) public pressure (Fernandez-Feijoo et al., 2014). Moreover, the multi-level perspective theory emphasizes the relevance of these companies to do a jump onto environmental aspects (Geels, 2011). Hence, research in SMEs is underestimated when compared to large industries (Brammer et al., 2012), regardless even that SMEs environmental effects on waste and pollution are significant -bordering 70% of companies' responsibility- (Reyes-Rodríguez et al., 2016). In this context, governments and policy-makers do not often address SMEs' responsibility in environmental degradation due to their small size. Morsing and Perrini (2009) summarize this historical problem: "*the smallness of the individual SMEs is not proportional to the collective grandness of SMEs*".

This unequal concern has been approached in recent years, where SME literature has been growing. For example, organizational culture and digitalization (Isensee et al., 2020), resources and capabilities (Eikelenboom & de Jong, 2019), stakeholders pressure (Tyler et al., 2020), entrepreneurial orientation, social and sustainable practices (Chassé & Courrent, 2018) are different approached themes. However, although SMEs' environmental aspects have emerged in recent literature, there is still a lack of explorative studies that do not approach ES

antecedents from multiple levels (Chang & Cheng, 2019) that integrate companies' size and location characteristics (Thorley et al., 2019).

This research aims to describe and examine antecedents variables that affect ES adoption under the framework of 1) resource and capabilities and 2) stakeholder theories (Donaldson & Preston, 1995; Teece et al., 1997; Wernerfelt, 1984). Regarding this theoretical context, focus is placed on three factors: Customer orientation (CO), Corporate Social Responsibility (CSR), and Entrepreneurial Orientation (EO). These antecedents consider different SMEs' perspectives (company, customer, community), and the justification for considering them is to approach different study levels in SMEs considering location aspects; scarce research focuses on these companies (Benhayoun et al., 2021). To guide this chapter, the following research questions have been established:

RQ1: What are the relevance of Customer orientation (CO), Corporate Social Responsibility (CRS), and Entrepreneurial Orientation (EO) on the ES adoption?

RQ2: Do these three factors (CO, CSR, and EO) present similarities and differences between different contexts? If so, what are they?

To approach these research questions, the empirical analysis concentrates on two countries; Spain and Chile. SMEs represent 99.83% of companies in the former, generating 71.9% of employment (Ministerio de Industria - Comercio y Turismo, 2019a) while representing 97% of all companies and 70% of total jobs in the latter (Ministerio de Economia; Fomento y Turismo, 2019). Regarding the environmental aspect, Spain is under the EU's robust environmental framework (European Commission, 2018). In contrast, Chile is one South American country with recently enacted environmental legislation (Ministerio del Medio Ambiente, 2016). Therefore, this research compares the environmental reality of two OECD countries with different social and cultural characteristics. Multiple case studies were performed through in-depth interviews in Spain (Catalonia) and Chile (Santiago region), the regions with the greatest presence of SMEs in the respective country, to examine and analyze these factors. This method is justified by its strength to seek new knowledge and insights to provide analytical generalization possibilities (Piekkari et al., 2009).

The chapter is structured in the following manner: Section 3.2 presents a literature review regarding the ES concept and discusses the presented antecedents on the adoption of ES application from SMEs; Section 3.3 describes the methodology, the sample, the data collection process, and analysis methods; Section 3.4 shows the results; Section 3.5 presents the findings of the study and their implications for SME management and policy-maker decisions. Lastly, the limitations and future research lines are presented in section 3.6.

3.2 Theoretical Background

3.2.1 From resources and stakeholders to SMEs Environmental Sustainability

Sustainability is an expression of balance achievement. The concept represents *"the development that meets the needs of the present without compromising the ability of future generations to meet their own needs"* (World Commission on Environment and Development,

1987). The central issue is the balanced and systemic integration of intra and inter-generational economic, social, and environmental performance (Geissdoerfer et al., 2017).

This research considers the environmental perspective of sustainability or the development of sustainable levels of consumption and production and the maintenance of natural capital as a complement to human capital (Goodland, 1995). Their conceptualization states the balance and resilience in resource use without affecting an ecosystem's stability (Morelli, 2013). From the companies' perspective, this definition denotes the importance of resource management, which is crucial for SMEs to achieve ES.

Regarding the aforementioned, the present study is theoretically based on the Resource-Based-View (RBV), with Stakeholder theory as the theoretical framework to understand the different factors contributing to ES adoption. The RBV theory describes that competitive advantages are derived from the resources and capabilities that are valuable, rare, imperfectly imitable, and not substitutable (Barney, 1991; Wernerfelt, 1984). Furthermore, RBV posits that competitive advantage depends on the ownership of unique and specific resources, combining and transforming them into organizational capabilities (Wernerfelt 1984; Barney 1991, 1996). Under the RBV, the managerial responsibilities are substantial, including repositioning the company as opportunities change and its resource set evolves (Lockett et al., 2009).

RBV in SMEs is critical, considering their well-known limited human and financial resources (Hitchen et al., 2017) and managerial competence (Lara & Salas-Vallina, 2017). The RBV offers a perspective to exploit companies' internal resources and lead proactive changes, especially considering environmental issues and firm responsibilities (Lozano et al., 2015). The resources profile and the business context pressures affect their environmental management practices (S. Wang et al., 2018). Therefore, SMEs that can transform their resources in multiple competencies demonstrate superior outcomes (Lonial & Carter, 2015). Considering the SMEs resources limitations, Woschke et al.'s (2017) research expand RBV theory in these companies, proposing courses action for SMEs and their managers. These authors suggest that resource-constrained SMEs should focus their innovation activities on incremental rather than radical processes. In addition, the role of managers constitutes an important asset for SMEs through their experience and knowledge to develop innovative processes within the organization (Prange & Pinho, 2017). In this context, the development of ES (considering it as an innovative process in SMEs) as a potential competitive advantage depends on the combination of financial, technical, managerial resources and the ability to combine them (Ayuso & Navarrete-Báez, 2018). Hence, RBV can be a natural base fit for the environmental dimension of sustainability.

Nonetheless, ES at the industrial level is a multidimensional issue that considers the companies; to note, their stakeholders are essential. In retrospect, stakeholder theory represents the guide to structure the companies' operation, considering the actors with a specific stake in the process (Donaldson & Preston, 1995). Clarkson (1995) generates a distinction between primary stakeholders (shareholders, investors, employees, customers, and suppliers) -with which without a company cannot survive- and secondary stakeholders (government, academy, community, non-governmental organizations) that influence companies but are not are essential for its survival. Nonetheless, this latter group can influence

companies' environmental decisions; actions such as public pressures tend to influence the interests of primary stakeholders. In this point, Friedman & Miles (2002) argue that a weakness of this theory lies in the underspecification of the organization/stakeholder relation itself. Therefore, the researchers develop a model to distinguish stakeholders according to their dynamism on time, based on their: 1) necessity (explicit or direct relevance for company development), 2) contingency (implicit or temporal influence for company), and 3) compatibility/incompatibility level (conflicting interests between the ideological and the practical). Several agents are interested in the action and companies´ decisions, expecting responsible behavior in their business development (Castelo Branco & Lima Rodriques, 2007).

In the SMEs' context, stakeholder theory presents limitations in its scope. SMEs are generally independent entities that prioritize their economic margins and have discretionary stakeholders' economic expectations (Sen & Cowley, 2013). Therefore, SMEs do not experience such obligations toward stakeholders, considering their relative independence. However, SMEs are no longer confined to social concerns. These companies have a more direct connection with the local community, benefiting from their recognition (embedded as a part of the community); therefore, they work to improve their reputation, trust, and legitimacy within and among citizens (Russo & Perrini, 2010). Under these considerations, SMEs have an indirect relationship with the secondary stakeholders' priorities. In this scenario, SMEs' social or environmental challenges depend on their organizational capabilities (Martínez-Martínez et al., 2017) and the community perspective and exerted pressure -in this aspect- (Quiroga-Calderón et al., 2018). Therefore, the evidence in environmental topics suggests the relevance of strategic manager behavior with their stakeholders (Hadj, 2020) and the importance of stakeholder's pressure for SMEs' environmental responsibility (Sáez-Martínez et al., 2016; Scuotto et al., 2020).

Regarding the relationship between these theories, the critical review research regarding stakeholder theory developed by Freeman et al. (2020) considers them complementary from the business perspective. For these researchers, the only contradiction arises if one believes that their disembodied resource floating around does not involve stakeholders in their acquisition, processing, and transfer, that is, value creation. However, all resources come -unavoidably- with people attached. Thus, these antecedents link the two reference frames to approach ES antecedent variables.

3.2.2 Environmental sustainability in SMEs: antecedents and evidence

All society statements have an environmental responsibility to comply, and SMEs are not the exception. However, it has not been a permanent priority in its development. Environmental management is a developing field in SMEs, where the literature has been growing recently, where strategic orientation can become crucial in their commitment to ES (Jansson et al., 2017). These strategic behaviors bring benefits to these companies. For example, Malesios et al. (2018) found a positive association between ES practices and economic indicators, improving customer performance. Nevertheless, how do these companies achieve these benefits?

To approach this question, it is necessary to analyze how SMEs develop and implement environmental practices. Sáez-Martínez et al. (2016) state that energy-saving, reducing waste, saving materials, saving water, recycling, and renewable energy are relevant practices to SMEs' environmental improvement. Reyes-Rodríguez et al. (2016), in a longitudinal study of 14 years, identifies and evaluates ten environmental initiatives that SMEs can adopt -with positive effects-, such as reducing costs and competitive advantage development; 1) environmental audit system, 2) a written environmental policy, 3) written environmental strategy, 4) regular audits of environmental goals, 5) set specific environmental goals, 6) assignation of responsibility for carrying out environmental strategy, 7) publication of a separate environmental report, 8) drawing up environmental accounts/audit, 9) quantitative measurement of key environmental indicators, and 10) certification according to ISO 14000. Moreover, implementing these practices implies adopting Circular Economy principles contributing to the recycling, reuse, and reducing resources (Oncioiu et al., 2018).

Despite these examples, it is impossible to ignore SMEs' limitations. A literature review of 175 articles about barriers to sustainability at a worldwide level performed by Álvarez Jaramillo et al. (2019) synthesizes the most frequent obstacles: lack of resources, the high initial capital cost in implementing measures, and lack of expertise. Moreover, this study identifies a clear imbalance in the production of research publications, the highest stemming from Europe and Asia. In contrast, Latinamerica's case is limited to Brazil and Uruguay. In this sense, a conditional moderator to achieve positive results is the managerial discretion of SME Managers/CEO/Owners as a catalyst and promoter of ES adoption in the organization (Eweje, 2020).

Moreover, ES is not only an internal topic. Stakeholders exert different pressures, from customer importance to environmental legislation's rigor (Hoogendoorn et al., 2015). These examples demonstrate the broader influence factors. Henceforth, this research selected three factors that influence ES adoption from a multiple-level perspective: Entrepreneurial Orientation (EO), Corporate Social Responsibility (CSR), and Customer Orientation (CO).

The first factor, EO, represents a good approximation of the SMEs' behavior and vision regarding the market (Avlonitis & Salavou, 2007); considered a driver affecting SMEs' survival and growth (Alvarez-Torres et al., 2019). SMEs with a proactive entrepreneurial orientation stance are more inclined to environmental concerns and practices into their organizational activities (Roxas & Coetzer, 2012). In lieu, when these companies have a high EO level, and present stakeholder integration, it amplifies their environmental orientation (Amankwah-Amoah et al., 2018). Therefore, understanding the internal behavior becomes relevant for the bolstering of environmental sustainability at the practical level.

The second factor, CO, is essential for SMEs; companies need to have continuous information to differentiate their offer and take market decisions (Keh et al., 2007). Furthermore, Hart & Dowell (2011) affirm that by connecting with their external stakeholders (customers), SMEs can get into the "*voice of the environment*." In their nature, SMEs have a relatively low interest in environmental management unless SMEs recognize that market trends and customers' interests are eco-friendly, becoming more sensitive to the environmental concern (Agan et al., 2013). The customer is an external stakeholder with a substantial role in leading

environmental changes due to their potential to alter SMEs' perception in the community. As a result, CO can shape how SMEs create and deliver more environmental products (Lee et al., 2019). In this way, understanding the customers' behavior becoming a relevant insight to promote ES and improve SMEs' environmental performance.

Regarding the third factor, the relationship between CSR and SMEs, there is a lack of consensus on the SMEs' managerial tools and opportunities derived from CSR (Russo & Perrini, 2010). An example of this situation is whether SMEs can benefit from positive effects as a reputational liability -considering they are less exposed than large companies- (Graafland, 2018). However, the evidence in the last years considers CSR the entrance bridge to environmental concerns and an enabler for SMEs' environmental management in their production process (Hadj, 2020). Moreover, a systematic literature review of articles (n =118) on the integration of CSR into the SMEs strategies performed by Ortiz-Avram et al. (2018) suggests that effective CSR implementation is a basis for the development and implementation of environmental practices.

These factors represent a multi-level perspective approach to ES development at a managerial level, with different strategic factors affecting ES implementation. Therefore, these variables will be analyzed in the following sub-sections.

3.2.3 Entrepreneurial orientation: The attitude of managers towards ES

Entrepreneurial orientation (EO) summarizes the style, decisions, and actions in developing a company's business strategy (Zhai et al., 2018). The empirical evidence suggests a positive relationship between EO and organizational performance, improving SMEs' competitiveness. For example, Covin & Lumpkin (2011) point out that an entrepreneurial approach is more receptive to external environment changes, reflected on being innovative, proactive, and having more risky business models than companies that do not adopt this approach. Furthermore, Covin & Miller (2014) explain that Resources-Based-Value (RBV) theory and capabilities perspective may enhance EO relationship outcomes in SMEs, as these can increase company resources and capabilities. Moreover, the study of Wales et al. (2013) brings to light the importance and validity of EO as a key variable that affects different company outcomes.

Thus, there is evidence that shows that EO influences ES. Hall et al. (2010) state that entrepreneurship conducts a relevant role in ES development. In this way, Marshall et al. (2015) state that a high EO level positively influences the creation of high-order ES practices. For example, Klewitz & Hansen (2014), through a systematic review based on 84 key journal articles on sustainability, found different sustainability profile behaviors based on the following attitudes: innovative, risk-taker, and proactive. In this regard, Jansson et al. (2017) show that a proactive attitude is a condition for sustainability. In retrospect, a risk-taking attitude has no significant direct relationship to the commitment towards sustainability; this might be due to the popular vision that sustainability is an undesirable risk. There are other more profitable areas for SMEs to develop and exploit.

However, despite this evidence, the nature of EO's role and impact on sustainability remains largely undefined in society. Johnson & Schaltegger (2016) mention that the scarce

research about EO and the SMEs entrepreneurial profile in ES remains open for research opportunities. Hence, EO in SMEs deserves to be analyzed.

3.2.4 Customer orientation: The companies' role and customer behavior on ES

Customer orientation (CO) is a set of beliefs that consider the customer's interest first while not excluding all other stakeholders (owners, managers, and employees) to develop long-term company profitability (Deshpande et al., 1993). CO is regarded as a strategic orientation that reflects the firm's ability to create and deliver superior customer value by processing market intelligence (Racela, 2014) and prioritizing customer needs. Consequently, the importance of environmental aspects depends on the company's' priorities.

Evidence of this relationship suggests a positive correlation. Piercy et al. (2002) posit that customer orientation is a long-term strategy that can generate competitive advantages, which can be fundamental for ES prospection in the short and long term. Regarding this increasing environmental concern, customer focus is crucial to achieving a commitment towards ES, generating business opportunities (Jansson et al., 2017), and translating into performance improvement (Pekovic & Rolland, 2016).

CO's role in SME development is relevant; Villanueva et al. (2010) find CO essential to SMEs' success. A company focuses on customers to know their current and future needs and quickly respond while coordinating their actions through CO. In this regard, Peña et al. (2016) raise the importance for SMEs to have information that allows them to adjust to consumers' expectations by using market information for designing their strategies.

Regarding the potential benefits to SMEs, the relationship with ES has other considerations. Hosseininia and Ramezani's (2016) research in SMEs from the food sector highlights that CO has an essential effect in environmental management only if the customer has confidence in the SME. In lieu, Jansson et al. (2017) state that customer commitment to environmental strategies is essential. However, the dimensionality of the customer role is an aspect that requires more information about their practical effects on SMEs' environmental consideration (Klewitz & Hansen, 2014).

3.2.5 Corporate social responsibility: The difficulties in their implementation

CSR's primary purpose is to make business activity and corporate culture sustainable in the economic, social, and ecological aspects (Reverte, 2016), a behavior widely associated with large companies and linked with sustainability aspects. Melissen et al. (2018) suggest that when companies develop their social responsibility, they are more effective in contributing to sustainable development.

For SMEs, CSR has an important role in increasing competitiveness (Turyakira et al., 2014). In addition, Madueño et al.'s (2016) research show that CSR practices increase competitive performance -directly and indirectly- through these organizations' ability to manage their stakeholders.

In environmental topics, Bevan & Yung (2015) explain that CSR in SMEs is a condition for sustainable environmental and economic development and a strategic tool to compete in a business environment (Motilewa et al., 2017). In this way, CSR practices' communication becomes critical for ES management success (Wu, 2017). Furthermore, Quarshie et al. (2016) show that CSR affects sustainability in the Triple-Bottom-Line concept (people, profit, society). However, an SME's priority is to achieve a competitive performance rather than developing environmental practices (Herrera Madueño et al., 2016). In this sense, a re-think on effectively incorporating this behavior is needed while considering SMEs' different realities (compared to large companies) in knowledge, resources, limitations, and cultural characteristics.

3.3 Methodology

This research uses a qualitative methodology appropriate to understand a phenomenon, describing the meaning and implications of their events (Carson & Coviello, 1996) -in this case, adopting a multiple cases approach-. This method is recommended to gain a more in-depth understanding of a phenomenon, identifying and describing the key variables and their relationship (Eisenhardt & Graebner, 2007) considering their complexity and context (Reinecke et al., 2016). Moreover, in environmental topics on SMEs, this approach was used in dimensions such as in the implementation of sustainable business practices (Caldera et al., 2018), ISO 14001 certification (Granly & Welo, 2014), or environmental engagement level (S. Williams & Schaefer, 2013).

The research's primary data was collected using in-depth interviews from SMEs in Spain (January-May 2019) and Chile (July-September 2019). In Spain's case, the sample comes from the region of Catalonia, which is the region that contributes most to Spanish GDP -19.1%- (Instituto Nacional de Estadística de España, 2019), concentrating most of national SMEs -22%- (Idescat, 2018). In Chile, companies are located in Santiago, the region with the highest contribution to Chilean GDP -43.6%- (Banco Central de Chile, 2018), and has 43% of country's SMEs (SII, 2017). Thus ensuring the use of similar criteria in area selection.

The SMEs definition in both countries is very similar, only differing in the annual income level. In Chile, SMEs are entities with an annual income of less than 3.21M€[1] (Ministerio de Economía, 2014). In Spain, SMEs are entities with an annual income less than 50M€ (European Commission, 2017b).

The selection criteria of companies were: 1) Belongs to productive and service sectors, which allows the possibility of applying sustainability and CE within the business; 2) More than five employees. Respondents were recruited with the support of the Autonomous University of Barcelona in Catalonia, and University of Chile in Santiago. Hence, 18 managers from 17 SMEs in Catalonia and 29 managers from 25 SMEs from Santiago were interviewed.

These interviews are semi-structured, where patterns and topics can emerge quite freely to obtain a full conceptual description of the studied phenomenon (Glaser, 1992), such as Environmental Sustainability (ES) factors. Previously, the interview content was validated by

[1] This amount correspond to the conversion of Chilean pesos to euros (at mean exchange rate of May 2020).

researchers of the Autonomous University of Barcelona and the University of Chile to make compatible the expressions used in both countries. All interviews (60-90 minutes in length) were recorded and transcribed in Spanish. Then, translated to English by a native language professional to ensure the conceptual and dynamic equivalence of the content (Mandal, 2018).

Before beginning the interview, a detailed explanation of the research purpose and objectives was given. Written consent was signed to participate voluntarily, record the interviews, and maintain the participant's anonymity for publication purposes. The interview structure considers general company questions (annual income, employees number, ownership structure, firms tenure) and the factors that can influence the application of ES in the business: 1) Entrepreneurial attitudes of the managers, 2) Customer factors in the business, 3) CSR and the company activities, giving space to emerging themes. The sample characteristics are presented in table 3.1.

Table 3.1 Sample characteristics

Managers characteristics		**Spain (n=18)**	**Chile (n=29)**
Gender	Male	11	13
	Female	7	16
Higher education	Yes	18	25
	No	0	4
Age	<35	2	14
	36 – 50	8	9
	>50	8	6
SMEs characteristics		**Spain (n=17)**	**Chile (n=25)**
Industrial sectors	Industrial	6	4
	Commerce	7	7
	Foodservice	2	8
	Consulting services	2	5
	Financial	-	1
Number of Employees	1 – 9	2	12
	10 – 49	8	11
	50 – 100	3	2
	>100	4	-
Firms tenure	<5	2	10
	6 - 10	-	9
	11 – 20	2	3
	>20	13	3

Table 3.1 highlights the representative gender distribution, guaranteeing the managers' experiences in diversity, important in SMEs management (D. Williams, 2013). The educational level shows similarities regarding university degrees. Regarding age, the Chilean sample has a larger younger group presence (<35 years) than the Spanish sample. This point is interesting because the available evidence suggests different perspectives on environmental themes - subject to age (Eikelenboom & de Jong, 2019; Lewis et al., 2015).

Regarding SMEs' characteristics, the sample considers different economic sectors in a relatively similar proportion in Catalonia and Santiago to explore the spectrum of ES factors.

Regarding tenure, the Spanish SMEs sample is older than the Chilean one; the SMEs age is an interesting point but with scarce evidence of its influence on organizational environmental impact (Laforet, 2013).

The data analysis process is based on thematic analysis, considering their qualitative research suitability, especially in semi-structured methods (Alhojailan, 2012). This process is worked through NVIVO11 software and identifies predefined and emerging meaning units from the interviewees' quotes. The research design process is detailed in figure 3.1.

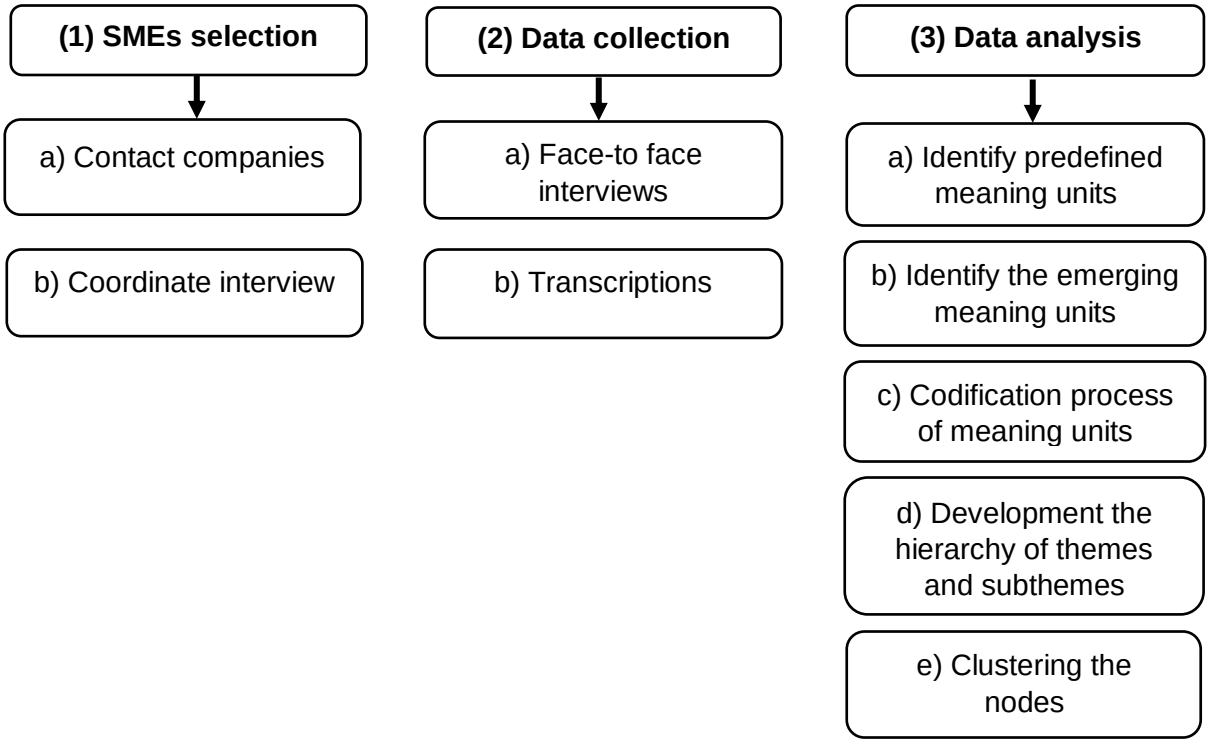


Figure 3.1. Research design stages

The quotes are codified to develop the codes' hierarchy structure (considering the themes and subthemes) that emerged in Catalonia and Santiago (see Figure 3.2). Lastly, a clustering analysis was performed to visualize the relationship and patterns between pre-established concepts and emerged.

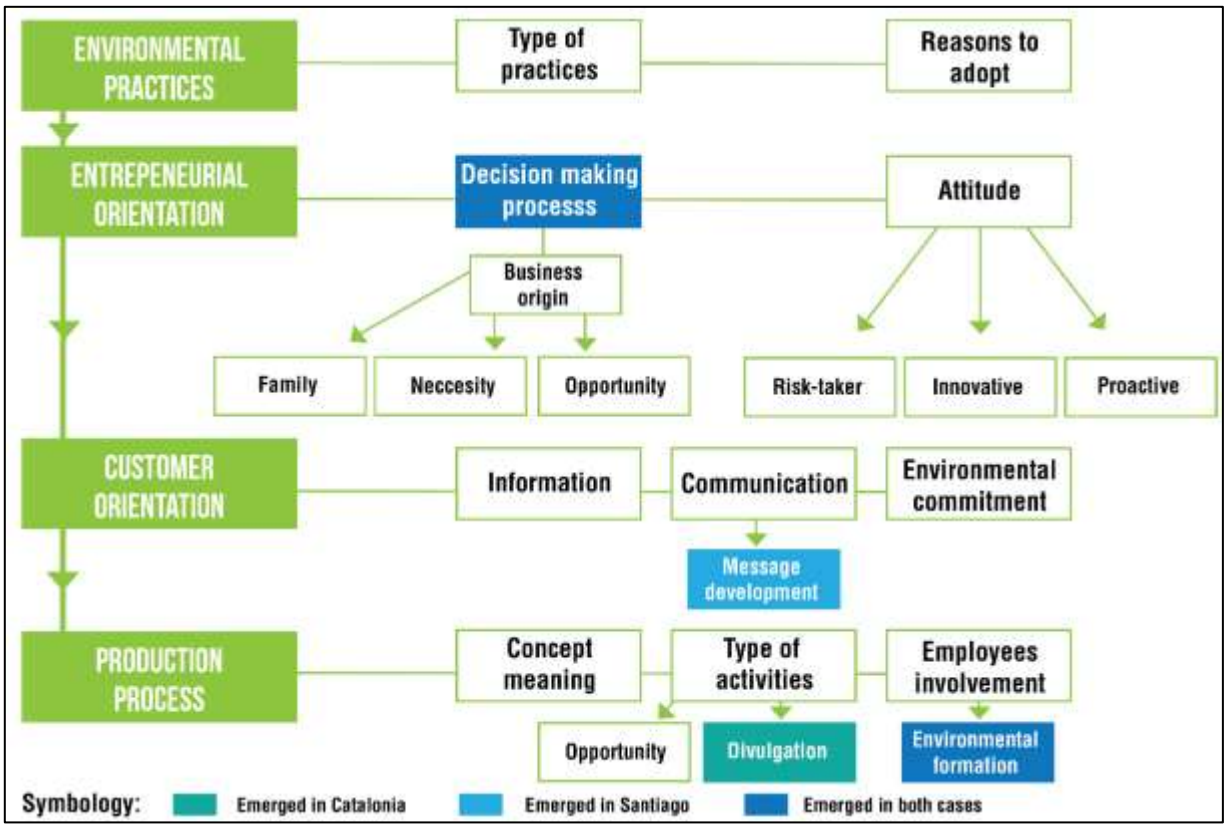


Figure 3.2 Coding framework of themes and subthemes for thematic analysis

3.4 Results

This section describes SMEs' environmental practices and the three selected factors influencing Environmental Sustainability (ES) adoption: Entrepreneurial Orientation (EO), Customer Orientation (CO), and Corporate Social Responsibility (CSR); in Catalonia and Santiago. Appendix B presents the SMEs interviewees ID and the characteristics of these companies (table 1 for Catalonia and table 2 for Santiago). A cluster analysis of the key issues' nodes (predefined and emerged) is presented.

3.4.1 Environmental practices in Spain and Chile SMEs: A general overview

The environmental practices show different patterns as well as common points in Catalonia and Santiago. Throughout the interview, SME managers were asked about adopting environmental practices in their businesses. Table 3.2 summarizes environmental practices in both countries.

In Catalonia, most SMEs (n=12) adopt environmental practices. From these companies, ‘saving resources’ and ‘waste management’ are their principal means of focus. However, companies are worried about developing environmental practices in the final stages of the productive process, which is more reactive than preventive. Yet, the reasons to be

environmentally sustainable are not too straightforward. For instance, an interesting aspect is a cause-consequence relationship. Half of the companies (n=6) apply environmental practices for economic and environmental reasons, yet others adopt environmental reasons mainly to focus on cost reduction (as the primary cause). Thus, mitigation of environmental effects is seen as a consequence, while for other SMEs, it is the environment that matters over costs.

In Santiago, 45% of SMEs (n=13) perform environmental practices; from these, recycle and disposable materials reduction of waste are the central practices. However, a slight difference is seen in the greater proportion of SMEs with environmental motivation. One possible reason for this is the lower age of the interviewees when compared to those in Catalonia, but this requires further research to determine its relationship. Regardless, the main results shown in table 3.2 shows the similarity between both country cases, where environmental concerns are found in the final stage of the production process -with a slightly higher circularity degree in Spanish SMEs-. However, environmental practices concentrate on minimizing instead of preventing environmental impact.

Table 3.2 Environmental practices in Catalonia and Santiago

Cities / Variables	Environmental practices adoption	Environmental practices most adopted	Reason to adopt environmental practices
Catalonia	Yes (n = 12) No (n = 6)	1. Waste management control 2. Water-savings 3. Energy-savings 4. Sustainable materials use 5. Materials reuse	Economic (n =2) Environmental (n = 4) Both (n= 6)
Santiago	Yes (n = 13) No (n = 16)	1. Recycle 2. Disposable material reduction 3. Water-savings 4. Material recovery	Economic (n = 1) Environmental (n = 7) Both (n = 5)

3.4.2 Entrepreneurial Orientation

3.4.2.1 The business origin and managerial attitudes in Catalonia

Most of the SMEs interviewed in Catalonia are family firms born from an opportunity (previous generation) or a personal venture to; spin on family business, reach a potential market, or generate new options in personal development. The CEO of an electronic technology company exemplifies this situation: *"I have been the General Director of a company that has been manufacturing in Spain for three years. I have my engineering background for the last 15 years, and now I have launched into this start-up adventure about 2.5 years ago" (ID: 01).*

SMEs managers are risk-takers in their business decisions and perspective's growth, but have more conservative-logic in environmental aspects, privileging economic sustainability. For example, the partner of a mechanical company states this point: *"We are entrepreneurs, and*

we take risks. In 2008, there were 16 people, and a strong crisis happened in 2008, and now we have 25 people. So we have taken risks, we have invested" (ID: 02).

However, companies with a sustainable business from the beginning are more likely to make investments. The director of a waste management company explains their case: *"In every company, you have to take risks; if you do not take any risk, you do not advance"* (ID: 03). For some interviewees, an innovative attitude is key for ES. However, the possibilities are limited by the available resources and financial aid. The CEO of an electronic technology company states this quite well: *"It is very difficult in Europe to innovate in environmental responsibility. I think that in Europe we are quite stagnant. When you want to innovate, the environment does not help"* (ID: 01).

Regarding these limitations, proactivity is an escape valve for environmental concerns. Most of the SMEs are reactive, choosing to move within their predetermined safe environment. Yet, they adapt when the business considers ES as a factor in their business conception and development. The director of a water treatment company states: *"The people who have to do environment and sustainability are more proactive because we have to change things"* (ID: 04).

In general, SMEs show a moderate profile (medium risk-taker, medium innovativeness, low proactiveness). Hence, there is a need for a clear aid framework that can boost the environmental aspects of their businesses.

3.4.2.2 The business origin and managerial attitudes in Santiago

In Santiago, there is variability in the origin between necessity and opportunity. Most businesses initiated by necessity are related to family businesses (sometimes inherited from the previous generation). The director of a veterinary clinic states: *"Is and will always be a family business"* (ID:01).

SME managers are low risk-takers and show motivation on environmental topics, looking for alternatives in this field, although the financial situation limits them. The owner of a waste management company states this aspect: *"That motivation was transformed into something else that until now also nourishes us, which is more the focus of the impact that the products generate" (ID: 02).* The owner of an optical lens company gives a similar appreciation on the matter: *"I have taken risks, beginning without total knowledge of the industry, we never gave up on it, thinking that we were going to do well in this project"* (ID: 03).

A moderate degree of innovation can be observed in entrepreneurial attitudes, which strongly ties to customer tendency. The owner of a textile company exemplifies this situation: *"We are innovators, […]. We take good care of the first thing because if you enter any other business, you will see that the difference is abysmal"* (ID: 04).

Furthermore, SMEs have a reactive attitude on environmental themes, principally due to the pressure of their daily activities. Instead, the SME managers that apply environmental practices are characterized by their *perseverance*. The owner of a sanitary products company represents this spirit: *"The issue of being persistent in environmental themes is crucial to be motivated all the time trying to be present. All problems have a solution"* (ID: 05).

Chilean SMEs represent a conservative profile (low risk-taker, low innovation, low proactiveness), where ES becomes a personal desire of SMEs.

3.4.3 Customer orientation

3.4.3.1 The client role in Catalonia: How to inform and communicate

In Catalonia, information is the way that connects companies to customers. In this case, companies do not deliver much information to customers about environmental practices. The CEO of a textile company states this situation: *"I believe that the final consumer has no information, and that is what should be done, to raise awareness"* (ID: 05). SMEs argue that it is necessary to have a bi-directional relationship to achieve a real connection between companies and customers to improve environmental performance. The owner of a textile company explains his vision: *"We believe that this can help us. The proof is that we are making efforts communicating this issue. Making more sustainable products, making recycled articles, it is a market niche in which we are"* (ID: 06).

In retrospect, the interviewees point out that different customer types are based on ES commitment and business behavior. The quality manager of a chemical company states their importance for the business: *"When a client raises a question or need, we transform it into a challenge for us, to satisfy it. Therefore, based on the inputs we have from customers, we generate our strategy"* (ID: 07). There are customer segments more involved and informed about if companies realize environmental practices. However, some transactional clients do not value these aspects. The acquisitions manager of a pharmaceutical laboratory exemplifies this issue: *"There are clients who deliver the material, and we only pack it. There are clients that we only do full service"* (ID: 08). Moreover, SMEs describe that if their SMEs stakeholders -as clients- do not exert environmental pressure, the incentives to adopt certifications such as ISO14000 or environmental practices are not taken as there are no rewards in economic aspects. These examples point out that ES is not too important for the customer from their perspectives and appeal instead to customer responsibility and interests.

Another relevant aspect mentioned is communication; SMEs express their concern about developing the message towards the customer both in substance and form. The CEO of a textile company expresses this consideration: *"You have to know how to communicate well what you are doing, what you have, why you have it. This is the most important thing, why we have, not only what we have"* (ID: 09A). Linked to this, the interviewees express their concern about the communication effects. Some companies take advantage of their image improvement, transforming their environmental practices into a marketing strategy without a real commitment to ES. The partner of a textile company states this point clearly: *"There are some sustainable fashion brands that sin a bit of this, which is seeing that maybe it is a good marketing strategy"* (ID: 09B).

3.4.3.2 The client role in Santiago: Lack of information and visibility.

In the case of Santiago, the situation reveals different problems in terms of information compared to Catalonia, as the information delivered to the customers about environmental

themes is scarce or null. The owner of a shoe company states this issue: *"In terms of communication, I lack in how to synthesize what we are carrying out, which is what I tell you, how to communicate our environmental practices in our process"* (ID: 06).

Yet, companies do make an effort to detect their client's needs. The owner of a food-service firm gives an example of this: *"We try to keep up with the requirements of our public in our area"* (ID: 07). However, from this process, SMEs identify a problematic relationship with the environment without giving ES enough importance. Thus, it becomes highly probable that SMEs do not consider environmental subjects within their value proposition as they hold little relevance to sales.

In this way, the interviewees coincide in heterogeneous behavior and customer commitment, yet the lack of client pressure for ES of products and services has become common. For example, the operations manager of a consulting company states: *"It is already very reactive. It works in the manner of 'I want this, so we do this'. There is no topic to go to propose; there is little there"* (ID: 08). Thus for SMEs, it does not seem necessary to obtain environmental certifications due to this perspective.

Communication is a relevant aspect for companies, as it is considered the first step to achieve ES. The owner of a restaurant company highlights this importance: *"It is fundamental to interact with the day-to-day clients, which was something we did not always have before"* (ID: 09). In this line, the clarity and scope of the message are the starting point. The owner of a craft company explains this situation: *"It has to be fundamental. What we are transmitting is what is closer to the person"* (ID:10).

However, this communication must be reinforced in two points: 1) First, through the relationship with the community. The owner of a restaurant emphasizes this aspect: *"We have been in the same neighborhood that we have always been, so we know all the people in the area, we are neighbors for years, and that shows"* (ID: 11). 2) Second, the visibility of sustainable actions and the corresponding media to communicate and enhance ES diffusion. The owner of a coffee company shares this concern: *"Today we do not communicate with them as much. We do not have the form to communicate with them well in the next three months. Today we communicate with them by uploading a photo"* (ID: 12). Thus, communication perception becomes a critical factor.

3.4.4 Corporate social responsibility

3.4.4.1 The lack of employee involvement in corporate social activities in Catalonia

CSR is a complex concept for Spanish SMEs, presenting different degrees of understanding. The partner of the mechanical company states their vision: *"We consider that a part of our benefits can be invested in society. However, there has to be no obligation for it to be done"* (ID: 02). The director of a chemical company states another perspective: *"I am a supporter of removing the social word because responsibility must be social. We live in society; there is no other type of responsibility"* (ID: 10). A common point from the interviewees is the null allusion to environmental themes as a part of CSR. However, an explanation for this phenomenon is the presence of waste management legislation. The marketing director of a

packaging company states this point: *"The environmental legislation determines the operation's rules. I believe that the regulation is intended to accompany us on how we should be to face the environmental challenges"* (ID: 11).

Regarding the aforementioned, the SMEs' CSR activities are focused on involvement with society. Most of the identified -and mentioned- activities are mainly related to charity and the community's delivery of products. When excluding the SME process (from the legislation standpoint) and discerning the environmental practices related to the companies' internal processes, the employees' low degree of involvement is a rising problem. The owner of an eco-hostel corroborates this idea: *"Personally the employees do not get involved. But that is a topic that we should take, and it cannot be that they (the employees) do not get involved"* (ID: 12). The interviewees express the importance of having a strong employee team to help transmit these attitudes throughout the firm, thus bringing it to organizational behavior. The Administration Manager of a plastics confection company shares their experience: *"We have a team of susceptible people who know how to transmit very well, and we can convince very quickly everyone who becomes part of the team"* (ID: 13).

3.4.4.2 Corporate Social Responsibility in Santiago: A timid approach to environmental issues.

Similar to Catalonia, CSR in Santiago considers a broad spectrum of conceptualizations. The range considers donations, charity, education or opportunities. A concrete example of this variety is explained by the owner of a shoe company: "*I feel that my social responsibility is my relationship with my internal client, the transparency"* (ID: 06), and the advisor of a financial institution: *"Nowadays, we are not talking as much about CSR in specific. Today we are encompassing more in sustainability as a concept"* (ID: 13). Other companies recognize that it does not include CSR development. The operations manager of the consulting company expresses their reality: *"I would say that there is no lifting of Social Responsibility and our effects on the community, of internal policies of benefits for workers, nothing"* (ID: 08).

Interestingly, CSR has an extension in ES aspects. However, this extension does not have common patterns, showing different perspectives, shown in table 3.3.

Table 3.3 Interviewees quotes about environmental practices within CSR

Interviewees	Corporate Social Responsibility activities related to environmental themes or practices
Owner of the coffee company	"We are trying to do a sustainable meal. All the money raised will be donated to the community" (ID: 04).
Manager of a cosmetic company	"Today, we are working on generating a volunteer-free plan; that is, you can choose what to help and when to help it, depending on the cause that motivates you. I believe that corporate environmental volunteering once a year Today is not enough for anything. I believe that the consumer who nowadays double-clicks no longer believes it" (ID: 14).
Owner of a restaurant	"We plan to do recycling activities" (ID: 15).

Independent that these activities relate to environmental topics, their communication level towards the society and customers is scarce. An industrial company manager explains: "*Our activities are completely internal in the company; nothing has been manifested to the community"* (ID: 16A). Although some companies spread these activities, a recurring issue is a passive interest in these themes when SMEs communicate them. The owner of an environmental consulting company points out: "*We communicate our environmental responsibility, but our stakeholders are not very interested either, as they do not get much on the subject*" (ID: 17A). These examples evidence different problems and perspectives for ES.

3.4.5 Other emerging topics

3.4.5.1 Decision-making process

SMEs make decisions continuously, establishing priorities in their business. In this sense, the way that they articulate their strategy directly affects the incorporation of environmental issues and developing practices. The hierarchy, decentralization level, business decisions unit (uni-personal, partners, collective), and stakeholders' involvement are also relevant aspects. These elements emerge with similar connotations in Catalonia and Santiago. The coordination between strategic decisions and their extension in environmental practices as tactics show interesting considerations.

3.4.5.2 Learning: formation and training

A theme that emerged through the different topics approached in the interviews is the formation of SMEs. It is common for SMEs to declare a lack of technical skills in environmental aspects. These limitations affect the organization (managers and their employees) transversally, and the concern is the absence of mechanisms to improve the knowledge. Historically, SMEs have more relevant concerns about their survival and ability to sustain themselves in a highly competitive market. Therefore, their efforts and motivation in the business core diminish the possibilities to apply environmental practices. However, Spanish SMEs have been observed to have a slightly higher level of knowledge when compared to Chilean ones, clearly reflected in their management. From this perspective, employee training is presented as a potential factor that enables environmental practices.

Considering the aforementioned, table 3.4 and table 3.5 summarizes the similarities and differences respectively between the structured and emerged aspects in Catalonia and Santiago.

Table 3.4 Similarities between environmental sustainability factors in Catalonia and Santiago

Topics/Regions	Catalonia and Santiago
Entrepreneurial Orientation	1. Reactive attitude about ES, depending on stakeholders' pressure. 2. The environmental logic is to minimize their impacts instead of preventing them.
Customer Orientation	1. Low relationship with the customer on environmental issues. 2. When SMEs realize environmental actions, their public visibility is scarce.

Corporate Social Responsibility	1. Low employees involvement in internal environmental practices. 2. Scarce communication of the environmental practices to their stakeholders (primary and secondary).
Emerged themes	1. Decision-making process: centralized and lower consideration to environmental themes in strategic decisions; traduce in scarce environmental certifications as ISO norms. 2. Scarce employees formation on environmental themes within the business

Table 3.5 Differences between environmental sustainability factors in Catalonia and Santiago

Topics/Regions	Catalonia	Santiago
Entrepreneurial Orientation	1. Moderate risk-taker attitude toward ES (depending on the investment-return relationship). 2. Medium innovative degree about ES, depending on the sectors and the tangible and intangible benefits.	1. Conservative risk-taker attitude toward ES (does not consider financial investment): 2. Low innovative degree about ES; does not consider part of the business development.
Customer Orientation	1. Low information degree about environmental practices to the customers. 2. The deficiencies are centered on the message development about environmental practices.	1. Null information degree about environmental practices to the customers. 2. The deficiencies are centered on communication about environmental practices
Corporate Social Responsibility	1. Environmental practices are not considered in CSR (are associated with environmental legislation).	1. Environmental practices are considered as part of CSR but have lower effects and recurrence.

The results of the Spanish and Chilean situation regarding ES adoption factors show certain similarities in passive behavior, reflected in the absence of ES in the SMEs' decision-making process and low employee involvement. In addition, the pending general debt is a major consideration in the business processes' initial stages and more tangible communication. However, Spanish SMEs show a slightly higher consideration of ES (dependent on their potential benefits), but stagnates in connecting with their stakeholders.

3.4.6 Clusterization of the three-factor nodes and their sub-themes

The established and emerging nodes were clustered using NVIVO 11 software based on coding similarity. This representation generates an underlying structure of the contents implied in the data (Amrutha & Geetha, 2020). In this case, by performing a nodes clusterization by word similarity (based on the words association of the interviewees when developing their responses and concepts during the interview) to observe the patterns about the concepts and the conceptual relationships. These maps are a graphical complement to the conceptual analysis of the ES factors and their sub-themes. The following sub-sections show the cluster map of Spanish and Chilean SMEs.

3.4.6.1 Cluster map of Catalonian SMEs

In the Spanish case, the ES application denotes a clear first cluster, where CO and CSR are the most associated variables to ES (see figure 3.2). Moreover, corporate activities with a sustainable focus must be aligned, where communication has a fundamental role in customer relationships. The second cluster associates EO and business origin, where ES is a consideration from the beginning, according to the companies' possibilities. The involvement of the employees is crucial to their application. The third cluster considers the information, an essential aspect of ES communication weakness; the challenge is integrating this information with the organizational activities. The fourth cluster is another side of the previous cluster, the relevance of ES for the customers. The two furthest clusters of ES reflect the business's current situation, the entrepreneurial attitude, and the decision-making process of their decisions where ES is not considered close to their priorities; however, it can have been influenced by rigorous environmental legislation.

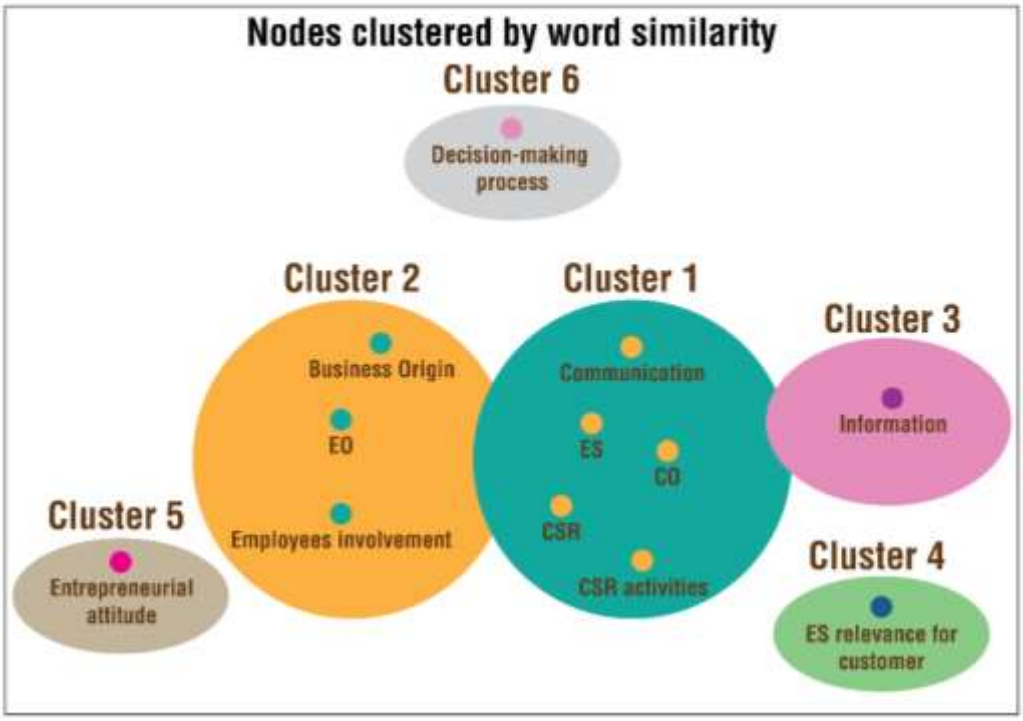


Figure 3.2 Catalonia clusterization of ES antecedents.

Source: Self-elaboration

- The points of the same color belong to the same cluster
- **Cluster 1:** Customer Orientation (CO), Corporate Social Responsibility (CSR), Communication, CSR activities, **Cluster 2:** Entrepreneurial orientation (EO), Business origin, employees involvement. **Cluster 3:** Information. **Cluster 4:** Environmental sustainable relevance for customer. **Cluster 5:** Entrepreneurial attitude. **Cluster 6:** Decision-making process.

3.4.6.2 Cluster map of Santiago SMEs

Clusterization is different in Santiago (see figure 3.3). The first cluster considers EO and CSR as the most associated variables to ES. Moreover, the entrepreneurial attitude and motivation highlight the importance of the SME managers' conviction, and the corporate activities with ES must be aligned. The second cluster is the CO and the information, establishing the relevance of this aspect to improve customer perception, generating a virtuous circle with SMEs. The third cluster is the decision-making process, distant from the companies decisions; the personal valuation is in the same line of the business origin, the fourth cluster. Lastly, the last clusters are the relevance of ES for customers and communication; these two inter-related aspects are a great doubt of SMEs in the ES implementation process.

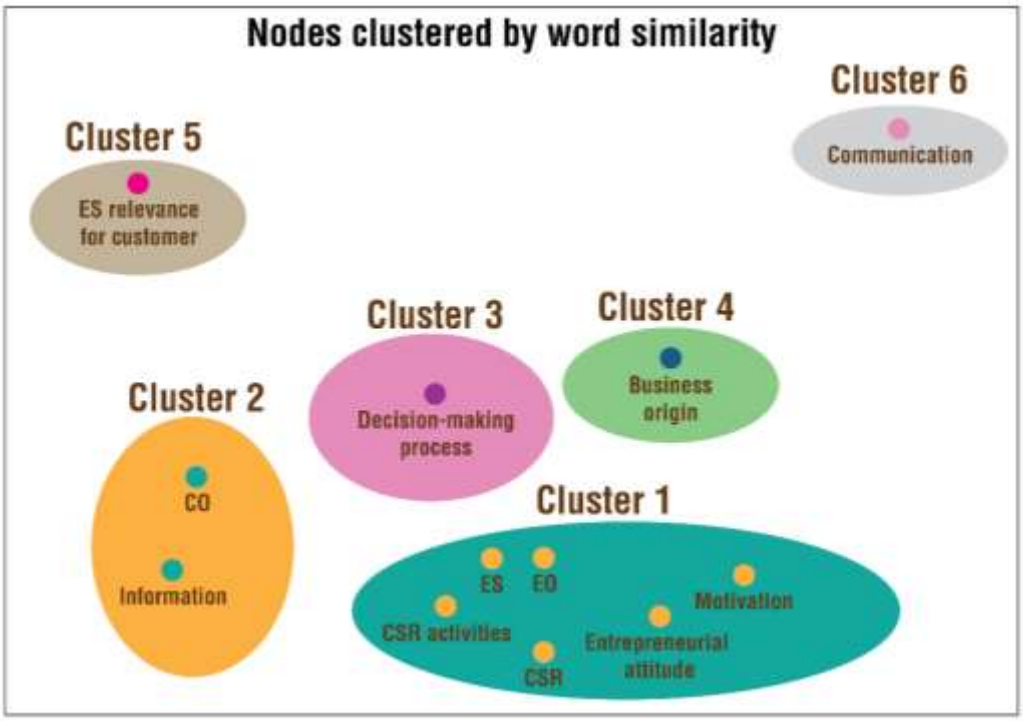


Figure 3.3 Santiago clusterization of ES antecedents.

Source: own elaboration

- The points of the same color belong to the same cluster
- **Cluster 1:** Entrepreneurial orientation, Entrepreneurial attitude, motivation, Corporate Social Responsibility, CSR activities. **Cluster 2:** Customer orientation, information **Cluster 3:** Decision-making process. **Cluster 4:** Business origin. **Cluster 5:** Environmental Sustainable relevance for the customer. **Cluster 6:** Communication.

These graphical representations visualize the conceptual association that SME managers realize during their discourse of ES factors based on the word associations.

3.5 Findings and discussion

This research contributes to the field of environmental sustainability, describing and examining the role of entrepreneurial orientation (EO), customer orientation (CO), and corporate social responsibility on ES adoption in Spanish and Chilean SMEs. In addition, two emerging factors are highlighted: the decision-making process and employees´ training (their potential to influence ES). Moreover, the study compares the similarities and differences between two countries with different grades of development. The main contribution of this study is to show how ES antecedents from a multiple-level perspective can promote or stall ES adoption on SMEs. Based on the findings, we discuss the results and offer theoretical and practical insights that support implementing and leveraging environmentally sustainable practices in SMEs.

Regarding the research questions stated in this chapter, this work found differences in the aforementioned factors between Spanish and Chilean SMEs in implementing ES. Hence, analyzing the managers' characteristics does not show relevant differences in gender, manager's-age and educational level between the countries (Eikelenboom & de Jong, 2019; Roxas et al., 2017). Nonetheless, considering the study's characteristics requires specific detailed sector research to shed light on their potential effects.

In lieu of the works of (Amankwah-Amoah et al., 2018; Marshall et al., 2015), SMEs with an innovative and risk-taking attitude reflect the implementation of ES in their business to a major degree. However, certain nuances exist in Catalonia and Santiago. In the former, SMEs show a moderate profile (low risk-taking, medium innovativeness, medium proactiveness), while the latter shows a conservative profile (low risk-taking, low innovation, reactive). An example of this difference is the tendency to realize little investment in environmental aspects (for economic or environmental reasons). These differences are similar to Gherib & Berger-Douce's (2012) cross-cultural research that compares French and Tunisian SMEs (findings show a more taking profile in French SMEs). These attitudes allow the visualization of ES more as business options, hence adopting new technologies or generating collaboration with other firms. In this context, considering the extension of RBV in SMEs developed by Woschke et al. (2017), ES must be seen as an incremental innovation, where it is more important to flexibly allocate resources than to expend great efforts in raising final resources.

In this line, an emerging topic is the decision-making process. In both cases, environmental aspects are not incorporated in the strategic decisions -explained by their day-to-day priorities- and do not directly benefit their companies. Moreover, this situation is endorsed by their different barriers: lack of financial resources, lack of time, risks associated with implementing a sustainable practice, and current regulations (Caldera et al., 2019). In this context, DiVito and Bohnsack's (2017) research suggests that EO influences ES management in the decision-making process. Therefore, SMEs managers need to assume the change in an agent role, internalizing ES in the organization (Wiesner et al., 2018). However, in this context, managers making strategic decisions (as ES) must be in line with their organizational structure, exploiting their strengths and avoiding their weaknesses (Chatzoglou et al., 2018).

In the case of CO, common patterns can be observed between Catalonia and Santiago. In both, SMEs consider the customer's passive attitude that does not exert pressure regarding environmental subjects. However, their managers understand the necessity of incorporating ES in their communication. In Catalonia, the principal problem is message development (how to engage their customers). Some companies undertake the effort, only desisting when noting the lack of relevance in the decisional buyer-process. This process requires support to develop an effective and engaging message. While in Santiago, the problem is communication, as SMEs that perform environmental practices that do not communicate these activities do not consider it relevant and prefer to communicate other messages related to commercial activities. These results are not unrelated to the evidence on low customer engagement in companies' ES and their dilemma for SMEs. When they are under customer pressure, they will actively search and capture customer input regarding environmental concerns (J. Chen & Liu, 2020) and engage in ES (Lee et al., 2019). In this sense, customer pro-environmental attitudes (as a secondary stakeholder) trigger SMEs to develop environmental measures (Triguero et al., 2013). The reasoning is that if customer and external society demands ES -as a consequence of CO- SMEs will respond to this sensitivity (Jansson et al., 2017). However, the main problem is the disconnected relationship between message development and effective communication, which requires a more in-depth understanding.

From this factor, employee training appears as an issue from the SMEs´ perspective; there is a clear recognition of the lack of internal capabilities about environmental topics that affect adopting high-level environmental practices. This theme is transversal between the countries, which is reflected in the absence of developed environmental practices relevant to ES (Ünal et al., 2019). This capability enables developing and integrating environmentally sustainable practices in SMEs (Roxas & Chadee, 2016). Considering these findings, the SMEs stakeholders (customers and employees) demonstrate low-level pressure on the environmental aspects. This situation is concerning because SMEs stakeholders have a pivotal role in influencing environmental aspects in the business strategy (Fabio Caputo et al., 2017). In this way, Danso et al. (2020) state that the SMEs' environmental sustainability is amplified when there are greater levels of stakeholder integration.

In retrospect, CSR is largely misunderstood in SMEs, as it is mostly associated with social activities (charities, donations). Nevertheless, there are some differences between the countries. Considering Catalonia's lack of high-level sustainable practices, low-level sustainable practices as recycling are mandatory under environmental legislation. Therefore, they are not considered within CSR conception. When companies understand their importance as corporate citizens in Catalonia, they see the externalities and negative effects not (usually) considered in their production process. While in Santiago, some SMEs apply recycling activities as a part of CSR and contribute to the community. SMEs do not have declared obligations at the moment (considering environmental legislation in development) (Ministerio del Medio Ambiente, 2016). This situation is normal for large companies and differs from small companies due to their operational impact and public exposure. These differences affect their CSR activities' content, nature, and extent (Dias et al., 2019). However, CSR's inclusion of environmental aspects is a discussion topic in SMEs, with evidence in different ways. (Dincer & Dincer, 2013) Qualitative research with Turkish SMEs found that SME managers incorporate

CSR environmental issues, showing a general concern for the environment. In the Australian SMEs' reality, Sen & Cowley's (2013) research about stakeholder theory applicability show that CSR within the SME sector is more aligned to stakeholders that represent: 1) influence in their resources to face the survival challenges, and 2) an increase in their social capital. Regarding comparative studies, one investigation by Colovic et al. (2019) in the food industry regarding CSR adoption between French and Lithuanian SMEs shows that incorporating environmental practices is both natural and essential in their operations; the difference is the major adoption of environmental certifications in French SMEs. In this context, a common point is the high environmental standards in the industry. This point is relevant to the study, considering the characteristics of the studied regions in this research, where CSR activities have a mandatory nature in Europe. In contrast, it has a voluntary character in Latin America (Hernández Pajares & Moneva, 2018).

Therefore, this research contributes to the literature, exploring ES factors on a multi-level qualitative approach from the SMEs' perspective, enriching the limited understanding of SMEs' environmental practices and externalities (Stoian & Gilman, 2017), critical for sustainable and economic development (Bevan & Yung, 2015). Furthermore, through multiple case studies, light can be shed on the ES factors adoption in Spanish and Chilean SMEs. Thus, this contribution to the literature is twofold: First, this study extends the ES literature about the role of EO, CO, and CSR from the managers' perspectives in two different institutional settings; a developed economy such as Spain and a transition economy such as Chile. Second, to expose two relevant internal aspects on SMEs: 1) the disconnection of decision-making processes and the environmental themes, and 2) training formation and the employee's involvement on environmental aspects, presenting their difference between the countries. These aspects require more local study and can complement and enhance ES (Crovini et al., 2020).

The research findings show how Spanish and Chilean SME managers can act environmentally responsibly from a managerial perspective. This research demonstrates the relevance of SME managers' innovative, proactive, and risk-taking attitudes to implement ES in their strategy. However, SMEs need a boost to motivate and convince SMEs of the potential benefits of ES. Additionally, managers need to understand the importance of communicating their environmental practices independent of their stakeholders' pressure, such as their clients. ES is a bi-directional process; message development and the appropriate communication channels are crucial to engaging with stakeholders. As a result, SMEs can give superior value to the market (Racela, 2014) by proposing value that adopts a downstream vision in a sustainable manner (Urbinati et al., 2017). ES is an evolving process that depends on the countries' companies, stakeholders, and institutional conditions.

3.6 Conclusions and limitations

The findings of this study suggest a series of aspects to consider in ES development. This research demonstrates: 1) the importance of risk-taking and innovative behavior, 2) the relevance of the communication process between SMEs and customers, and 3) the disconnection of corporate social responsibility about environmental themes, providing an empirical background to examine ES antecedents. This study also demonstrates that ES is not considered part of the strategic decision-making process, showing the comparative cluster between Spanish and Chilean SMEs.

In the compared analysis, Spanish SMEs are one step forward, forced by a more strict environmental regulation than Chilean SMEs, where personal motivation and attitude are the main drivers. The lack of customer engagement is presented as a transversal difficulty to bolster ES. In this context, the original value of this research lies in the analysis of the current situation of different contexts about ES adoption.

Despite the contributions, this research has limitations. This study investigates SMEs' ES based on two countries' multiple cases, limiting the findings' generalization capacity. Therefore, the results must be read mindfully, considering the sample size. For this reason, future research could benefit, study other countries, cultures, and specific economic sectors. The industries have different aspects and limitations that need to be considered in future research to enrich the empirical perspective.

Regarding the findings, future studies can be extended to analyze the learning orientation in SMEs, considering their knowledge necessity and decision-making process -taking into account the institutional and contextual factors-. SMEs do not have pressure in environmental sustainability topics, and deepening the priorities, mechanisms, and resources to learn and adapt to the environment can be relevant for ES adoption.

Concerning the data, this investigation is based on SME managers' responses; it can be interesting for future research to collect the appraisals from other stakeholders, such as suppliers, clients, and/or the local community, to contrast the different views of ES. Additionally, future research would contemplate the influence of time in the results to verify, refute or extend the obtained results.

CHAPTER 4:

SMES, ENVIRONMENTAL FRAMEWORK AND WASTE MANAGEMENT. A COMPARATIVE EMPIRICAL STUDY OF SPAIN AND CHILE

Keywords

Environmental sustainability, waste management, environmental framework, supply chain, raw materials, SMEs,

4. SMEs, environmental framework and waste management. A comparative empirical study of Spain and Chile

4.1 Introduction

The situation of rampant environmental degradation and climate change has generated great concern in society's present and future development, affecting industrial advancement worldwide. With climate change and resource scarcity as core sustainability issues, today's world requires a global commitment to overcome its difficulties. The 17 Sustainable Development Goals (SDGs) established by the United Nations to preserve and protect the planet is a prime example of this growing preoccupation (United Nations, 2018). As a result, finding a way to achieve sustainable growth and development has become a priority for most world societies.

In the economy's acts of excessive environmental depredation, companies have direct and relevant responsibility. The current production patterns and systems based on the taking, throwing, and disposal of resources and products are no longer viable. Companies must be capable of balancing their economic and financial objectives while adequately using their resources (including avoidance of overexploitation), generating value for their stakeholders, and ensuring their continuity in time (Ozbekler & Ozturkoglu, 2020; Székely & Knirsch, 2005). Yet, many companies struggle to harmonize their growth with the responsible use of resources and their respective waste management, which are crucial aspects for environmental development (Zorpas, 2020) and their application (Haupt et al., 2017).

In this context, the role of Small and Medium Enterprises (SMEs) in waste management tends to be overlooked by researchers. As a result, the situation of SMEs has limited coverage. The impact of their waste stream is underestimated due to their relatively smaller size (Woodard, 2021) and under-measurement of their management and production indicators (Szilagyi & Mocan, 2018). The problem is, although their impact is low, their overall effects are higher in terms of pollution, waste, and total emissions (Aragón-Correa et al., 2008). As a consequence, the evidence in the literature regarding waste management in SMEs is concerningly limited, a fundamental issue for sustainable city development (Sáez-Martínez et al., 2016; Zhang et al., 2019). While there has been considerable research on the large companies and household waste stream, there remains limited research to understand waste management in SMEs, including: 1) the current managerial behavior, 2) the environmental legislation context, and 3) the mechanisms to support the separation of recyclable within SMEs. Furthermore, there is a lack of studies concentrating on the waste situation of SMEs whilst considering their location and contextual conditions (Rabadán & Sáez-Martínez, 2017).

Regarding the latent need of studies in this context, this research analyzes and compares the SMEs waste management situation of two countries: Spain and Chile. These two are selected for their SME cases, from a developed and an emerging economy, to study their similarities and differences. For instance, in Spain, SMEs represent 99.83% of companies and 71.9% of total employment (Ministerio de Industria - Comercio y Turismo, 2019a), whereas in Chile, SMEs represent 97% of companies and 70% of companies of total employment (Ministerio de Economia; Fomento y Turismo, 2019). In particular, the study examines two main

regions within these nations: Catalonia and Santiago. Catalonia is the second most populated region of Spain (7,488,717 inhabitants), contributing 19.1% of the country's GDP (Instituto Nacional de Estadística de España, 2019). In retrospect, Santiago is the second most populated region of Chile (7,915,199 inhabitants) (Instituto Nacional de Estadísticas de Chile, 2019), accounting for almost half (43.6%) of Chilean GDP (Banco Central de Chile, 2018).

In regard to the environmental context of these countries, Spain's environmental approach has been heavily governed by the EU environmental framework for the last 20 years, through directives related to waste hierarchy, separate waste collection, Expanded Producer Responsibility (EPR), and more (European Commission, 2008). In contrast, Chile's regulations have been developed under its impetus. Latin America does not have a common environmental and waste framework; each nation establishes its institutionality and goals, generating different levels of advancement and concern on the subject (CEPAL, 2014). Hence, Chile's initiatives are more recent than those of the EU, i.e., specific laws governing EPR dates from 2016 (Ministerio del Medio Ambiente, 2016), and Chile is the pioneer country in the region on banning the distribution and use of plastic bags -a law recently implemented in 2018- (Ministerio del Medio Ambiente, 2018b).

In this context, the present research describes the SMEs' waste management situation and environmental regulation context, while also considering their implications on the business practices, which are critical for SMEs' development (Zamfir et al., 2017). Therefore, the investigation contributes to waste management literature, crucial for achieving a cleaner and sustainable production (Schroeder et al., 2019). Moreover, the findings are valuable for numerous actors, particularly practitioners who need a comprehensive idea about the SMEs' waste management situation and their organizational effects, hence enriching the development of public policies. Lastly, the study endeavors to cover the knowledge gaps, establishing the following research questions:

RQ1: How is the current situation of SMEs waste management? What are the challenges and/or problems that SMEs must face?

RQ2: What are the consequences of environmental regulations on the situation of SMEs waste management? Are there differences between the SMEs of Catalonia and Santiago?

These questions are approached through empirical research within SMEs in Catalonia and Santiago.

Consequently, this study adopts a qualitative method, using multiple case studies through in-depth interviews. With 18 in-depth interviews in Catalonia and 29 in-depth interviews in Santiago, information was obtained from different economic sectors to understand the SMEs' waste management situation in both countries, whose managers provided their perspectives from their managerial experience. In addition, a thematic analysis was undertaken to analyze the insights obtained in the study. Moreover, this perspective is complemented with an analysis of environmental norms, using public data derived from government and public institutions.

The chapter has been organized as follows: Section 4.2 provides the theoretical background on waste management and environmental norms, Section 4.3 demonstrates the research methodology, the sample, and data collection. Section 4.4 analyzes the data and shows results. Section 4.5 discusses the findings and implications for SME managers and policy-maker decisions. Lastly, Section 4.6 is for the conclusions and limitations of the research.

4.2 Theoretical Background

4.2.1 The regulation theory framework on SMEs environmental development

The global environmental situation has increased the external environmental pressure on companies to reconfigure their business strategies and orientations in response to calls for sustainable development (Roxas & Coetzer, 2012). On the basis of institutional theory, companies operate within an external framework determined by institutions, manifested in a social framework of rules, norms, values, schemes, and routines (Carpenter & Feroz, 2001; Scott, 1995). The institutional theory has three dimensions or pressure types: regulative, normative, and cognitive (Scott, 1995). The regulatory dimension considers the explicit, formal, and enacted laws that define and regulate the behavior boundaries and interactions (Kostova, 1999). The normative dimension corresponds to social norms, values, responsibilities, beliefs, and assumptions socially shared and expected in a society (Kostova, 1997; Scott, 1995). And the cognitive dimension constitutes the nature of reality (socially mediated) of a common framework that has meaning or makes sense (Geels, 2004; Scott, 1995). Based on the institutional theory, company legitimacy is achieved when their behavior and operation complies with the regulatory, normative, and cognitive standards defined in their business context (Fernando & Lawrence, 2011; Roxas & Coetzer, 2012). This study focuses on:

1) The regulatory dimension from the analysis of the environmental and waste management framework.

2) The normative dimension from the SME managers, examining their attitudes, values, and beliefs.

In the environmental context, the regulatory dimension has been a prominent part in promoting environmental practices (Gauthier, 2013), environmental innovation (Liao, 2018), and consumption & production patterns (Mohammad Ebrahimi & Koh, 2021). However, their extension to SMEs is limited. The character of the regulatory dimension does not always fit with the nature of SMEs, becoming complex to complement; however, it must be noted that the study of their effects on environmental performance is still lacking (Graafland & Smid, 2017). In the case of the normative dimension, their studies relate to the managerial commitment regarding commercial activities and their environmental effects (Mogos Descotes et al., 2011). The literature on the normative dimension in institutional analyses tends to underestimate -or does not consider- the role of owner-managers in handling the strategic configurations and processes within their companies (Rothenberg, 2007). In their case pertaining SMEs, their beliefs, values, and expectations have a strong resonance with their strategic decisions and are a determinant of their environmental behavior (Revell et al., 2009). Thus, examining the attitudes, values and beliefs of managers provides insight into why some firms are more proactive than others in their environmental management practices (Roxas & Coetzer, 2012).

The knowledge about the effects of these dimensions is little known, especially in developing countries, and consequently, on the intentions of these companies to adopt and implement environmental practices (Belal & Cooper, 2011) such as waste management. Therefore, the analysis of the environmental and waste regulation framework, and the attitudes, perceptions and beliefs of SME managers becomes relevant.

4.2.2 Regulatory environmental frameworks in Spain and Chile

The environmental framework determining the configuration of rules and mechanisms imposed on companies to reduce their adverse effects on the environment and society is crucial. Therefore, the correct establishment of standards and mechanisms plays a central role in companies' environmental responses, especially SMEs (Lynch-Wood & Williamson, 2014). In this context, the environmental framework is quite different in Spain and Chile.

4.2.1.1 Spanish environmental framework

Spain is subject to the legal framework of the EU, which established the first environmental standard for all its member states in 1986. This framework states: (1) general rules to preserve, protect and improve the quality of the environment; (2) the first steps of the 'polluter pays' principle; and (3) the measurement of environmental conditions in the regions (European Commission, 1987). Furthermore, various treaties and agreements have updated this general standard, including those signed in Maastricht, Lisbon, and Helsinki (European Commission, 2017a).

One of the EU's principal concerns has been encouraging SMEs to adopt Circular Economic (CE) principles and practices in recent years. In 2017, the CE generated approximately 3,985 million jobs in the EU, corresponding to 1.69% of total employment (Eurostat, 2019). The EU launched a CE Package in 2018 that emphasized developing tools to support waste hierarchy objectives at all appropriate levels. It also focuses on promoting and incentivizing CE practices within SMEs (European Commission, 2018a). In the same focus, the EU established a new CE Action Plan in March 2020. This ambitious plan is based on a closer relationship with customers and a sharing and collaborative economy powered by big data, blockchain, and artificial intelligence. The plan seeks to accelerate circularity, dematerialize the economy, and make the EU less dependent on primary materials (European Commission, 2020). In this context, according to 2018 data, Spain has a domestic material consumption (DMC) of 9,110 kg per capita, ranking 37th globally.

Under this framework, Spain has launched a Spanish CE Strategy, with several objectives, including: (1) to reduce the national consumption of materials by 30% of GDP (using 2010 as the reference year); (2) to reduce waste generation by 15% to 2010; and (3) to improve reuse to the point where 10% of municipal waste is regenerated (Ministerio para la Transición Ecológica y el Reto Demográfico, 2020). Furthermore, this multi-dimensional strategy provides the impetus for a new production and consumption model that maintains the value of products, materials, and resources for as long as possible.

4.2.1.2 Chilean environmental framework

Chile is under a diametrically different context. Environmental legislation in the South American region varies from country to country, and region to region, as there is no shared environmental framework. The region does not have common normative structures; as each nation establishes its institutionality and goals, generating different levels of advancement and concern on the subject (CEPAL, 2014). Countries such as Colombia and Uruguay possess a more developed environmental framework, while countries such as Bolivia and Ecuador have a less developed system (United Nations Environment Programme, 2018). Hence, the South American regional pressure -regarding environmental legislation- depends exclusively on a country's relevant and workable priorities. This heterogeneity contrasts with the situation of the European Union, which has common goals and considers the circular economy and waste hierarchy as strong principles (European Commission, 2018b).

In Chile, the environmental framework originated in 1994, when a general law founded and established the Ministry of the Environment, creating a general basis for environmental concerns that incorporate citizens' on topics such as rights, pollution, education, information, and other issues (Ministerio Secretaría General de la Presidencia, 1994). This law publicly made companies and society responsible for environmental issues for the first time, following Chile's establishment of bilateral environmental agreements with the USA, EU, and Canada (2003). Fifteen years later, in 2018, the Ministry of the Environment created the Circular Economy Division to approach problems such as: 1) the low recycling rate, 2) the product design, and 3) the promotion of the circular business models (Ministerio del Medio Ambiente, 2018a). This step became relevant considering that the country has a 40,400 kg per capita DMC, making it the largest DMC worldwide.

This year (2021), to promote CE in the country at multiple levels, the environment ministry launched the CE route 2040. The purpose of this route is to: 1) bolster sustainable development, 2) promote the responsible and efficient management of natural resources, 3) promote sustainable consumption and production, 4) generate green employees (based on CE principles), and 5) to bolster recycling in the society (Ministerio del Medio Ambiente, 2021). In this context, waste management is a crucial factor in improving the environmental condition.

4.2.2 Waste management: conceptualization and development

One of the outcomes of the production processes of any company is the waste generated. The concept of waste is not clearly defined in the literature (Adipah & Kwame, 2019). The range of definition is large; as comparing a discardable object (European Council, 1991) to substances, or objects, that can be disposed of and/or recovered largely depends on the final destination of said material (OECD, 2009). This last conceptualization suggests that the use-value of waste depends on how it is viewed by society. In this sense, one of the main aspects of environmental sustainability in a city is waste management (Jones & Comfort, 2018).

The waste management process covers the collection, processing, transport, recovery, and disposal of waste, including the supervision of operations and after-care of disposal sites (European Council, 1991). There are various ways that a territorial unit (town, city, municipality,

and local authority) can manage generated waste. The processes for collecting different materials and the range of respective treatments, from landfilling, incineration, and composting to recovery, constitutes a waste management system (Eriksson et al., 2002). In this context, waste hierarchy (prevention, reuse, recycle, recovery, and -in case of the last option- disposal) is crucial to conserve natural resources and protect the environment (A. Singh & Sushil, 2017). This type of system, covering both companies and households, is typically managed by local authorities. Moreover, this system has a central issue in its development: traceability, which refers to the monitoring and controlling of the different stages within a waste management system (Briassoulis et al., 2014), allowing for evaluating the performance and effectiveness of it.

For clarification, a waste management system is an expression of the waste management legislation of a country. Legislation differs according to geographic location, and this consideration is imperative to understanding the characteristics of the legislation. The characteristics of waste management systems in Catalonia and Santiago are described as follows.

4.2.2.1 Waste management in Spain

Spain waste generation is 438kg/capita/year, slightly higher than the EU average (430.7kg/capita/year). Their waste legislation extends the EU framework enacted in 1998, subsequently updated in 2008 (European Commission, 2008). This legislation establishes concepts such as waste hierarchy, separate waste collection, and EPR. A law regulating EPR was enacted in 2011 and updated in 2015, based on the principle 'the polluter pays', i.e., the law forces companies to be responsible for their waste (individually or as a group of firms), through separate, non-profit waste collection systems (Ministerio para la transición ecológica y el reto demográfico, 2011).

The European framework has developed municipal objectives in terms of waste reduction, establishing strict standards and targets for urban waste as follows: 55% in 2025, 60% in 2030, and 65% in 2035 (the percentages refer to reuse and recycling of all waste). In addition, all plastic packaging must be recyclable by 2030. Certain types of waste will also be collected selectively: hazardous household waste in 2022, biological waste in 2023, and textile waste in 2025 (European Environment Agency, 2017). All EU member states must comply with those goals, where Spain has established several standards relating to specific materials: hazardous substances (1988), packaging (1997), batteries (2008), electronic devices (2015), and vehicles and tires (2017) (Ministerio de la Presidencia – Relaciones con las Cortes y memoria democrática, 2018).

4.2.2.2 Waste management in Chile

In Chile, waste generation is at 419.75kg/capita/year. The nation is the one that generates the most waste in the South American region based on 2016 official statistics (The World Bank, 2018). In this context, the region does not have a common framework for developing its waste management legislation based on different economic and social realities. As a result, in South

America, environmental concerns are primarily associated with waste management and waste disposal (economic value) instead of legislation to prevent waste generation (Betancourt Morales & Zartha Sossa, 2020).

In the country, waste legislation is based on the EPR law (Extended Producer Responsibility). This waste legislation -which dates from 2016- refers to the producer's responsibility for waste arising in the production process (this law is highly similar to the Spanish law, taking various aspects of their norms). The focus is to: 1) establish waste generation prevention, whilst promoting waste reuse, recycling, and valorization, 2) generate the basis to gradually implement principles such as eco-design, certifications, and deposit-return schemes; and 3) to promote the waste hierarchy process to companies.

The law provides a plan to establish the separate collection of waste by integrated waste management systems. Furthermore, the law establishes priority areas and materials-to-waste collection objectives (Ministerio del Medio Ambiente, 2016). These goals were upgraded in the updated waste legislation enacted in 2019 (specific goals gradually increasing in scope). Priority areas were defined as follows: (1) tires (50% collection and 25% reuse by 2021); (2) packaging (70% reuse of non-household packaging and 60% of household packaging by 2022 and by 2030, respectively) (Ministerio del Medio Ambiente, 2019a). However, a non-specific launch date was established for other materials such as lubricant oil, electronic devices, and batteries. A ministerial council further updated the packaging goal mentioned above by a decree-law on the 7th of May 2020, which established specific goals (with gradual implementation) for 2030 on waste collection and valorization for domiciliary containers and packages: paperboard for liquids (60%), metal (55%), paper and paperboard (70%), plastic (45%) and glass (65%), and industrial containers and packages (70%) (see Ministerio del Medio Ambiente, 2020). This decree establishes a delay of 30 months for the goals due to the COVID-19 pandemic and begins in 2023.

Furthermore, Chile launched a pioneer law in 2018 on the prohibition of plastic bags in local commerce (understood as bags made of plastic polymers and produced from oil) (Ministerio del Medio Ambiente, 2018b). The compliance of this law for SMEs was initially set to begin in the second semester of 2020. These measures highlight the importance of analyzing the SMEs' perspectives as a relevant actor in waste generation.

It must be noted that the law regulating EPR is the first general law on waste in Chile's history, hence representing the country's environmental framework. Before 2016, industrial waste was subject to controls and mechanisms managed by the corresponding government bodies (e.g., ministries of mining, agriculture). In lieu, the 20.416 Law refers to special standards for SMEs, based on the principle of proportionality (Ministerio de Economia - Fomento y Turismo, 2010). This law establishes the municipal waste management system's relevance for SMEs' (based on Law 20.416) and household waste. Table 4.1 summarize the environmental regulations and their characteristics at regional, national, and local levels.

Table 4.1 Environmental regulations at regional, national, and local levels.

Regulations	Catalonia	Santiago
Supra-national	EU Waste management legislation; goals imposed for separate collection, recycling, and recycled materials in 1998 (updated in 2018). Law to regulate EPR was enacted in 2011 (updated in 2015).	Latin America No common legislation. Every country establishes its legislation and goals.
National	Spain Specific legislation for materials (hazardous substances (1988), packaging (1997), batteries (2008), electronic devices (2015) and vehicles and tyres (2017). This legislation was updated in 2018 by the CE Package and in 2020 by the EU's New CE Action Plan.	Chile No legislation for separate waste collection management in municipalities. Law regulating EPR enacted in 2016 (updated in 2019 and 2020), to be implemented gradually: tires (2021), packaging (2023), lubricant oil and electronic devices, and batteries (2020). The law prohibiting plastic bags derived from oil (enacted in 2018), implemented gradually for SMEs.
Local	Catalonia Separate waste collection management from 1993 (municipalities with more than 5,000 inhabitants).	Santiago Waste collection and management are organized independently by municipalities.

The following subsection describes the specific waste management characteristics of two regions under study, Catalonia and Santiago.

4.2.3 Waste management characteristics and their implementation: Catalonia and Santiago

4.2.3.1 Catalonia: separated waste collection and the tax rate

Catalonia, which produced an average of 504.93 kg of waste per citizen in 2018 (Generalitat de Catalunya, 2018), has separate waste collection systems for different materials (plastic, paper, metal, organic material, glass, and non-recyclable elements). In 1993, Catalonia imposed a separate waste collection regulation governing all municipalities with more than 5,000 inhabitants (Presidencia de la Generalitat de Cataluña, 1993). The system is financed by integrating various waste management systems, which are, in turn, managed and administered by the municipalities. The system ensures the availability of rubbish bins located at 100-150 meters from every household. In addition, when citizens buy a product (which is part of this system), they pay a 'green point' levy used to fund the product's waste management.

Furthermore, households pay a fixed cost, which is added to their water amenities bill, regardless of that household's consumption (Área Metropolitana de Barcelona, 2009). This cost results in a two-tier payment system for the separate collection and management of waste. Moreover, with the implementation of new legislation, Catalonia introduces a waste rate between 27 - 51 euros annually (to take effect in May 2020) to improve waste collection and treatment. Furthermore, this legislation contemplates a discount for citizens who use the city's 'green points' (recycling points where waste is collected separated for recycling), whose users will benefit from reductions of up to 14% in their waste tax. This new mechanism is seen as a first step to achieve a fair waste rate about the generation of waste by households (Ajuntament de Barcelona, 2020).

In the case of companies, there are two alternatives: (1) to hire a private waste management service, which must be accredited/validated by the municipality or a local entity with authority; or (2) to pay the public price to municipalities or local entities. This second option considers the cost as based on a combination of economic activity (classification of activities), the surface area of the company, and the volume of generated waste (minimum, small, medium, large) (Ajuntament de Barcelona, 2018). In terms of cost, Catalonia spent approximately 953 million EUR on waste management (including street cleaning) in 2018, which represents around 12.86% of its total municipal budget (Secretaría de Estado de Presupuestos y Gastos, 2018).

4.2.3.1 Santiago: non-separated waste collection system and a fixed tax rate

Santiago produced 485.72 kg of waste per inhabitant in 2017 (Ministerio del Medio Ambiente, 2019b). Chile's capital does not have a uniform waste collection system (waste is generally collected by municipal trucks and disposed of in landfill sites). Instead, waste management in communes is the responsibility of the local municipalities, where each independently manages their system. These municipalities' current waste collection system consists of a door-to-door collection using a truck transportation system (Blazquez & Paredes-Belmar, 2020).

Like other Latin American cities (and in the macro-sense countries), Santiago has many informal recyclers whose working conditions are far from optimal (Comisión Económica para América Latina y el Caribe, 2016). This situation is being addressed in the decree-law mentioned above by formalizing informal recyclers' work, a similar approach taken in Colombia (Ministerio del Medio Ambiente, 2020a). In lieu, a new system called 'Recycle at home' has been launched in Chile, based on a platform that connects citizens to recyclers; thus, while the pandemic situation and quarantine is ongoing, these recyclers remove household waste directly from the source and take it for disposal (Ministerio del Medio Ambiente, 2020b). However, the plan is causing some concern due to several technical issues that remain unresolved, related to (1) the amount of waste and the certificate of disposal supplied to households; (2) traceability processes to ensure that waste ends up in recycling plants; and (3) the amount of recycled raw materials that return to the market.

This system has income from two sources: The first source corresponds to an annual amount that companies pay for cleaning services, including municipal business permits, which

companies need to operate (Ministerio del Interior, 1996). This amount is determined by every municipality, taking into consideration their cost structure for this service. The second source is an amount within the territorial tax that household owners annually pay that varies by municipality depending on how costs are defined (tax assessment, waste system costs). This tax applies exemptions to households in situations and/or conditions of poverty (households whose tax assessment is less than 225 MTU (Monthly Tax Units), equivalent to approximately € 12,888, are exempt from this rate) (Ministerio del Interior, 1979).

Like Spain, Santiago also has a system of green points, managed and coordinated by private waste management companies and municipalities, that is non-homogeneous. The law on EPR provides a plan to establish separate waste collection systems, establishing an obligation (from 2023) to install infrastructure that includes one green point per 40,000 inhabitants and an additional green point for each additional 80,000 inhabitants. Therefore, households' waste collection will gradually be established, beginning with 10% of households in around 2023. Santiago spends approximately 200.2 million EUR[2] on waste management (including cleaning services), representing 7.61% of the total municipal budget (Secretaría de Estado de Presupuestos y Gastos, 2018). Appendix C provides a comparative overview of expenditure per capita for the 50 municipalities in Catalonia and Santiago with the largest populations.

The collection rate for recyclable waste materials in Catalonia is 41.76% (Generalitat de Catalunya, 2018), compared to only 3.11% in Santiago (Ministerio del Medio Ambiente, 2019b), reflecting a strongly asymmetric situation in waste management in the two regions, despite similar levels of strong public investment. Table 4.2 summarizes the characteristics and differences of the two waste management systems.

Table 4.2 Waste management systems in Catalonia and Santiago characteristics and differences.

Variables	Catalonia	Santiago
Waste management system households	Separated waste collection system operated by municipalities and funded integrated management waste systems for different materials.	Non-separated waste collection system operated independently by each municipality, terminating in a landfill. Small number of green points and private systems that accept waste (clean, unlabelled, and unpackaged). Independent waste withdrawal for recycling or reuse.
Waste management rate households	Households pay a rate according to their water consumption (new system from May 2020).	Households pay a fixed rate, which varies by municipality.
Waste management	Certified waste managers. Municipal system for separated waste collection.	Non-certified waste managers. Informal collectors.

[2] This amount correspond to the conversion of Chilean pesos to euros (at exchange rate of December 2018).

system companies		Municipal systems for non-separated waste collection (same system as households).
Waste management rate companies	Regulated payment to certified waste managers. Public price to the municipal system according to the type of waste, commercial sector, volume, size (sq m).	Non-regulated payment to non-certified waste managers. Non-regulated payment to informal waste collectors.

Source: Authors, based on (Ajuntament de Barcelona, 2009, 2018, 2019, 2020; Ministerio del Interior, 1996; Ministerio del Medio Ambiente, 2020a)

4.3 Methodology

This empirical research is based on multiple case studies to examine the SMEs' waste management situation in-depth. This method is convenient for approaching extensive phenomenons with multi-dimensional characteristics and offers flexibility to explore broader themes (Eisenhardt & Graebner, 2007). Moreover, providing reliable and robust evidence rather than single case studies (C. L. Chen et al., 2021). Hence, this method is appropriate, considering this research's characteristics.

The primary data for this research was collected from SMEs in Catalonia (Spain) and Santiago (Chile). Thus, detailing the principal considerations in the sample selection. The definition of SMEs used in both countries is explained in chapter 3 methodology. Consequently, the main difference between SMEs in both countries is their annual income. In the case of Spanish SMEs, their annual income stays in a range of less than 50 million EUR (European Commission, 2017b), while in Chile's case, its SMEs produce less than 3.21 million EUR per year (Ministerio de Economía, 2014). In regard to the selected regions, Catalonia and Santiago concentrate most of the SMEs in their countries, respectively (22.1% and 42.9%).

The selection criteria of companies were: 1) To belong to the productive and service sectors (which manipulate waste in any stage of the production process), 2) to have more than five employees, and 3) to have more than three years of operations. Respondents were recruited with the support of the Autonomous University of Barcelona in Catalonia, and the University of Chile in Santiago. Following, 18 managers from 17 SMEs in Catalonia and 29 managers from 25 SMEs from Santiago were interviewed.

The sample represented different economic sectors in Catalonia (industrial 47%, commerce 29%, food services 12%, and consulting services 12%) and Santiago (food services 32%, commerce 28%, consulting services 24%, industrial 12%, and financial 4%). Table 4.3 summarizes the interviewees' basic characteristics (primarily male, primarily aged 45-54 years, and primarily university-educated) and companies (mainly well-established and employing between 11 and 50 workers).

Table 4.3 Characteristics of the interviewees.

Variables		Catalonia (n=18)	Santiago (n=29)
Gender	Male	61.1%	44.8%
	Female	38.9%	55.2%
Age, years	25-34	11.1%	41.4%
	35-44	22.2%	27.7%
	45-54	44.4%	10.3%
	55-64	16.7%	10.3%
	Over 65	5.6%	10.3%
Education	Secondary	0%	6.9%
	University	44.4%	79.3%
	Post-graduate	44.4%	13.8%
	Doctorate	11.2%	0%
Company workers	5-10	16.7%	62.1%
	11-50	44.4%	31%
	51-100	16.7%	6.9%
	Over 100	22.2%	0%
Company age, years	1-5	22.2%	37.9%
	6-10	0%	34.5%
	11-20	11.1%	10.3%
	Over 20	66.7%	17.3%

The interviews, conducted and recorded in the Spanish language, each lasted approximately 50-70 minutes. Interview content was previously reviewed by researchers of the Autonomous University of Barcelona and the University of Chile to validate and harmonize concepts and expressions and enhance understanding of interviewees' questions. The interviews were semi-structured, ensuring discussion of theoretical aspects and capturing emerging themes and issues (Reynolds et al., 2018). They were based on general information about the company, its characteristics, and the market. This chapter's main aspect is the ES application based on two central themes: environmental regulation and waste management. Based on these themes, in-depth knowledge of their effects on SMEs' business and their processes was obtained.

The data analysis of this chapter was performed by thematic analysis of SME interviews (following the same patterns as chapter 3). This framework is considered the most appropriate for any study that seeks to discover using the interpretation approach and the characteristics of semi-structured interviews (Alhojailan, 2012). This study employed the methodology described by Castleberry & Nolen (2018), identifying meaning units from the interviewees (considering the previously defined and emerging topics) using NVIVO 11 software. The following step was to codify the meaning units and store them in a container (node) representing the interviewees' themes, concepts, and ideas. The research design steps and procedures are summarized in Table 4.4.

Table 4.4 Research design process.

Research Steps	Description
Selection of SMEs	1.1 Contact 30 different SMEs. 17 SMEs (Catalonia) and 25 SMEs (Santiago) agreed to participate in the research
Data collection	2.1 Establish contact with the participating SMEs and schedule the interview dates. The final list corresponds to 18 managers (Catalonia) and 29 managers (Santiago) of 25 SMEs 2.2 Face-to-face interviews on-site at each relevant company (in different communes of Santiago), each lasting approximately 60–90 min. 2.3 Signing the research confidentiality agreement 2.4 Application of the interviews 2.5 Transcription of the interviews
Data analysis	3.1 Identify the meaning units (predefined and emerging) 3.2 Codification of the meaning units and store in nodes 3.3 Develop the nodes' hierarchy of the themes and subthemes.

Source: Self-elaboration. Based on (Castleberry & Nolen, 2018; Ryan & Bernard, 2003).

The nodes are organized in a hierarchical structure to establish the connection between the ideas. Figure 4.1 summarizes the coding process and resulting codes by theme in Catalonia and Santiago.

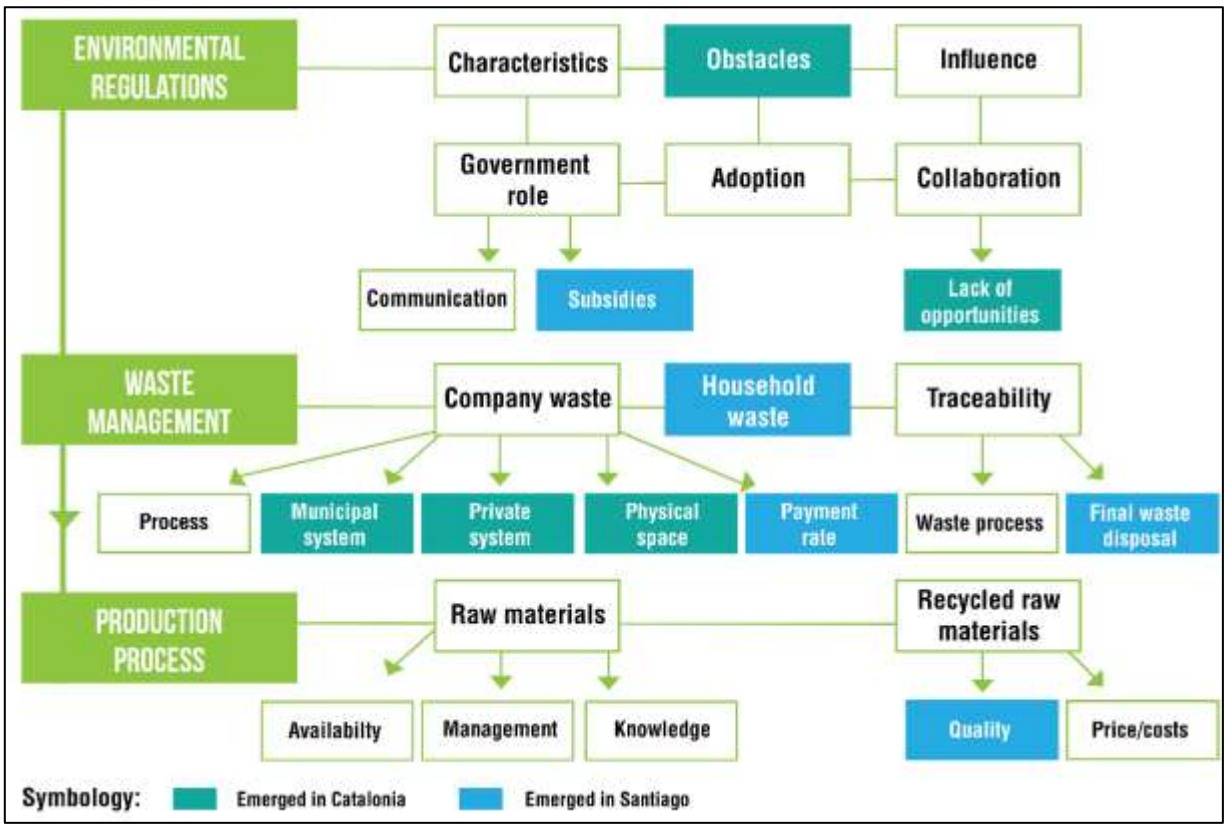


Figure 4.1 Coding framework of themes and subthemes for thematic analysis in Catalonia and Santiago

4.4 Results

This section describes the perceptions of SMEs in Catalonia and Santiago regarding the environmental and waste regulations, their analysis of waste management systems, and their practical implications on the business processes and the environmental consequences. As mentioned in chapter 3, Appendix B, Table 1 (Catalonia), and table 2 (Santiago) present the interviewees' ID and their characteristics. Following, an analytical scheme of waste flow for Catalonia and Santiago is presented.

4.4.1 Environmental and waste regulations: SMEs business and practical perceptions.

4.4.1.1 The rigorous environmental normative and lack of support for SMEs in Catalonia.

The regulation of environmental aspects of business is of growing importance in the current global economy. In Catalonia, respondents point to the key role of legal aspects through environmental regulations governing companies, which are recognized by SME managers, in general, to be rigorous. For example, EPR legislation from 1996 -as adopted by companies- determines that waste can be handled by paying a private waste collection service or paying a public price for the municipal separated waste collection system. However, according to the respondents, the regulations do not consider the SMEs' reality in their respective environments. In essence, EPR is more prohibitive than proactive, as it regulates and demands rather than proposes or encourages initiatives to increase the adoption of environmental practices. For example, the owner of a poultry company expresses: *"The regulation is inflexible; we have assumed it"* (ID: 14). In retrospect, the operations director of a water treatment company corroborates this assumption by stating that: *"The norm is part of the technical regulation" (ID: 16).* Thus, when regulations are laxer, companies rely on this broader framework to act without taking environmental sustainability into account. The partner of a mechanical company expresses one example: *"We pay for waste management; it is our obligation, which undoubtedly reduces our profits"* (ID: 02).

Regarding ISO 9000 (quality management) and ISO 14000 (environmental management) certification, some companies only comply with these standards when the market attributes them value or when the customer demands it. The director of a waste management company expresses: *"Our accreditations have a high annual cost for the company; we must go through a series of audits and controls to obtain it"* (ID: 03). The CEO of a vineyard expresses another example: *"The current Spanish environmental norm becomes a hindrance due to its administrative aspects, lack of sensitivity and willingness to support, i.e., to obtain environmental certifications" (ID: 15).* In this context, the owner of a textile company expresses: *"The environmental regulations are lax in social aspects; many external products are produced in precarious social conditions, it is not coherent to allow them"* (ID: 06).

The interviewees indicated they would be willing to implement sustainable actions if they received co-financing subsidies or grants from public or government bodies. However, as pointed out, many large companies and corporations do receive such specific subsidies. In this context, the owner of an eco-hostel explains: *"I have the whole hotel with LED lights; big companies are given a prize for it, but in regard to my volume, no. I do not get prized. They get a subsidy, and I don't because it cost me less money than it cost them. I think small and*

medium-sized companies do many things, but we are not taken into account at all" (ID: 12). The interviewees also emphasized the lack of regulations regarding communications, indicating insufficient to sensitize companies to sustainable actions. In this context, the administration manager of a plastics confection company states: *"We should have more information and support with regulatory understanding; support is essential"* (ID: 13). The managers suggest that developing a road map could set out clearer and better environmental parameters for SMEs and ensure that state institutions disseminate information on proper practices and thus aid in adopting environmental practices.

4.4.1.2 The disconnection between environmental normative and SMEs in Santiago.

In Santiago, SMEs have a clear appreciation of environmental regulations, indicating that the laws focused on the aspects of a company's operation, affecting public health and security. In their view, the local authorities did not prioritize environmental laws, and local norms or municipal determinations were inexistent in this matter. The manager of an industrial company explains this point: *"The regulations focus on the start of activities, municipal license, labor contracts"* (ID: 16B). There was unanimous agreement of a severe lack of environmental regulations that could directly affect their operations. When interviewees were asked about the ISO 9000 and ISO 14000 standards, many did not fully understand what they meant or felt any pressure (by government or society), only when entry to international markets. The owner of an optical lens company states their experience: *"Here, I do not have higher environmental demands"* (ID: 03).

Regarding waste regulation, SMEs have a general notion about the EPR law. The owner of a sanitary products company explains their reality as an SME: *"The law regulates waste, but for small companies it is voluntary"* (ID: 05). Nevertheless, they did not know the practical effects that it has for them as SMEs. Considering their experience over the business years, managers did not feel afraid regarding law-compliance failure due to the historical lack of inspections. The thought process (in the perspective of SMEs) is that this type of law was to be practiced -and is for- large companies. This premise was further sustained in their beliefs about their (assumed) minor environmental effects. They were companies with low volume when compared to large companies; a concerning misunderstanding based on the public perception of SMEs. Interestingly, Chilean managers have expressed concerns regarding the regulation of recycling and waste collection in their country. The partner of a mechanical company expresses this situation: *"Waste management is worrying. We do not keep track of what happens when garbage is removed"* (ID: 18B).

Retrospectively, SMEs recognize that EPR and plastic legislation (such as limiting plastic bag use) positively changes the population's behavior. However, their criticism is that the focus is misplaced; instead of regulating and forbidding, states should develop proper infrastructure and implement educational campaigns to change behavior. The owner of a shoe company expresses their concern: *"Is the government concerned about this? Do you mind that we recycle? What are your recycling policies? They do not provide us with information and training to help us improve"* (ID: 06). SMEs did not conceive that the solution was to punish each environmental problem's behavior since it did not contribute to long-term environmental sustainability. The owner of an environmental education company exemplifies this point: "*If*

these types of regulations begin to come out, they are positive, but we do not forbid everything. More than prohibitions, we generate things that favor environmental actions." (ID: 19). The sensation is that the government has failed to develop an agenda for environmental themes implementation in SMEs. The partner of an environmental consultancy states an example of this aspect: *"The EPR law is focused on big companies, but also the waste is not just from the big companies, maybe SMEs generate much more in volume. Moreover, they enact an EPR law without recycling plants"* (ID: 17B).

Therefore, a major commitment is necessary for change to happen as the impact of the environment's deteriorating state is reflected in the economic system's externalities. Moreover, SMEs have no incentives to adopt environmental practices. The government's role is pointed out by the owner of a restaurant: "*Governmental institutions must assume their responsibility in waste. After all, we pay patents, permits, and taxes"* (ID: 20). However, not everything was criticism. These companies consider that establishing economic incentives (i.e., tax exemptions and rebates) or developing collaboration between SMEs and public institutions can improve the current situation. The manager of a textile company explains their position: *"Economic incentives are required, such as tax cuts"* (ID: 21). This context would suggest that the issue is not an economic one but one of state policy.

In summary, SMEs' experiences in Catalonia and Santiago about environmental regulations (considering differences in progress and implementation) would suggest a common sensation of obstacles placed on SMEs. Furthermore, the lack of concrete and clear guidelines in the form of a CE roadmap for SMEs and financial subsidies and educational programs further highlights that the regulations are limited and fail to offer specific guidance and proposals.

4.4.2 Waste management system: Difficulties and deficiencies

4.4.2.1 Waste management in Catalonia: The traceability problem.

In Catalonia, waste management has a developed structural base. The local entities or municipalities regulate separate waste collection by SMEs, choosing one of two approaches: 1) payment of a public price based on their business activity and volume of waste, or 2) payment of a private waste collection service approved by the municipality or local entity. In this context, waste represents a complex problem for SMEs. The marketing director of a packaging company expresses this situation: *"We generate many types of waste, many times you do not know what to do with them or how to manage them; it is complicated"* (ID: 11). Waste collection companies, representing the SME's guarantee regarding waste management, are responsible for accounting, recording and removing waste, as well as delivering a report of collected waste materials segmented by type and quantity. Usually, the separated waste goes to treatment plants or eco-parks for recycling, and non-recoverable materials go to landfills. In this way, it represents legal compliance. The CEO of a textile company expresses this aspect: *"We manage our waste as required by law. However, textile waste does not go to waste. Yarn and fabric waste are reprocessed"* (ID: 05).

However, SMEs generally doubt that the current recycling activities are due to insufficient public infrastructure. The acquisitions manager of a pharmaceutical company expresses this

concern: *"There are not enough recycling plants, in the case of England, for example, it is already committed to a dairy company, and all the bottles that the only the plant in England can produce are already fully committed"* (ID: 08). However, a problem with private waste collection services -pointed out by interviewees in Catalonia- is the lack of guarantees that the waste will be recycled and its poor level of traceability. The concept of traceability of materials and the corresponding recycling and recovery activities are little known.

Companies keep records of withdrawn waste but have no traceability information on the recycling rate from waste managers. The interviewees confirm that managers opt to ignore what ultimately happens to the waste, given that there are no proper methods to ensure that private companies are functioning as intended (or as they promised). The manager of a business fostering center states this aspect: *"Companies mix everything on the initiative of the waste manager and place no value on it. The manager signs the waste collection, and everyone is happy. But what the manager has taken away, how much money has been lost, or what materials may have been reused are lost forever, we will never know"* (ID: 17).

4.4.2.2 Waste management in Santiago: A basis problem

In Santiago, waste management shows systematical deficiencies. The interviewees explain that they must pay an amount (specified independently by every municipality) for their waste. However, the municipalities do not have separate waste collection systems. Hence, SME waste is typically collected by municipal trucks to be taken to landfills for final disposal. The partner of the mechanical company explains their experience: *"The garbage collection is unified; it does not differ by material. However, sometimes the glass is collected separately"* (ID: 18B). The owner of a restaurant presents another example: *"Nothing forces us to separate the waste, so everything goes together"* (ID: 22).

Furthermore, there is no major difference between SMEs and households in terms of waste collection and separation before collection; in other words, the waste from companies has final disposal in a landfill, precisely the same as in a household's situation. The owner of a textile company states an example to consider: *"On Tuesdays and Thursdays, the garbage truck passes by and takes everything. We do not know what they do with the waste. The same thing happens with companies and people. There are some clean points, but they do not accept all kinds of materials"* (ID: 04).

SME managers explain that municipalities did count with separate waste collection points, limited to specific zones in the city with adequate infrastructure to separate waste collection. The owner of an educational consulting company expresses their consideration: *"The garbage truck brings everything together. We need a good separation of the waste, it must be done differently"* (ID: 19). However, each commune had a different quantity of these points (from public and private initiatives), leaving many SMEs far from being in serviceable range. The owner of a food-service company relates their practical experience: *"We collect the waste and we will deposit it at the recycling point. The point is far from the business. I doubt that many SMEs like me take this job"* (ID: 23). Moreover, some municipalities have agreements with private companies for separate waste collection. The owner of a food-service company expresses their experience: *"There are private companies that carry out recycling withdrawal,*

which charge an amount that we cannot assume today, it is expensive to be environmentally friendly" (ID: 07). These companies typically require that (companies or inhabitants) separate packaging types (separating cardboard and plastic from food packaging, for instance) and deliver items (e.g., bottles) clean.

Moreover, the respondents point out their concerns regarding "working for a private company that takes the economic benefits of recycling", raising doubts about this kind of private waste management system and forcing many to ask why the service is not public. For example, the manager of a cosmetic company expresses this concern: *"You have the feeling that you are going to the clean point and putting it together again (for them). Also, people say the guy who is recycling is earning money"* (ID: 14). Again, no distinction is drawn between waste from SMEs and households, with both expected to prepare waste for collection by private entities that benefit greatly from this service's omission. Interviewees emphasized two significant issues:

1. SMEs have no practical reasons (only ethical reasons) to recycle due to municipalities' failure in their collection systems to separate different types of waste (plastic, glass, metal, paper, organic). This condition means that if SMEs separate materials, the materials will still end up in a landfill (defeating the purpose of reuse and recycling). An alternative option is to use private waste collection services; however, this would affect SMEs' finances (increased spending on waste management). The problem with traceability remains, as the law does not ensure that collectors register or record what happens with collected waste materials, affecting trust in activities like recycling, recovery, and reuse. As a result, SMEs do not have a clear notion of reliable data regarding the percentage of the waste recycled and returned to the market. The partner of an environmental consulting company expresses an example of this situation: *"There is no traceability. Waste managers generate an entry document, where they say they receive so many kilograms of waste, and I keep that document that is my finding and (my) part of the work that was done"* (ID: 17A).

2. In deciding to recycle, companies would prefer natural persons (citizens) to act as informal collectors who remove the waste to sell it to companies. The owner of a design company exemplifies this situation: *"We pay a person to go through the waste, and we have no idea where they are taken if recycled or if separated"* (ID: 24). These informal collectors would obtain an economic benefit, and materials would be reused or recycled. This action could mitigate the lack of transparency regarding waste collection by private entities and avoid landfills becoming choked with reusable and recyclable materials. In this context, the partner of the mechanical company expresses this reality: *"I do not know to what extent it is useful to pay a company for recycling; there is not always a registration or certification"* (ID: 18A). Nevertheless, these actions are not enough to resolve the situation. The traceability problem affects many different aspects of the waste management system (collection, disposal, recovery).

3. Physical space is often mentioned as a major factor affecting waste management by SMEs. The interviewees state that most of them did not possess an area to store waste and immediately needed to reduce the amount of waste in their company, limiting the recycling

possibilities. The owner of a restaurant expresses this aspect: *"Because of our lack of storage, sometimes we throw things out that we could use, but we have nowhere to store them."* (ID: 11). Even though many SMEs would participate in recycling, their lack of space forces them to depend on the municipal system. Consequently, Although the companies had the intention to recycle, this crude reality diminishes the possibilities of recycling or reusing waste as a resource.

4.4.3 Raw materials management: The collateral effects of waste management

The raw materials are the input for the companies' productive process. Their management is relevant in companies as SMEs that count on limited resources. There are more sustainable raw materials than others, and waste management affects this situation.

4.4.3.1 Raw materials in Catalonia: The recycled raw materials quality and availability

In Catalonia, the Interviewees SMEs recognize different kinds of materials (some more sustainable than others) used in different supply chain processes in primary and secondary activities. In the case of recycled raw materials, the quality is poor because the central separate waste collection system receives all types of waste (e.g., all types of plastics). Therefore, the generated recycled raw materials have high possibilities of decrease and limited use. In this context, SMEs present a standard level about the characteristics of the raw materials. Moreover, cost more than virgin raw materials hinders their adoption and frequent use. For example, the CEO of a textile company explains this limitation: *"We are dealing with raw materials that are more sustainable, the problem is their high prices, we are experimenting"* (ID: 05). In the same line, the CEO of an electronic technology company gives their testimony: *"We are gradually incorporating these aspects, as we can, it benefits us all, society"* (ID: 01). SME managers are concerned that increased adoption of recycled materials may lead to scarcity as suppliers may not meet demand (current production capacity may not be enough to deal with any increase in demand).

Moreover, there are some technical aspects to consider. For example, the quality manager of a chemical company state this point: "*At the moment, you cannot be biodegradable given the durability of the raw materials. The clients want a product that lasts a long time in the field, not to have to make refills. However, the biodegradable ones that we have tried do not last at all"* (ID: 07). In this line, the owner of a textile company considers: *"From the design, we strive to create less waste. At the cutting level, to use less fabric, water, washing, dyes, printing, the best use of raw materials depends on us"* (ID: 06).

The use of recycled raw materials does not only represent an improvement of the SMEs' environmental impact. The interviewees are aware of the financial impact of adopting more sustainable materials, as switching to more sustainable resources implies an increased production cost. The acquisitions manager of a pharmaceutical company points out this aspect: *"Right now, there are raw materials on the market that are recycled. Currently, the cost is very high because there is insufficient infrastructure to manufacture all these raw materials. Therefore, raw materials that come from recycled sources are more expensive than newly*

manufactured material" (ID: 08). Some companies, but not all, can assume the cost differential, an issue that is strongly related to the value perceived by customers and their willingness to pay for sustainable products. In this context, an increase in recycled raw materials can reduce their prices.

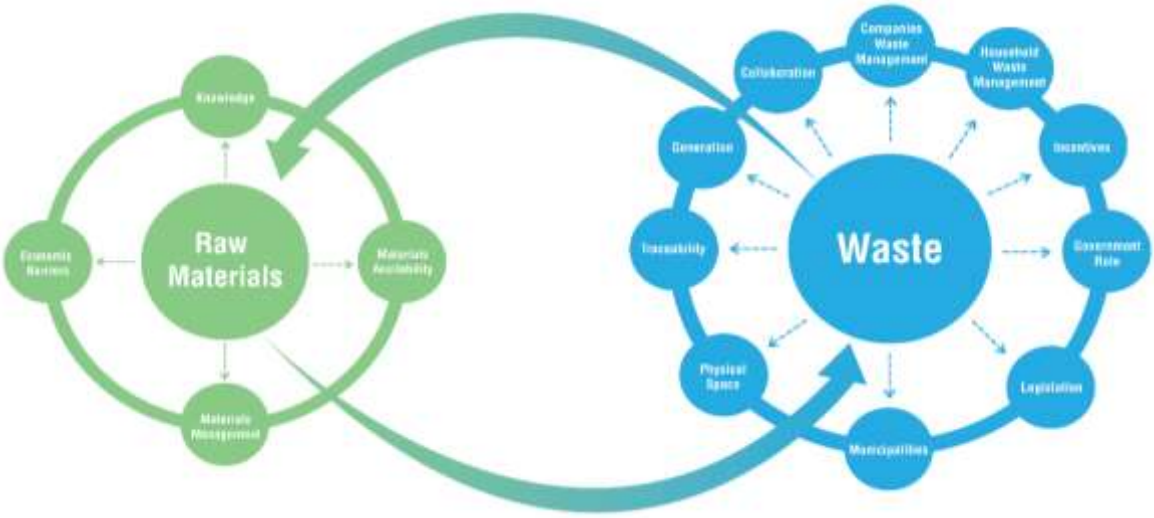
4.4.3.2 Raw materials in Santiago: The technical knowledge and price problems

In Santiago, the respondent SMEs highlight the relevance of using sustainable raw materials in their production processes (more important for some industries than others); it was not a priority for SMEs. However, the main issue is managing these resources, as companies focus on satisfying customers' needs. In many cases, this may lead to an action contrary to environmental concerns/ideals, i.e., the overprotection of the product's packaging, using an excessive amount of raw materials such as plastic, expanded polystyrene, and aluminum used to protect the product and ensure safe and secure delivery. The owner of a restaurant exemplified this situation: *"There are some aluminum containers, some featherweight boxes, and some products in a paper bag. Finally, all that comes together in a plastic bag that we deliver to the customer, all for product protection"* (ID: 22). This situation represents another perspective that affects the environment, considering the resources perspective.

Another problem are products that are thrown away without understanding its components, which leads to improperly mixing waste (for instance, a box with a plastic component cannot be recycled with cardboard). An example of this situation is expressed by the owner of a sanitary products company: *"The problem with raw materials such as plastic is that people and companies do not take enough care to give it more of useful life. Plastic is an excellent alternative if you know how to use it"* (ID: 05). When SMEs have a surplus of materials that they do not properly dispose of, they need additional technology and/or technical know-how to properly discard the waste or reuse it. The manager of the cosmetic company expresses: *"The issue is what do we with materials like plastic. When we use it, how many times, to what extent we manage it. Is the material the problem? No. It is what we do and how we abuse it, but it is not easy if no one has ever explained the material aspects of it. Clear tools are needed"* (ID: 14). The owner of an industrial company expresses another vision: *"Due to the characteristics of iron, we do not have a more sustainable material to replace it at this time"* (ID: 25).

Furthermore, cost becomes a substantial barrier to increasing sustainable raw material use. SME managers indicate that they have to make a conscious effort to adopt environmental principles, especially as their business margin and profitability often do not allow them to generate their desired changes. The owner of a food-service company states: *"I have quoted for materials, but the providers are few, and they do not come too close (in terms of price-efficiency). There is lack of a greater supply and accessibility to these materials"* (ID: 23). Furthermore, the owner of a veterinary clinic reflects this situation: *"Being honest, the truth is that we have not changed suppliers because the product comes in a plastic or cardboard box. Unfortunately, today we are making provider decisions on a cost-benefit basis"* (ID: 01). In this context, SMEs do not explore these materials. Therefore, it does not find (temporarily) availability and quality problems.

In summary, the waste management extension considers various aspects such as waste legislation, waste management system (companies and households), and their activities (from waste generation to traceability). These aspects are added to the SMEs' situation as physical space limitation, ease for collaboration, and the role of stakeholders (government and municipalities). The sum of these conditions has repercussions on the recycled raw materials. In addition, their management and availability add to the limited knowledge regarding their characteristics, further conditioning their use. Therefore, there is a bi-directional relationship between waste and raw materials (see figure 4.2); the modification of waste management or conditions affects recycled raw materials, and vice versa. In essence, modifying an aspect could have positive or negative effects on the entire chain of relationships.

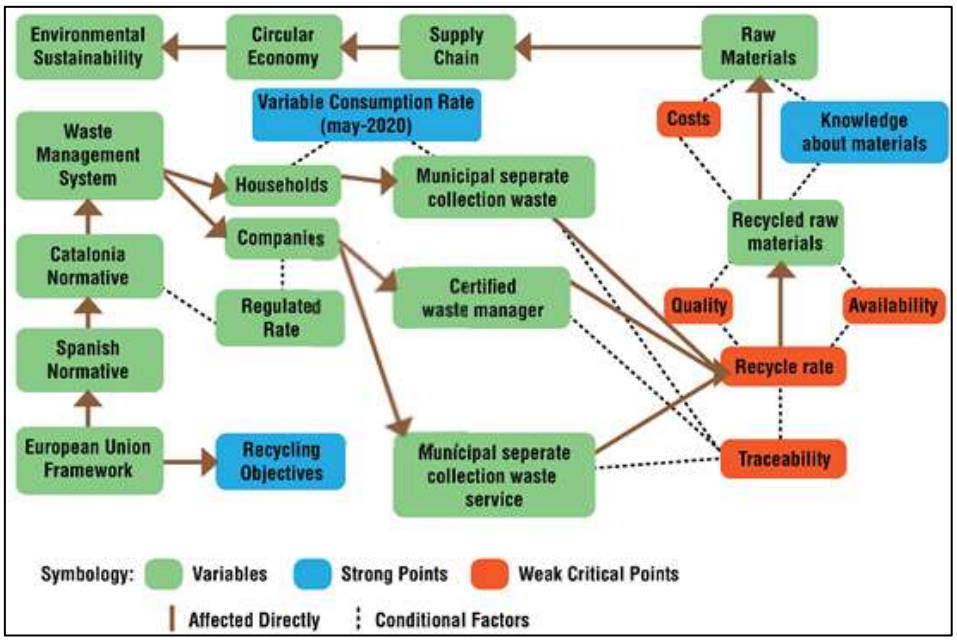


Source: Self-elaboration.

Figure 4.2 The relationship scheme between waste and raw materials nodes.

4.4.4 Environmental normative, waste management and raw materials: An integrative view

Based on the literature review, the information elaborated from government data, and the SME interview content analysis, the following diagrams were designed to depict Catalonia and Santiago's situations. Figure 4.3 shows the environmental outlook in Catalonia.



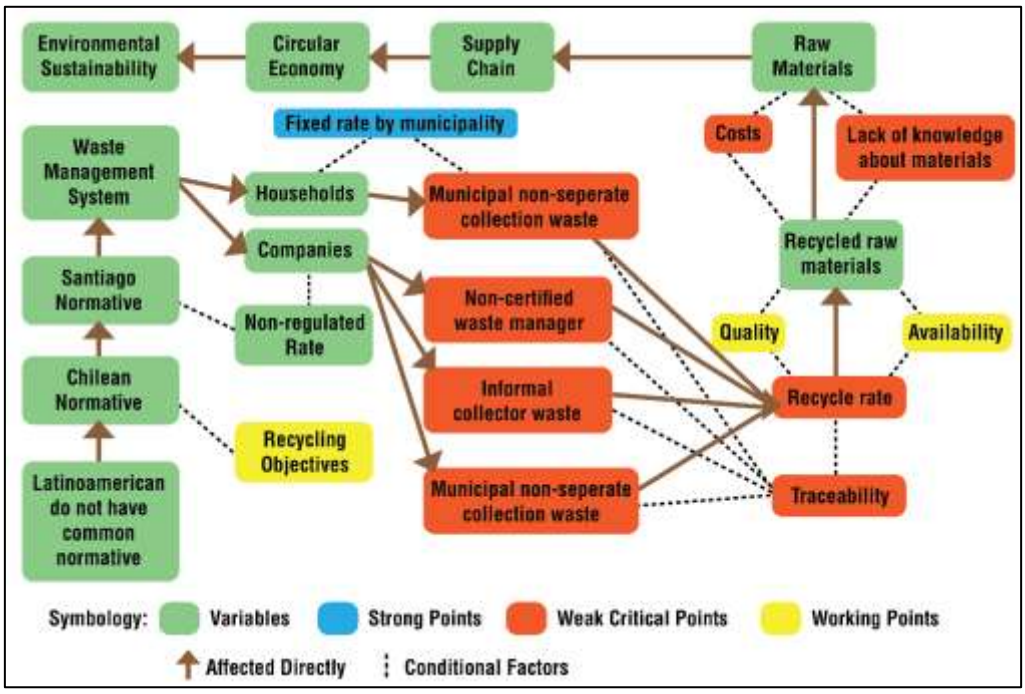
Source: Authors. The solid lines represent a direct effect of a variable and/or a sequential relationship on other variables. The broken lines represent variables with a conditional effect, depending on their implementation or efficiency, on other variables.

Figure 4.3 Integrated scheme of Catalonia situation.

The situation in Catalonia reveals specific problems in the final stages. In the early stages, environmental and municipal waste regulations have been established with clear conduits for the process for companies and households—the waste management system functions in the collection and separation phases. However, the waste processing stage is problematic in transforming waste into recycled raw materials.

The waste traceability from different waste management systems in the final stage affects the recycling rate. The municipal service (for SMEs and households) may have to deal with the quality of collected waste, ultimately affecting the recycling rate in processing plants. In contrast, the private waste collection service generates a lack of certainty about the ultimate destination of separated waste, thereby directly affecting the recycling rate. The quality and availability of recycled raw materials after the recycling process are thus affected. In addition, recycled materials (as previously mentioned) cost more due to their scarcity, which produces a secondary effect of decreased production in companies that use recycled raw materials.

Santiago's situation shows differences compared to Catalonia, considering the different states and environmental and waste management standards and regulations applications. Figure 4.4 shows the outlook in Santiago.



Source: Authors. The solid lines represent a direct effect of a variable and/or a sequential relationship on other variables. The broken lines represent variables that have a conditional effect, depending on their implementation or efficiency, on other variables.

Figure 4.4 Integrated scheme of Santiago's situation.

More difficulties in the different stages of waste management are evident in Santiago compared to Catalonia; this is due to environmental and waste management regulation being relatively new in Chile. Furthermore, Latin America has no common waste framework that might generate regional pressure regarding objectives. In contrast, pressures have only increased superficially and gradually (i.e., recycling objectives and their stepped aims). Municipal waste management in Chile lags behind the EU, as exemplified by the lack of separate waste collection from companies and households. Generally, it is mainly informal or private options that exist (and in some cases, in collaboration with local municipalities). However, they generate traceability issues from the outset (although this may change with EPR legislation implementation in upcoming years).

Therefore, the quality and availability of recycled products are not yet an issue, given the low demand for such materials (and the lack of a proper waste separation system). The lack of recycled materials raises prices, added to the region's lack of knowledge and technical know-how regarding said materials, which means that adoption will be slow. This lack of an integrated structure strongly affects the recycling rate, as structural changes in the different stages are required to reduce the use of new virgin materials in production processes and increase recycled raw materials.

4.5 Findings and discussion

The environmental regulations and waste management represent the cornerstone of the waste situation in companies. Although the situation of larger organizations was approached in the literature (Alayón et al., 2017; Hurreeram et al., 2014), significantly less work has been done on the situation of SMEs' waste (Woodard, 2021). This research demonstrates how environmental regulations influence SMEs' waste management, under the theoretical perspective of the regulatory and normative dimensions. Moreover, an integrative overview of the waste management situation can be incorporated into the current knowledge by approaching their effects on recycled raw materials from a managerial perspective.

Additionally, this research contributes to the existing literature by introducing new knowledge on the current state of SMEs' waste management situation. By comparing two regions (Catalonia and Santiago) at different development stages in environmental themes, novel evidence is obtained to comprehend their substantial influence on SMEs' waste management under the regulatory and normative dimensions. Hence, addressing the challenge of increasing environmental knowledge regarding specific locations whilst considering their different conditions (Bakos et al., 2020). The study also generates insights regarding the waste management systems and their characteristics, such as type (public or private systems), rates (fixed or variable), and waste collection (separated or non-separated), necessary for environmental development (Mura et al., 2020)

Moreover, developing a holistic scheme of the waste management situation provides a structured view of the complex relationships between environmental and waste management regulations and standards, waste management, and their effect on recycled raw materials. Thus, clarifying these aspects can facilitate or hamper their development in SMEs (Levänen et al., 2018).

4.5.1 Implications and managerial contributions for Catalonia

In Catalonia, the environmental and waste regulations are stable and precise. However, the waste management system derived from these norms does not consider the situation of SMEs. Furthermore, the system does not generate guarantees for SMEs.

A crucial aspect of the system is the waste collection process. The current system does not generate guarantees about waste traceability (crucial for the system reliability), becoming only a legal obligation for SMEs. The low standard of separate waste collection (mixing different types and qualities of waste) generates a low conversion of separate waste in recycled raw materials. Furthermore, the poor quality of these materials generates a significant shrinkage in their use. In this context, SMEs need to bear these sunken costs (in addition to the recycled materials price). Also, SMEs illustrate the lack of incentives in waste legislation to stimulate environmental behavior (Rabadán & Sáez-Martínez, 2017). Therefore, this situation reduces the SME's demand for said materials to improve their environmental sustainability (Kalaitzi et al., 2018). With more advanced waste legislation and experience, as evidenced in EU countries, the study reveals that recycled raw material is still an unresolved problem (Bassi & Dias, 2019; European Environment Agency, 2018). This reality contrasts enormously with the

EU plan to promote recycled material used to decouple the economy from natural resource use (European Commission, 2020).

Regarding the economic aspects, the waste payment fee does not generate favorable conditions for SMEs. The current options are paying a private waste collection service or paying a public price to municipalities or local authorities. The public price for SMEs is determined by their economic activity (according to activities classification), the surface area of their premises, and the volume of generated waste. While this polynomial system generates an equal standard, it does not generate incentives to reduce waste. As a consequence, there is little interest in recycling, reuse, and reducing waste. Puig-Ventosa & Sastre Sanz (2017) point to the dual relevance of waste collection pricing: the fixed fee (which effectively penalizes responsible behavior) versus the variable fee (taking into account waste generation and water consumption). Under the regulatory dimension context, the regulations on Catalonia provide a structural environmental framework to comply but do not give the possibilities for SMEs to incentivize environmental development and improve their waste management practices. In the normative dimension, SME managers manifest positive attitudes and beliefs about their role in the waste management situation. However, they show untrustful in their traceability, a practical issue to resolve.

Considering these situations, potential ways to cope with these aspects are:

1) First, combining the current waste system with deposit-refund schemes (DRS) is a widely adopted in Germany and Denmark. DRS combines two mechanisms: a tax on purchasing a product and a subsidy on the identical product's separated waste collection in the after-use stage (Linderhof et al., 2019). However, the drawback of the DRS is that the implementation cost is high, and it also requires accurate analysis for effective implementation.

2) Second, to generate more specific conditions about the separate waste collection. A system that considers the characteristics of the materials in the separation process can improve the quality of recycled materials. For example, Haupt et al. (2017) describe the Swiss waste management system as closed-loop (recycled material used in the same product) and open-loop (recycled material for secondary use). A concrete situation is that blue and colorless PET recycled materials can be used for the same product. In contrast, green PET is valid only for secondary use. The EU proposes harmonizing separated waste collection systems in its Circular Economy plan for 2020 to ensure an effective combination of separated collection models (European Commission, 2020).

3) Third, in the economic aspect, developing a flexible scheme that considers a return fee for SMEs according to: 1) waste generation and 2) percentage of recycled materials use can improve the SMEs' waste management situation. The waste system fee is a factor in encouraging a waste management system (Park & Lah, 2015).

4.5.2 Implications and managerial contributions for Santiago

The environmental normative in Santiago presents several aspects that need to be considered. First, according to the SME managers' perspective, the waste legislation -applied through EPR law- does not consider the SMEs' reality, characteristics, conditions, and limitations in their application. These findings are consistent with Margallo et al. (2019) regarding waste management policy deficiencies in Latin America. Second, the regulatory approach excludes SMEs on their responsibility (according to the proportionality principle established in law 20.416). This condition implies a minimizing view of the problem without addressing the underlying situation on approaching and how to support SMEs. In this context, the norm is incipient, with a long way to achieve European countries' standards. Third, these companies do not feel pressure from the law, acting according to their practical experience over the years. Fourth, law compliance is relatively weak due to a lack of enforcement from inspectors.

Waste management is not the exception and generates detrimental effects on SMEs' waste situation. The current main problem is that SMEs use the same system as households. In this context, the lack of collection systems based on properly separated waste (Ministerio del Medio Ambiente, 2019b) reduces practical waste management possibilities. This situation means that SMEs need to figure out their system to separate waste while taking possibly incomplete traceability and the lack of trustworthy registers into account. Moreover, adding to this situation, the SMEs' physical space limitation complicates storing material and incentivizes quick final disposal. Therefore, a well-managed collection system directly affects the entire waste management system and their benefits; material recycling and reuse (Molina-Moreno et al., 2017; Yıldız-Geyhan et al., 2019).

The EPR legislation (updated in 2019 and 2020) tackles separate waste collection. As a consequence of the norm, Santiago's separate waste collection points have (and continue) to increase in the following years (independent of the delay generated by the COVID-19 pandemic), principally through an integrated waste management system of producers. Nonetheless, this process must be accomplished through a robust traceability process to ensure that separate waste arrives at treatment plants. However, caution will be required with the operating conditions for EPR, including (1) the fixing of system costs and the percentage to be borne by the customer, (2) the utilities of the system and reinvestment mechanisms, and (3) adequate representation of stakeholders in decision-making processes. Moreover, law compliance (under the law principles) is doubtful, considering the historical lack of inspections. Most especially, transparency and honesty will be crucial for the success of the system.

The above-described situation has potential repercussions on recycled raw materials, where the EPR law is a changing factor in this equation. Considering the current SMEs' conditions (normative context, limited materials knowledge, financial structure), the availability and quality of the recycled materials do not represent a concern due to their low-level demand. But instead, represent a bleak long-term outlook if the usage volume (demand) increases. Therefore, the situation is not simple for developing countries such as Chile. Therefore, the adequate implementation of the EPR law in Chile is not a definitive solution, but it is the first step to improve the recycled raw materials situation.

Another aspect to consider is the waste payment system. SMEs pay a fixed rate, included in the municipal license payment, to launch and continue a commercial activity. This rate is independent of the amount of generated waste (the same method used for households, except that exemptions are allowed based on socioeconomic criteria) (Hernández, 2019). This situation greatly influences the possibility of reducing waste, as SMEs do not have any financial incentive to be more sustainable, and the situation is the same for households. In this context, SMEs indicate that they pay a specific amount for separated waste collection (SMEs genuinely committed to environmental themes, employ a waste manager). Recently, the ministry of environment launched the program "Recycle at home." This program considers a direct relationship between recyclers and consumers (SMEs can participate due to their null differentiation in the system) where the latter pay for the service. A longer-term perspective of this service can generate the perception of a triple payment by households (waste collection fees, product levies according to EPR principles, and charges for recyclers that collect waste directly from households) and double payment by SMEs (waste fee derived from municipal permit and charges for recyclers that collect waste directly from SMEs). As a consequence of the current systematic deficiencies, the rate of separated waste collection (recyclable raw materials) is dramatically low, 1.72% in the country and 3.17% in Santiago approximately (Valenzuela-Levi, 2019). In the regulatory dimension context, the environmental framework presents a gradual development phase of enactment and implementation, tending to ignore the responsibility of SMEs in the environmental and waste management situation. This situation contrast with the positive beliefs of SMEs manager in the country. However, they need to prioritize between regulation and their financial situation. The production and operation costs is critical peer pressure, in the same line as (Mohammad Ebrahimi & Koh, 2021).

Considering these situations, potential ways to cope with these aspects from policy-makers and practitioners are:

1) First, to design and implement a waste management system that considers the population and companies' characteristics. The EPR law leaves SMEs aside due to their effects. Instead of this legal consideration, the norm can support SMEs' actions to 1) reduce their waste and 2) promote the effective separate collection, with subsidies and financial aids. Moreover, the government institutions can provide formation plans regarding the material characteristics to comprehend the environmental impacts of their produced goods that can be extended to consumers to sensitize their consumption effects. For tackling their waste situation, SMEs need knowledge, guidance, and infrastructure (Kornilaki & Font, 2019). In addition, SMEs need incentives to encourage environmental actions, considering their resources and limitations. A practical and integrative waste management system considers all its stakeholders (society, companies, and public institutions) (Fuss et al., 2018). Therefore it is not recommendable to imitate a model.

2) Second, the actual waste tax does not consider the SMEs' characteristics; it is a standard tax defined by every municipality that supports their waste management. Therefore, the first step is to generate a differentiated tax, according to waste generation and their type (plastic, metal, aluminum, cardboard), penalizing mixed materials.

Moreover, regarding this last point, the government can implement a tax return fee, according to the ease to separate the waste components or single material waste. Therefore, an effective design of waste tax contributes to the waste hierarchy implementation of a territory (Milios, 2021).

4.6 Conclusions and limitations

This study focuses on SMEs' waste management situation and their challenges, considering the role of environmental legislation and waste management systems. The findings provide information on the lack of in-depth comparative studies on the operationalization of environmental themes (Farooq et al., 2019). Data about waste management conditions at the municipal level and current public policies were incorporated to enhance the quality and originality of the research. Based on the results, waste management differs between Catalonia and Santiago, with a substantially more advanced level of development in the former. These differences impact the whole system, as seen in the developed schemes for both cities. The waste norms, separate collection system, and tax payment methods are critical factors in SMEs' waste situation. Moreover, waste management affects the availability and quality of recycled raw materials. In this context, combining 1) environmental legislation that considers SMEs' reality and characteristics, and 2) waste management system with adequate infrastructure (waste collection points, treatment plants for recycling waste) and conditions (separate collection, waste tax) can improve SMEs' waste management situation.

Despite the study's contributions, there are a few limitations to consider. First, the study has adopted a qualitative approach, performing a rigorous codification and categorization process in bringing the findings. However, a quantitative approach can be developed to complement and validate this study's generalizations at the aggregate level in further research. Second, the research sample is representative, with a good scope, considering the regions' relevance. Nonetheless, future studies could include other regions in those countries to analyze location aspects and other countries to enhance comparison at the international level. Third, the study analyses the SMEs waste situation from different economic sectors to obtain a wide range of SME perspectives. Future steps could be interesting to consider specific sectors (e.g., commerce, food, technology, textile) and business focus (business-to-consumer, business-to-business), .providing insights by industries that enrich overall and sectoral knowledge about waste management.

CHAPTER 5:

UNDERSTANDING THE LEARNING PROCESS ON SMES CIRCULAR ECONOMY DEVELOPMENT AND THEIR ORGANIZATIONAL PERFORMANCE. A QUANTITATIVE APPROACH FROM CHILEAN EXPERIENCE

Keywords:

Learning orientation, organizational learning, circular Economy, competitive advantages, market performance, SMEs

5. Understanding the learning process on SMEs circular economy development and their organizational performance. A quantitative approach from Chilean experience.

5.1 Introduction

Already more than a year has passed since COVID-19 was declared a global pandemic by the WHO in March 2020 (WHO, 2020). This disruption caused detrimental effects on public health, the environment, and society, generating expected long-term impacts and consequences coupled with socio-ecological systems (Cheval et al., 2020). An example of these detrimental effects is the tremendous increase in healthcare waste products such as discarded facemasks, gloves, and safety equipment (Dente & Hashimoto, 2020; Rume & Islam, 2020; Zambrano-Monserrate et al., 2020). And when regarding the industry, it is not the exception; the measures to prevent the COVID-19 spread rose the amount of packages used in products, food (delivery), and groceries (Vanapalli et al., 2021), affecting sustainable production possibilities (Kumar et al., 2020). These devastating effects increased the critical environmental degradation, affecting the quality of life of the general population (Majeed & Ozturk, 2020).

This context generates concern regarding the role of environmental aspects in the post-pandemic recovery, producing different alternatives. For instance, the crisis can have a strong focus on economic and social sustainability (Sarkis, 2020), or it can be an opportunity to generate environmental and resilient local economies in their interaction with the economy (Korsgaard et al., 2020). In this scenario, at the industrial level, a critical actor in the environmental situation are SMEs (Small and Medium enterprises). This group has been one of the most affected by the outbreak and lockdowns following COVID-19's arrival, due to their (SMEs') structure and vulnerability to economic shocks (Sharifi & Khavarian-Garmsir, 2020). Additionally, these companies are essential in the economy, representing approximately 90% of businesses and more than 50% of worldwide employment (World Bank, 2020). Moreover, they are responsible for 70% of global pollution (Reyes-Rodríguez et al., 2016). Yet, the vast amount of research has centered on large companies (De Mendonca & Zhou, 2020; Epstein & Roy, 2007; Gallego-Álvarez, 2018; Marco-Fondevila et al., 2020; Murillo-Avalos et al., 2021), and only limited attention has been paid to the environmental challenges faced by SMEs (Pedersen et al., 2018). This fact is produced due to the general perception of SMEs having local and lower individual impact (Graafland & Smid, 2016).

In this context, a relevant theme to approach SMEs' environmental situation is the role of the Circular Economy (CE). CE represents the change of a linear economy to a restorative system that promotes the concept of end-of-life cycle extension for products and services (Kirchherr et al., 2017), where the implementation of these practices in SMEs is a multi-dimensional phenomenon. However, the empirical evidence regarding CE development in SMEs is concerningly limited (Cariola et al., 2020). In the strategic field, CE adoption and implementation are not necessarily bound to an environmental business strategy (Barreiro-Gen & Lozano, 2020), which can be developed as actions, focusing on short goals to reduce costs or improve processes (Sharma et al., 2021).

Moreover, the resource limitations and necessary financial investment added to environmental legislation become a real obstacle for SMEs to be more environmentally friendly (Caldera et al., 2018; Rizos et al., 2015; Villegas Pinuer et al., 2021). Independent of these relevant aspects, the SMEs' learning process is critical for their development and faces new complex challenges (Tian et al., 2020). Therefore, it can be a determinant factor to approach the environmental challenge.

Learning is a social process to accumulate, assimilate and transfer knowledge in an organization (Petrakis & Kostis, 2015). This knowledge can generate new organizational routines, processes, practices, norms, improving productivity and organizational processes in SMEs (Coyte et al., 2012). Therefore, SMEs unable to learn and manage knowledge cannot change situations, innovate or adapt to new contexts (Arsawan et al., 2020) and cannot leverage the benefits (competitive advantages, organizational performance) of environmental concern in SMEs (Muñoz-Pascual et al., 2019b). Therefore, it becomes critical to understand the characteristics and effects of the learning process in the circular economy development for SMEs.

In this way, studying the two sides of learning in SMEs is necessary: Learning Orientation (LO) and Organizational Learning (OL). LO represents the inner side, the mechanism to create and manage knowledge (Sheng & Chien, 2016). In contrast, OL represents the external aspect, the capability to learn from other companies, independent of their mechanism to develop knowledge (Dada & Fogg, 2016). Moreover, the SMEs' age can influence this learning process, according to the maturity stage of SMEs (Nunes et al., 2013). Therefore, understanding the learning aspect becomes crucial to align environmental sustainability practices in companies' processes and activities (Beske, 2012).

This article explores and analyzes the situation of Chilean SMEs. These companies represent 97% of firms in the country, generating 70% of total work (Ministerio de Economia; Fomento y Turismo, 2019). Additionally, the pandemic context has generated severe detrimental effects in the country, where Chilean national GDP has decreased 5.8% in 2020 (Banco Central de Chile, 2020), and the unemployment rate has reached up to 9.5% (843.760 persons) (Instituto Nacional de Estadísticas de Chile, 2021a). Under these conditions, the relevance of environmental issues is uncertain. Hence, this research endeavors to approach the research gaps about the learning process, CE, and their organizational consequences. To this end, the following research questions serve to address the main problems identified by this study:

RQ1: What is the role of the learning process in promoting CE implementation in SMEs? Do learning orientation and organizational learning present a similar behavior in SMEs?

RQ2: Does SME's age influence the relationship between the learning process and CE?

RQ3: Can CE generate competitive advantages (CA) for SMEs? Do these competitive advantages generate positive effects on Market Performance (MP)?

To answer the aforementioned research questions, this study proposes a model to understand: 1) the role of SMEs' learning process in CE development, and 2) the

implementation of CE and their organizational effects in competitive advantages and market performance. In addition, some control variables are included, such as: 1) the environmental business strategy to analyze their relevance on CE, and 2) some pandemic detrimental effects as income and employee reduction.

Thus, this model provides an integral view of CE development and the specific role of the learning process, giving an overview to apply CE in the SME context, considering the limited work that approaches CE implementation holistically (Dey et al., 2020). A structured survey was developed and administered to a sample of Chilean SMEs managers to study the proposed model, obtaining 205 observations, with the model analyzed using Structural Equation Modelling (SEM). From a managerial perspective, this research brings on empirical findings, shedding light on the SMEs' learning process (internal and external knowledge) and their relationship with the practical implementation of CE in SMEs. The outcome of this article, which will be beneficial specifically for SMEs, practitioners, and policymakers, should help bolster CE. Therefore, this study represents a novel piece of information and evidence regarding CE challenges for SMEs in the pandemic context.

The chapter is organized as follows. Section 5.2 illustrates the theoretical framework. Section 5.3 develop the research hypothesis and their theoretical support. Section 5.4 presents the research methodology, including the operationalization of the constructs, the sampling design and characteristics, the data collection process, and the pandemic context in SMEs. Section 5.5 present the SEM analysis results for the proposed model. Section 5.6 develops the research discussion, including their contributions and implications. Finally, section 5.7 focuses on the conclusions, limitations, and further research directions.

5.2 Theoretical background

5.2.1 The environmental development of SMEs and the learning process.

A historical issue for companies is to align the business with the environment (Hambrick, 1983; Miles et al., 1978). Incorporating environmental themes on the business has been a fundamental demand towards companies, triggered by the planet's detrimental environmental situation. In this line, due to their importance on the economy, SMEs are a relevant engine for sustainable environmental development (Oncioiu et al., 2018). However, the evidence suggests a reluctant attitude to environmental aspects due to several constraints: financial investment, supply chain integration, technical expertise, and organizational culture (Leonidou et al., 2017). It is widely known that resource and capability constraints are a continuous problem for SMEs, limiting their action capabilities, and increasing their vulnerability (Sallem et al., 2017). In this sense, the Circular Economy (CE) appears as a concrete way to achieve sustainable development for SMEs.

The CE is widely understood as an economic system based on the restorative principle by intention and design, replacing the end-of-life concept (Ellen MacArthur Foundation, 2013). Commonly, this philosophy is interpreted as the operationalization of sustainable business strategies. However, this relationship is still unclear in the literature due to their multidimensionality (Geissdoerfer et al., 2017), considering that it is not strictly necessary to

count with an environmental strategy to apply CE (Nulkar, 2014). Independent of this strategic consideration, CE aims to help preserve the natural capital and extend the product lifecycle, maximizing their value (Mura et al., 2020).

Thus, CE implementation generates positive effects for society and companies. In this sense, reducing the environmental impact of companies and minimizing their costs in the manufacturing process (waste, energy, carbon-emissions) through reducing, reusing, and recycling practices (Hasan et al., 2019), representing direct economic benefits (Lieder & Rashid, 2016). These benefits should be relevant for SMEs, considering their limitations. However, this process is not instantaneous, and the systematic literature review performed by Aghelie (2017) establishes knowledge assimilation as a crucial factor in developing environmental themes in these companies.

Nonetheless, most SME entrepreneurs are preoccupied with their active involvement in the daily activities of the business, driven by short-term business pressures, and are looking for quick and easy solutions, very often, without a competence development (Panagiotakopoulos, 2011). Knowledge management in companies requires an infrastructure capable of supporting the creation and maintenance of knowledge, enabling its cultivation and facilitation (Kriščiūnas & Greblikaitė, 2007). However, SMEs tend to be alone in this matter, finding themselves without a learning environment that facilitates their management (Gray & Jones, 2016). In this context, the analysis of the learning process in SMEs, and approaching their different perspectives would contribute to CE development by improving their environmental condition and performance.

5.3 Theoretical model development

5.3.1 Learning Orientation in Circular Economy

Learning theory is the subject of an extensive body of literature, with theoretical roots in a wide range of disciplines and themes, considering psychology (Mughal & Zafar, 2011; Schein, 1993; Tennant, 2007; Wanless, 2016), strategic management (Ginter & White, 1982; Grant & Baden-Fuller, 2018; Jennings, 2002; Kolb et al., 1986), and human resources development (Contu & Willmott, 2003; Klett, 2010; Sleezer, 2004; Yang, 2004). These perspectives contribute to addressing the learning process and their failures in the organizations. From the theoretical construction of learning, two perspectives emerge: Contingency and Constructivism. The former considers that an organization must adapt their structure to contingencies such as the environmental, company size, and business strategy (Gerdin & Greve, 2008). The latter establishes that organizations construct knowledge and meaning from their experiences (Dagar & Yadav, 2016).

Learning represents a way for the development and growth of companies, one of the natural objectives of an entity. In this context, a learning organization continuously transforms itself in the process, linked to the collective development of all their members, hence enhancing their skills (West, 1994). The definition implies that an organization experiences a process of continuous change and adaptation while at the same time needs to enable individual learning (Garavan, 1997). Thus, learning orientation (LO) is the manifestation of the companies' propensity to learn and generate value (Baker & Sinkula, 1999; Mavondo et al., 2005) and how

to create and use knowledge to enhance competitive advantage (Calantone et al., 2002). The key characteristics of this orientation are: 1) the transfer of learning from individuals to groups, 2) commitment to learning, 3) systems for developing learning, and 4) mechanisms for renewing the organization (Mavondo et al., 2005).

This orientation is reflected in a company's cultural aspects that improve insights and knowledge processes to improve organizational performance and customer value (McGuinness & Morgan, 2005; Nasution et al., 2011). For example, market orientation is inherently a learning orientation (Slater & Narver, 1995). In this sense, the adoption of LO can facilitate and transform conflicting viewpoints in novel organizational knowledge (De Clercq et al., 2017). In the case of SMEs, little attention has been drawn to the effects of learning processes on these companies (Frank et al., 2012). However, the current evidence suggests positive relationships. And independent of their low levels of formalization and bureaucratization, SMEs tend to incorporate informal learning from the environment to enhance their survival in the market as a tacit mechanism (Real et al., 2014). In this way, to incorporate more developed knowledge, SMEs need an adequate internal structure and process, accomplished by the managers' compromise, considering the nature and maturity of the business (Carr & Gannon-Leary, 2007). In this context, the adoption of LO is a characteristic associated to fast-growth in SMEs (Tan et al., 2014), environmental commitment (Roy & Thérin, 2008), and the growing trend of the circular economy and its principles (Mason & Tanha, 2020). In this line, the circular economy (CE) represents the antonym of a linear economy (a one-way economic system that assumes an unlimited capacity to produce, without considering the waste and effects of pollution), focusing on restoring damage done in resource acquisitions and waste generation (Murray et al., 2017). The core of CE interpretation is the holistic transformation of environmental protection to sustainable economic development, including reducing, reuse, and recycling activities in production, circulation, and consumption (Jiao & Boons, 2014).

CE is not a novel phenomenon; the idea behind CE dates back to the following years of industrial times. In the chemical industry, the production processes refer to an ideal cycle, where there are no waste-only products (Lancaster, 2007), similar to the patterns of the biogeochemical cycle (Gupta & Jain, 2018). Currently, a growing tendency is present, and an example of this rapid growth is the existence of more than 100 definitions of the concepts, considering multiple scopes and knowledge disciplines (Kirchherr et al., 2017).

However, the broad spectrum of CE triggered some critiques from the CE's philosophical ecological perspective due to their divergent conceptual directions -which are relevant to note. Millar et al. (2019) present one of these approaches regarding CE literature omissions: CE can achieve economic growth without degrading the environment. In this perspective, Korhonen et al. (2018) highlight that CE has rebound effects and affects the material flow. Activities such as recycling, recovery, reuse, and remanufacturing use materials and new energy inputs that do not represent a closed-loop of the material flow (Korhonen, Honkasalo, et al., 2018). These effects can affect consumption patterns; for example, increased recycling boosts the supply of relatively cheap secondary materials, lowers prices, and spurs more consumption of products made of these materials (Schröder et al., 2019). In this way, CE activities can increase overall production, partially or fully offsetting their benefits (Zink & Geyer, 2017). This perspective

presents discrepancies and aspects to consider in CE development, highlighting the relevance of studying their empirical effects on SMEs.

The literature has shown that LO boosts the adoption of environmental issues and practices on business strategy and generates commitment to the learning process (Feng et al., 2014). The research of Cantú et al. (2021) in Mexican SMEs shows that knowledge and a collaborative environment become factors that can boost or deter CE initiatives, where managers play a crucial role as agents of change. These results are shared by Ünal et al.'s (2019) research in Italian SMEs that highlights that the transition to CE requires the moderating role of managerial commitment and their capability to bring and permeate knowledge within the organization. Moreover, this knowledge must be accomplished by the SMEs' manager commitment. The beliefs and managerial attitudes motivate the progressive implementation of environmental initiatives at the strategic level (Reyes-Rodríguez et al., 2016), facilitating organizational changes. In Chilean SMEs, the limited evidence suggests difficulties exploiting LO due to their focus on market-related networks and activities that improve their performance and competitiveness (Rehman, 2017). In order to fill the scarce evidence regarding this orientation effect on CE in the country, the proposed hypothesis is:

H1: Learning Orientation (LO) has a positive and significant influence on the Circular economy's development (CE).

5.3.2 Organizational learning in Circular Economy

More than fifty years have passed since Cangelosi & Dill (1965) experimented with management simulation exercises and described the learning process in group interaction and their effects on decision-making, becoming one of the first documented experiences on organizational learning (OL). In this context, the distinction between LO and OL is substantive, not merely a semantic issue. The former focuses on the propensity to learn and create value, while the latter on the knowledge interaction.

OL presents various definitions. Sinkula (1994) defines OL as the development of new knowledge and their effects on the organizational behavior. Easterby-Smith et al. (2008) refer to the changes in knowledge and its transfer in an organization, in the function of the experience and ability to learn from others. Other authors consider the integration of knowledge acquisition and their assimilation through organizational changes (Kreiser, 2011; Pérez López et al., 2004). Regarding their development, the literature review on the articles published between 1970 – 2009 performed by Flores et al. (2012) identifies six sub-process that capture the entire learning cycle: information acquisition, distribution, interpretation, integration, organizational memory, and institutionalization. Thus, OL includes multiple aspects but tends to include creation, acquisition, and assimilation as central aspects of the process, manifesting in different ways as cognitions, routines, and behaviors (Argote, 2011) enable an organization to improve their performance (Real et al., 2006).

The concept of OL has been expanded across the literature, where knowledge has been developed at the individual and organizational level, as well as the impact of the company's strategic management (Fiol & Lyles, 1985), its collective learning conditions (Senge, 1991),

and it is understanding typology: 1) organizational, 2) learning at work, 3) climate, and 4) (Örtenblad, 2002) measuring the dimensions of OL at the individual, group and organizational levels (Kim et al., 2015; Menezes et al., 2011; Song et al., 2009; Watkins & Marsick, 1993). Thus, OL literature has grown whilst considering these foundational and theoretical perspectives.

This research focuses on the acquisition and assimilation aspects of organizational learning, considering external knowledge and learning from others. This orientation is associated and aligned with SMEs' strategic thinking and goals, allowing to take full advantage of market opportunities (Altinay et al., 2016). Furthermore, the SMEs' capabilities lead to gradual learning when a knowledge network can expand their organizational boundaries and build up exploratory and exploitative learning (Klewitz, 2017). Furthermore, this orientation can provide essential benefits for SMEs in their adaptation capacity and enhance their possibilities to achieve competitive advantages (Dada & Fogg, 2016).

Furthermore, evidence of OL in SMEs shows different aspects. A positive effect is observed on innovation performance (Abdul-Halim et al., 2019; Gomes et al., 2017; Tian et al., 2020) with learning as a background. Also, García-Morales et al.'s (2012) research of Spanish firms shows OL provides tools to reinvent their process, avoid stagnation, and permit organizational innovation. Similar positive effects are found in Ur Rehman et al.'s (2019) research in Malaysian SMEs, highlighting SME managers' leadership style and organizational commitment in this process, as in the same case of Begum et al.'s (2020) investigation in Chinese SMEs.

The scholars have shown that external learning (learning from other sources) contributes to creating organizational sustainability development conditions (Smith & Smith, 2012). The effects of OL adoption and environmental issues have some interesting evidence. Muñoz-Pascual et al.'s (2019) research in Portuguese SMEs found a positive effect, but it is impossible to adopt without the appropriate information systems and external knowledge assimilation. Similar results are reported in Italian manufacturing SMEs by Scipioni et al. (2021).

Under the context of CE, their core interpretation is the holistic transformation of environmental protection to sustainable economic development, including reducing, reuse, and recycling activities in production, circulation, and consumption (Jiao & Boons, 2014). OL processes oriented to stimulate the cultural transition to CE require inter-organizational cooperation and stakeholder culture perspective to influence internal personnel and organizational structures (Scipioni et al., 2021). Moreover, OL can be an important factor for successfully implementing CE in the supply chain but must be accomplished by employee training, knowledge acquisition, and collaboration with partners (Oelze et al., 2016). In the Chilean case, the evidence of OL and CE is null. OL development approaches their influence on exporting SMEs' internationalization (Cancino, 2014; Pino et al., 2020) and developing innovation capabilities (Carrasco-Carvajal & Garciá-Pérez-De-Lema, 2021). In accordance with these findings, and to shed more light in the Chilean context, the following hypothesis is formulated:

H2: Organizational learning (OL) has a positive and significant influence on the Circular economy’s development (CE).

5.3.3 Circular Economy and competitive advantages

One of the principal concerns for companies is maintaining and enhancing their competitiveness in a global market. A company's competitiveness is the capability of a firm to fulfill a double purpose: meeting and satisfying customer requirements and be profitable (Vlachvei et al., 2016). In practical terms, competitiveness reflects a company's position in their interaction with competitors, customers, regulation, technology, and suppliers (O'Shannassy, 2008). This position can translate into a competitive advantage and exploit their resources and capabilities (Newbert, 2008), allowing a company to achieve superior performance (Sigalas & Pekka Economou, 2013).

In the SMEs' context, competitiveness tends to be a critical issue; production costs, quality, product range, or delivery services are important areas for development and improvement (R. Singh et al., 2010). In this way, the capacity to exploit their human resources and the appropriate formation and training of their employees is critical to achieving high performance (Taçoğlu et al., 2019). However, the competitiveness measurement depends on a company's characteristics. For example, there is a correlation between company size and the employed competitiveness measurement method. Therefore, it is more suitable to use simpler and less demanding methods for smaller companies (Kožená & Chládek, 2017). Moreover, Ritchie & Brindley's (2005) research states the impact of cultural differences (barriers, constraints, and facilitators) on SME competitiveness. Their interaction with influencing variables such as gender or age generates context when evaluating SMEs' competitiveness in different regions.

Under this context, CE can become a source of competitive advantage for SMEs. For example, in their theoretical review of CE business models, Lahti et al. (2018) suggest that companies interested in circular or sustainable business will have enormous potential to stake a claim on their markets, leading to profits and long-term competitiveness. Sharma et al.'s (2021) research in Indian SMEs shows that green initiatives are significant, believing that leads to competitive advantage depending on the SMEs resources -for example- to recycle their products and exploit the materials used. The experience of Scotland's CE plan, studied by Whicher et al. (2018), shows a deeper engagement of stakeholders in their development. However, it is unclear how the sentiments expressed in the strategic plans filter through to SMEs, being a pending issue, identifying their influence on the expectations of SMEs. CE can be a favorable framework for following sustainable development objectives and improve competitiveness, whilst reducing the environmental impact (Sarfraz et al., 2021) if said SMEs trust their development and thus achieve the potential positive effects.

In the Chilean case, the evidence is only limited to the South American context, where Betancourt Morales & Zartha Sossa (2020) perform an extensive literature review on CE, demonstrating: 1) conceptual errors, 2) unclear implementation, 3) technical and economic barriers for small companies. These aspects hamper the possibilities of developing CE as a competitive advantage. Therefore, and in line with the previous research linking competitiveness and CE, whilst considering their different scope levels, the following hypothesis is generated:

H3: The adoption of Circular Economy (CE) by SMEs will lead to the achievement of a competitive advantage.

5.3.4 Competitive advantages and market performance

The existing literature has well-documented the positive effects of competitive advantages on performance, providing a firm with the wherewithal to outperforms its competitors (Zhou et al., 2009). Furthermore, the business performance has a multi-dimensional approach, considering the market, financial, and customers measurement (Fraj-Andrés et al., 2009). Under this context, this study assesses the dimension of market performance.

This latter, is the ability to satisfy and retain customers offering quality products and services of a company (Moorman & Rust, 1999). Their measurement captures the customer relationship (satisfaction, loyalty, retention) and market development (share, share growth, sales revenue). In addition, these metrics are appropriate to reflect the adaptation to a changing environment (Moorman & Rust, 1999; O'Sullivan & Abela, 2007).

Developing a competitive advantage based on environmental sustainability can attain market performance (Hussain et al., 2020). Competitive advantages that result from implementing green or eco-friendly actions (distinguish themselves from greenwash-driven competitors or superficial activities) positively affect SMEs' market performance (Papadas et al., 2019). In this way, when competitive advantages derived from environmental strategies or activities generate benefits to customers (cost savings, added value), it improves a company's market performance through their reputation and the increasing demand from environmentally aware consumers (Junquera & Barba-Sánchez, 2018). In this context, CE actions as: 1) waste reduction and elimination, 2) stimulate resources recovery and reuse, 3) promote dematerialization, can generate sustainable competitive advantages, which improve the market performance of a company if they can exploit and communicate appropriately (Huang & Li, 2017).

In the SMEs' context, the competitive advantage derived from their transition to CE can benefit their market performance. For example, the 'green image' recognition from the customers depends on how well the CE implementation process is supported by company culture with a green mindset (Rizos et al., 2015). Furthermore, Zamfir et al. (2017) identify how CE practices in SMEs such as renewable energy use, minimizing waste, and reducing materials can transform into competitive advantages, enhancing their market performance when there is favorable business context, organizational commitment, and investment.

However, to develop successful competitive advantages, which lead to higher market performance, SMEs face different challenges. Lesakova's (2019) research in Slovakian SMEs shows the necessity to improve ways for developing knowledge transfer. This lack of knowledge generates main problems in SMEs such as: 1) low level of waste recycling, 2) low share of renewable energy sources use, and 3) low redesign of products or services to minimize material inputs and to use recycled materials more efficiently. According to the author, these difficulties hamstring the possibility of developing sustainable competitive advantages and translating into not achieving a higher market position. Similarly, Cantú et al. (2021) find that

SMEs' competitive advantages based on circular initiatives must be aligned with their business models and contextual conditions. For the researchers, SMEs should consider the national context's specific attributes, such as the available infrastructure, the current regulations, and consumer characteristics and preferences. Indeed, a competitive advantage derived from adopting green business practices can yield economic and non-economic benefits if adequately implemented (Leonidou et al., 2017).

Regarding the case of Chilean SMEs, the studies bridge the technological capabilities (Bianchi et al., 2017) and supply chain aspects (Didonet et al., 2014) to develop competitive advantages and thus affect organizational performance. Therefore, it does not approach the development of competitive advantages based on CE and their effects on market performance. In this context, the proposed hypothesis is:

H4: The achievement of a competitive advantage by SMEs, which is derived from CE development, has a positive influence on SMEs' market performance

5.3.5 The moderating effect of SMEs age in the learning process

SMEs are entities in continuous transformation and development, according to their resources and capabilities. Their tenure (reflected in their experiences and management) leads SMEs to market maturation in this context. As a consequence of this process, SMEs learn of their success, failures, and interaction through their environment and stakeholders (Thornhill & Amit, 2003).

In this scenario, the effect of age on the SMEs' knowledge is studied in different topics, showing different scopes as a moderator. About innovation, Messeni Petruzzelli et al. (2018) find a moderating role of 'firm age' in the relationship between knowledge maturity and innovation value (Arora et al., 2009). Therefore, firm age is beneficial for SMEs' innovation development when employing mature knowledge. Regarding internationalization, Santoro et al.'s (2019) research shows that age does not present a moderating effect in the relationship between knowledge sourcing and internationalization, thus not supporting this hypothesis in Italian SMEs. This evidence extends the findings of Love et al. (2016) regarding the SMEs' negative direct effect on internationalization.

In contrast, direct evidence is not found of the moderating role of the effects of a firms' age on the relationship between learning (development and/or acquisition) and the Circular Economy in SMEs. One of the scarce studies that analyze firm age and environmental issues in SMEs is developed by Laforet, (2013); study that shows that organizational innovation outcomes do not have an adverse environmental impact, independent of firm age. In this sense, there is a knowledge gap on the effect of the SMEs' age in the relationship between learning aspects and the Circular Economy. Regarding the antecedents mentioned above, the proposed hypotheses are:

H5a: The SMEs' age moderates the relationship between Learning Orientation (LO) and Circular Economy (CE).

H5b: The SMEs' age moderates the relationship between Organizational Learning (LO) and Circular Economic (CE).

5.3.6 Control variables: Environmental business strategy and COVID-19 context

The circular economy can be considered as the implementation of environmental business strategies, but it does not necessarily come from the development of environmental business strategies. The environmental business strategy does not constitute a pre-condition to implementing circular economy practices (Kalmykova et al., 2018). These strategies start from top-down, have a long-range focus, direct organizational capacity towards environmental objectives, and require a broad organizational commitment to address companies' environmental impact. In retrospect, circular practices look for business costs, technologies, processes and are oriented to short-term results and specific solutions (Nulkar, 2014). Therefore, considering that CE can be developed as a tactical plan, it becomes relevant to analyze the environmental business strategy development in SMEs as a control variable in the model.

In addition, the pandemic brings several adverse socio-economic effects, affecting diverse industrial sectors (Nicola et al., 2020), where one of the most affected are SMEs (Razumovskaia et al., 2020). The difficulties in operating and demand reduction due to lockdown measures reduce these companies' incomes dramatically, making it complex to maintain their workforce (Strange, 2020). Considering the importance of resources and capabilities to implement CE in managerial aspects (Rizos et al., 2015), this research evaluates incomes and employee reduction as control variables.

The pandemic has evidenced that the public needs to count on more resilient and environmental SMEs, which might give a new boost to the transition towards environmental sustainability (Juergensen et al., 2020). Therefore, this study approaches Circular Economy (CE) implementation, examining the influence of the learning process through Learning Orientation (LO) and Organizational Learning (OL). Knowledge management is an invaluable resource for SMEs to overcome their resource limitations (Desouza & Awazu, 2006; Durst & Edvardsson, 2012). Moreover, examining CE effects on business performance through CA and MP. The research proposed hypotheses are empirically examined through the theoretical model shown in Figure 5.1.

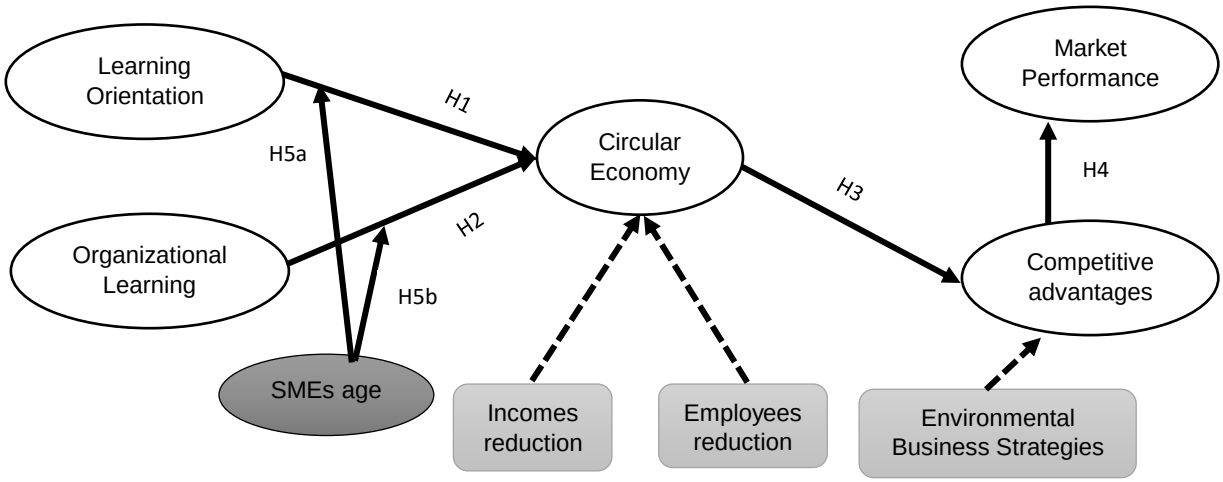


Figure 5.1 Constructed model connecting Circular Economy (CE), their antecedents, and consequences.

5.4 Methodology

5.4.1 Participants and sample characteristics

Research data was collected in Santiago, the country's capital. The city has been affected by the economic situation, which is reflected by the 10.3% unemployment rate (421.530 persons) in the May 2021 – July 2021 trimester (Instituto Nacional de Estadísticas de Chile, 2021b)

The selected population for this study are SME managers and decision-makers from different industrial sectors. In the country's culture, managers tend to be advisory and are considered as the social referent group in terms of opinions in decisions (Nasco et al., 2008). Therefore, the sample frame derives from different public and Chilean governmental databases, which represent (in total) approximately 2,500 SMEs and their contact information. These SME managers were contacted through a detailed email -three times per company- with the study description soliciting their participation in the survey. The data gathered between October 2020 and February 2021 obtained a response rate of 10.23%. After the clean and screen process (missing values, outliers, incomplete sections), a total of 205 SMEs represent the final sample used for analysis. The respondents' general information and companies' characteristics (including the industrial sector, operating years, market type, employee number, and annual incomes) are summarized in tables 5.1 and 5.2.

Table 5.1 Respondent characteristics

Variables	Classification	Sample (n=205)	Percentage (%)
Gender	Female	102	49.8
	Male	103	50.2
Age (years)	18 - 29 years old	18	8.8
	30 - 45 years old	122	59.5
	45 - 64 years old	62	30.2
	65 and above	3	1.5

Education	High school	18	8,8
	Graduate degree	138	67.3
	Postgraduate degree	49	23.9
Experience (years)	1 – 5	31	15.1
	6 – 10	49	23.9
	11 – 20	72	35.1
	>20	53	25.9

Table 5.2 Companies characteristics

Variables	**Industry**	**Sample (n=205)**	**Percentage (%)**
Industrial sectors	Consumer goods	37	18
	Commerce	31	15.1
	Food-retail	29	14.1
	Food-services	18	8.8
	Textile	11	5.4
	Agriculture	9	4.4
	Cosmetics	7	3.4
	Energy and environment	7	3.4
	Construction	6	2.9
	Pharmaceutical	6	2.9
	Technology	6	2.9
	Recycle	3	1.5
	Others	17	8.3
Company (years)	1 – 5	108	52.7
	6 – 10	64	31.2
	11 – 20	15	7.3
	>20	18	8.8
Market type	B2B	21	10.2
	B2C	65	31.7
	Both markets	119	58
Employees (number)	1 – 9	168	82
	10 – 49	29	14.1
	50 – 199	6	2.9
	>200	2	1
Annual incomes*	<80.000€	116	56.6
	80.000€ - 160.000€	24	11.7
	160.000€- 400.000€	25	12.2
	400.000€ - 800.000€	23	11.2
	800.000€ - 3.200.000€	11	5.4
	>3.200.000€	6	2.9

*The annual income is given in Chilean pesos; the exchange rate used is $897.5CLP/EUR (CLP; Chilean pesos), which is the average euro exchange rate for the period which the survey was applied (Oct 2020 – Feb 2021) reported by the Central Bank of Chile.

5.4.2 The pandemic context on SMEs: Description of business repercussions

All society statements suffer the economic repercussions due to the quarantines and lockdown measures, and SMEs are no exception. A concerning fact is the reduction in incomes and employees, with more than two-thirds (67.8%) of companies seeing their revenues reduced. Furthermore, 30.2% (n = 62) of SMEs have lost more than 50% of their income, and 31% of them forcibly having to reduce their number of employees.

Another interesting aspect is the business actions that SMEs are taking in the pandemic. Regarding the business sector, only 8.8% of SMEs (n =18) declare changing their economic sectors since the pandemic began, showing low mobility between sectors. To analyze the pandemic's adaptive business measures, the study uses the scale developed by Saebi et al. (2017) on business adaptations to recessive situations or crises. The most prominent measures are: 1) increased sales effort to new customers, 2) introduction of new products and services, and 3) reorganization. See figure 5.2 for the detail of all measures.

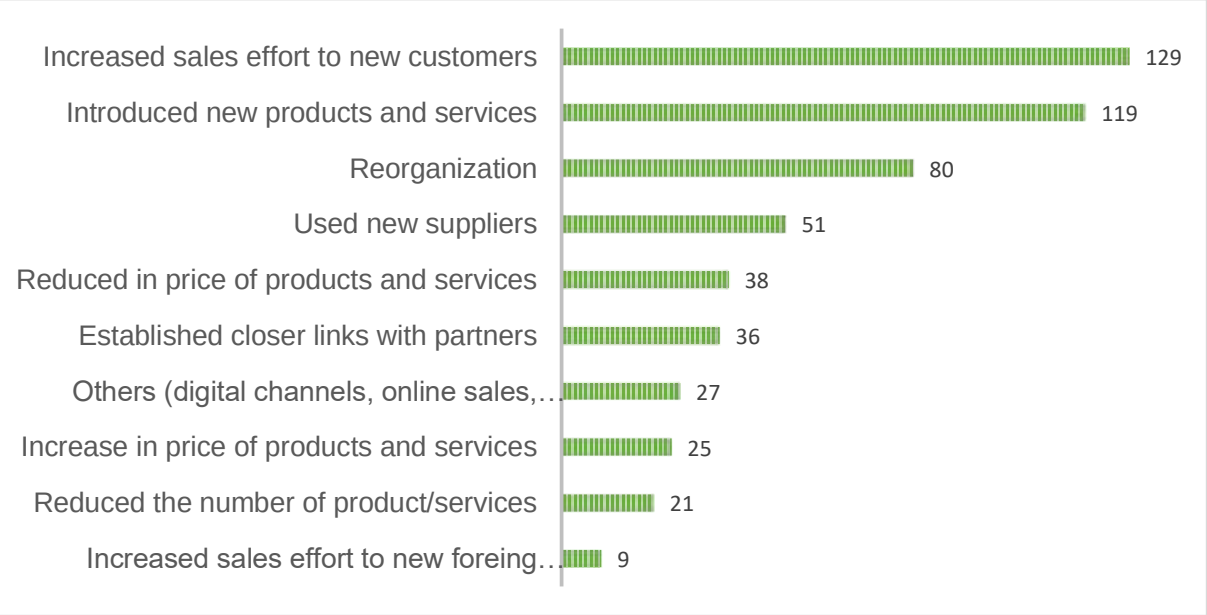


Figure 5.2. SMEs measures to adapt their business to the COVID-19 pandemic.

In summary, the COVID-19 context shows devastating economic effects on SMEs that can affect their strategic behavior, based on the diversity of measures they have taken to overcome this public health crisis.

5.4.3 Survey characteristics and distribution

The questionnaire was developed according to the theoretical background previously discussed. The instrument was divided into two parts. The first part includes general questions about the company, such as firm age, number of employees, industry, market type, incomes, and marketing expenditure. Moreover, it includes questions about the pandemic context as income reduction, employee reduction, and industrial sector change.

The second part of the survey comprises of questions that refer to the constructs' operationalization, developed from the literature review. The items contained in the scales were measured under a 7-point Likert scale (1= strongly disagree to 7= strongly agree) to qualify the responses. Regarding the constructs, LO refers to the creation process and use mechanisms of knowledge in the companies. The five items used were adopted from Laukkanen et al. (2013), while OL comprises how companies learn. The five items covering internal sources, knowledge generation and adoption, and dissemination were adopted from An et al. (2018). The CE is understood as the operationalization of environmental business strategies. This variable was evaluated by seven items focused on CE practices, adopted from Nuñez-Cacho et al.'s (2018) scale. To measure the competitive advantage, the Banerjee et al. (2003); and Leonidou et al.'s (2017) scale were adopted, composed of six items. Regarding performance, considering their broader nature, the seven items of employee market performance were adapted from Leonidou et al. (2017); Moorman & Rust, (1999); and Vorhies & Morgan, (2005). The environmental business strategies were used as a control variable, which was evaluated by seven items focused on incorporating environmental aspects on the strategic plan, organizational objectives, and product development -adopted from Leonidou et al. (2017)-, thus using an average score of these variables. The item details are presented in Appendix D, Table 1.

Data were analyzed using covariance-based structural equation modeling (CB-SEM) to estimate the relationship between variables and verify the proposed model (Tenenhaus, 2008), which was tested using Covariance Based Structural Equation Modeling (CB-SEM). This technique is suitable considering the nature of the research and model characteristics. CB-SEM allows the estimation and fitting of complex model structures compared to the regression analysis structure and is recommended to analyze moderator effects (Hair et al., 2014). This kind of model is appropriate for testing hypotheses and estimate correlations. Furthermore, the method is appropriate when the data has a normal distribution -the covariance-based SEM approach is used regarding the proposed hypotheses' nature (Kaplan, 2012)-. AMOS Software was used to perform the analysis.

5.5 Results

5.5.1 Nonresponse and Common method bias check

As a first step, nonresponse biases were analyzed and checked. This study made several efforts to minimize this type of bias through construct validity, the questionnaire design, and cross-validation (Siemsen et al., 2010). Nonresponse bias was performed using the Mann-Whitney U test, which serves to check if significant differences between the earlier and later respondents affect the study's results (Saini et al., 2020). In this case, comparing the first 50 and the last 50 collected cases. For this purpose, objective variables were used such as company age, employee number, and market type to check possible differences. The three variables were not statistically significant (see table 5.3), where their ρ-values number is greater than .05. These results indicate that the two datasets do not show a significant difference between them, discarding nonresponse bias (Ruxton, 2006).

Table 5.3 Mann-Whitney U test results

Test	company age	employee number	market type
U (Mann-Whitney)	1210	1176.5	1060
W (Wilcoxon)	2485	2451.5	2335
Z	-0.297	-0.563	-1.407
Significance	0.767	0.573	0.159

This research is subject to common method variance (CMV), considering that all constructs were collected from a single respondent (Biderman et al., 2011). To approach the potential CMV effects on independent, dependent, and moderating variables, a non-linear order in the employed survey was distributed (Podsakoff et al., 2003). This variable disposition diminishes the possibilities for respondents to link the variables in the study, limiting the chance that the responses for a set of questions can affect other questions.

To analyze the possibility that CMV could produce bias in the research results, two procedures were undertaken.

First, the Harman single-factor test was developed (see table 5.4). In this analysis, all items were subjected to a single factor. If this first factor does not exceed 50% of the total variance, it can discard the CMB presence (Podsakoff et al., 2003). The results, summarized in table 5.5, showed that the first single factor explains 29.056% of the total variance, discarding the presence and influence of common method bias in the results.

Table 5.4 Indicators of Harman single factor test.

Indicators	Values
Kayser Meyer Olking sampling adequacy measure	0.858
Bartlett sphericity test	3959.267
Df	351
Significance grade	0,00

Table 5.5 Total variance explained (Harman single factor test)

Factor	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative%	Total	% of variance	Cumulative%
1	8.451	31.301	31.301	7.846	29.059	29.056
2	3.749	13.884	45.185			
3	2.99	11.074	56.259			
4	1.968	7.29	63.549			
5	1.347	4.99	73.069			
6	1.223	4.531	75.993			

Second, the marker variable technique was applied following Simmering et al. (2015). To employ this analysis on the environmental framework, a non-ideal marker (having perceptual/subjective and being theoretically related) was utilized as the marker variable (Richardson et al., 2009; Simmering et al., 2015). The analysis compares different CFA models with the marker variable (see table 5.6). Following, the method-C model (constrained model)

does fit significantly better than the baseline model. Therefore, there is evidence of shared CMV between the indicators of substantive variables (model variables) and the latent marker variable. The method-U (unconstrained model) does not fit significantly better than Method-C; CMV is the same for all indicators. Lastly, the method-R model is not statistically significant (LR: 9.52, df = 10, ρ = 0.484) when compared to the method-C model (LR: 35.649, df = 5, ρ = 0.000000002) or method-U model (LR: 70.291, df = 1, ρ = 0.0000005), indicating that the presence of CMV does not skew the relationship between the substantive variables. Therefore, the results imply that CMV is not enough to generate a bias in the research results.

Table 5.6 Model comparisons for CFA Models with marker variable

Model	X^2 (df)	CFI	RMSEA (90% CI)	LR of ΔX^2	Model comparison
CFA with marker	763.991 (335)	0.886	0.079 (0.072-0.087)		
Baseline	827.229 (350)	0.873	0.082 (0.075-0.089)		
Method-C	791.58 (349)	0.882	0.079 (0.072-0.086)	35.649, df=5, ρ=0.000000002	vs Baseline
Method-U	720.679 (327)	0.895	0.077 (0.069-0.084)	70.901, df=1, ρ=0.0000005	vs Method-C
Method-R	730.518 (337)	0.895	0.076 (0.068-0.083)	9.52, df=10, ρ=0.484	vs Method-U

Notes: CFA = Confirmatory factor analysis; CFI: Confirmatory factor analysis; RMSEA: Root mean square error of approximation; LR: Likelihood ratio test; U: Unconstrained; C: Constrained; R: Restricted.

After discarding nonresponse and CMV bias, Structural equation modeling (SEM) was used for data analysis. This analysis was undertaken using IBM AMOS version 18 software.

5.5.2 Constructs: Reliability and validity

To corroborate the internal reliability and the convergent validity of the constructs using different measures, the factor loadings are higher than 0.5 -the recommended value- (Chin, 1998; Hair et al., 2010). The average variance extracted (AVE) estimate values that reflect the latent construct's overall variance amount, are above 0.5, the recommended threshold (Hair et al., 2010). Following, the Composite Reliability (CR) represents how well the selected indicators measure a construct, returns values between 0.83 and 0.93, when the considered threshold value is over 0.7 (Hundleby & Nunnally, 1968). In this way, the five constructs' reliability values that compose the model are greater than the recommended thresholds values (Hair et al., 2010). Table 5.7 summarizes the results.

Table 5.7 Measurement model values

Constructs	Items	Mean	SD	Loading Factors	KMO	Cronbach Alpha	CR	AVE
Learning Orientation	LO1	6.23	1.081	0.921	0.824	0.937	0.933	0.778
	LO2	6.16	1.158	0.94				
	LO3	6.08	1.285	0.827				
	LO4	6.08	1.24	0.835				
Organizational Learning	OL1	5.58	1.478	0.81	0.817	0.826	0.833	0.505
	OL2	5.27	1.425	0.663				
	OL3	5.65	1.529	0.832				
	OL4	5.84	1.46	0.642				
	OL5	4.69	1.912	0.57				
Circular Economy	CE1	5.06	2.164	0.514	0.845	0.874	0.874	0.589
	CE3	4.02	2.33	0.763				
	CE5	3.8	2.142	0.796				
	CE6	4.56	2.156	0.874				
	CE7	4.63	2.153	0.836				
Competitive Advantages	CA2	4.34	2.014	0.743	0.872	0.921	0.926	0.715
	CA3	4.83	1.933	0.752				
	CA4	5.07	1.797	0.879				
	CA5	5.33	1.87	0.979				
	CA6	5.37	1.836	0.853				
Market Performance	MP1	6.02	1.031	0.682	0.827	0.842	0.858	0.556
	MP2	5.76	1.154	0.86				
	MP3	5.94	1.147	0.906				
	MP4	6.23	0.923	0.696				
	MP6	5.04	1.529	0.516				

Notes: The items CE2 (0.484), CE4 (0.49), CA1 (0,482), MP5 (0.487) and MP7 (0.489) were deleted because their loading factors are below 0.5.

In the case of discriminant validity, measuring the distinctness degree of the different constructs was corroborated using the Fornell-Lacker criterion (Voorhees et al., 2016). These criteria establish discriminant validity when the AVE square root score exceeds the correlation value between the constructs. According to table 5.8, discriminant validity was checked for all the constructs, considering that correlation values are less than the AVE square root for each construct.

Table 5.8 Fornell lacker criteria for discriminant validity

Variables	LO	OL	CE	CA	MP
LO	**0.882**	0.481	0.271	0.514	0.165
OL	0.481	**0.711**	0.247	0.391	0.107
CE	0.271	0.247	**0.767**	0.681	0.184
CA	0.514	0.391	0.681	**0.846**	0.178
MP	0.165	0.107	0.184	0.178	**0.746**

Notes: The diagonal represents the square root of AVE values, and the other cells are the correlations. LO: Learning Orientation; OL: Organizational Learning, CE: Circular Economy; CA: Competitive Advantages; MP: Market Performance.

To apply a double-check of discriminant validity, Heterotrait-monotrait (HTMT) ratio was used. These criteria represent the ratio between-trait correlations and within-trait correlations (Hair Jr et al., 2017). The test requires calculating a ratio of the average correlations between constructs to the geometric mean of the average correlations within items of the same constructs (Voorhees et al., 2016). The criterion values do not exceed the 0.85 – 0.9 range, ensuring discriminant validity (Henseler et al., 2015). As can be seen in table 5.9, the HTMT ratio is lower than the established threshold.

Table 5.9 Heterotrait – Monotrait ratio for discriminant validity

Variables	LO	OL	CE	CA	MP
LO					
OL	0.395				
CE	0.323	0.237			
CA	0.211	0.175	0.722		
MP	0.06	0.05	0.198	0.13	

5.5.3 Measurement model

In SEM analysis development, the first stage is to check the measurement model validity. According to Astrachan et al. (2014), it should be assessed by the Goodness Of Fit (GOF) model. In this aspect, as indicated in table 6.9, the ρ-value for X^2 is significant (ρ<0.001). The normed X^2 (CMIN/df) value is 1.512, lower than 5, the threshold value (Marsh & Hocevar, 1985). Comparative Fit Index (CFI) is 0.965, and Normal Fit Index (NFI) is 0.904, higher than acceptance level (>0.9), considered for a good fit model (P. Sharma et al., 2012). The Goodness of Fit Index (GFI) is 0.895, showing a good absolute fit index (Byrne, 2013), and Tucker-Lewis Index (TLI) is 0.958, considered an excellent fit model, takes the model complexity into account (Wickrama et al., 2016). The Standardized Root Mean Square Residual (SRMR) that measures the lack of model fit shows a low value (0.058), and Root Mean Square Error of Approximation (RMSEA) that denote the size of residual (or errors) is 0.05, lower than their recommended cut-off value (<0.08) (Byrne, 2013). These values comply with the requirements for a good model fit.

Table 5.10 Measurement model indices

Model indicators	X^2	CMIN/df	CFI	GFI	NFI	TLI	RMSEA	SRMR
Obtained values	347.84	1.512	0.965	0.895	0.904	0.958	0.05	0.058
Threshold values		<5	≥0.9	≥0.9	≥0.9	≥0.9	<0.05-0.08	≤0.08

Note: CMIN/df: chi-square/df; df: degree of freedom; RMSEA: Root mean square error of approximation; GFI: Goodness of fit index; CFI: Comparative fit index; IFI: Goodness of fit index; TLI: Tucker-Lewis Index; PGFI: Parsimony goodness of fit.

5.5.4 Structural model

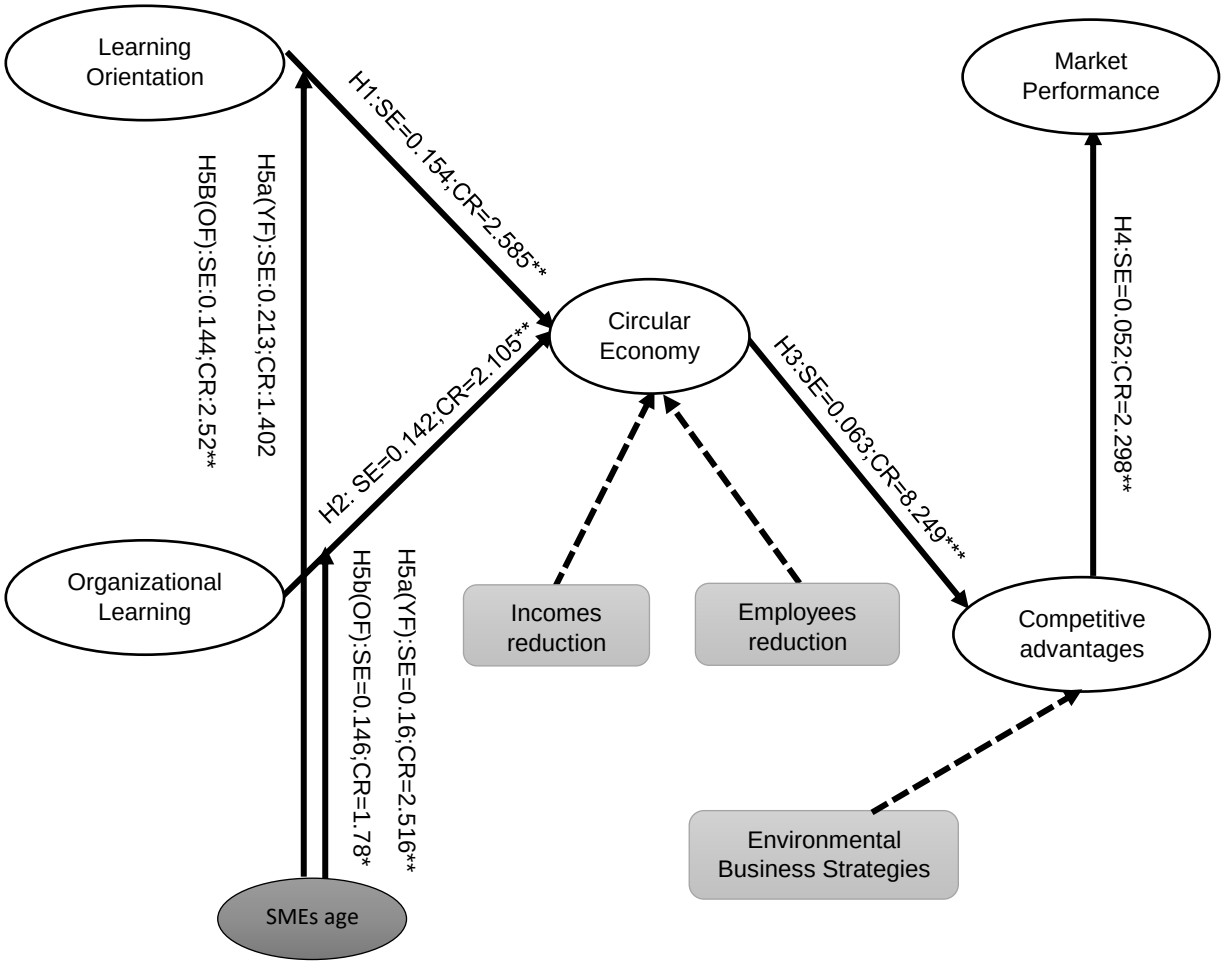
The structural model indicates the causal relationships between the model constructs through SEM analysis. Hence, as a development of this analysis, adjusting indices of the structural model's fit are reported (see table 5.11). The absolute fit indexes show accepted values higher than the thresholds (Hooper et al., 2008). X^2 is significant at (ρ<0.001) according to the ρ-value, normed X^2 is 1.94, GFI is 0.861. The value of GFI is less than 0.9, but higher than 0.8, which is considered a reasonable fit (Doll et al., 1995). The incremental fit exhibits a good fit level (CFI = 0.932; TLI = 0.923), and Parsimony Fit index shows a good level, higher than 0.5 (Mulaik et al., 1989) (PGFI = 0.689). The values of RMSEA and SMRS are 0.068 and 0.08, below the cut-off points. Therefore, the results confirm the fitness model (Hair et al., 2014).

Table 5.11 Structural model indices

Model indicators	X^2	CMIN/df	CFI	GFI	NFI	TLI	PGFI	RMSEA	SRMR
Obtained values	471.48	1.94	0.932	0.851	0.87	0.923	0.689	0.068	0.08
Threshold values	<5		≥0.9	≥0.9	≥0.9	≥0.9		<0.05-0.08	≤0.08

Note: CMIN/df: chi-square/df; df: degree of freedom; RMSEA: Root mean square error of approximation; GFI: Goodness of fit index; CFI: Comparative fit index; IFI: Goodness of fit index; TLI: Tucker-Lewis Index; PGFI: Parsimony goodness of fit.

To test the proposed hypothesis (showed in figure 6.3), the maximum likelihood estimation was used, based on standard error (ER) and critical ratio (CR), whose measurement shows the path significance level (summarized in table x). In the case of H1, the path coefficient scores (SE = 0.154; CR = 2.585; ρ = **) suggest a significant positive effect of LO in GBS. Considering the values, H1 is supported. Similarly, the scores for H2 (SE = 0.142; CR = 2.105; ρ = **) supports the hypothesis. In the case of H3 (SE = 0.063; CR = 8.249; ρ = **) the values support the hypothesis. H4 (SE = 0.052; CR = 2.298; ρ = **) is in the same line and is supported. The hypothesis summary is presented in Table 5.12.



Note: YF: Younger firms; OF: Older firms; Significance level *** = p<0.001; ** = p<0.05; = * p<0.1; n.s. = not significant

Figure 5.3. Structural model

Table 5.12 SEM estimations of the proposed hypothesis.

Hypothesis	Structural Path	Estimate	*p*-value	SE	CR	Decision
H1	LO → CE	0.218	0.01**	0.154	2.585	Supported
H2	OL → CE	0.185	0.035**	0.142	2.105	Supported
H3	CE → CA	0.656	***	0.063	8.249	Supported
H4	CA → MP	0.174	0.022**	0.052	2.298	Supported

Note: Significance level *** = p<0.001; ** = p<0.05; = * p<0.1; n.s. = not significant

5.5.5 Age firms: The role on SMEs learning process

A multi-group analysis using the chi-square difference method was employed to examine the moderating effect of age in SMEs, comparing the effects of experienced firms with the younger ones. The median was used as the cut-off point, the most common approach to defining older and younger firms (Ismail & Jenatabadi, 2014). In this case, the obtained median

is five years. Thus, it is a point to consider according to the sample characteristics and SMEs' age distribution.

Moreover, this value is justified from the SMEs dynamism in the Chilean market, that only 50% survive after five years of operations (Arellano & Carrasco, 2014). This value is used to classify SMEs into two categories: SMEs with fewer than five years in the market are named younger firms, and SMEs with five or more years are called older firms. In a first step, the study checks if an SMEs' age produces differences at the model level through the configural invariance measurement test (see table 5.13), which allows to examine if the overall structure holds up similarly for a moderator variable (Cheung & Rensvold, 2002).

Table 5.13 Configural invariance test

Overall model	χ^2	df	p-value	Invariant
Unconstrained	63.102	10		
Fully constrained	72.998	14		
Number of groups		2		
Difference	9.896	4	0.042**	NO

Note: Significance level *** = p<0.001; ** = p<0.05; = * p<0.1; n.s. = not significant

The results show that the two models differed across the younger and older SMEs age groups (see table 5.14). Regarding the proposed hypothesis, in the case of H5a, the results for younger firms (SE = 0.13; CR = 1.402; ρ = n.s) suggest that SMEs' age does not significantly affect the relationship between LO and CE for younger firms. In contrast, for older firms (SE = 0.087; CR = 2.522; ρ =**), the obtained scores indicate that the SMEs' age has a significant and positive effect on the relationship between LO and CE. For H4b, the results of moderation analysis for SMEs age on the relationship between OL and CE suggest for younger firms (SE = 0.107; CR = 2.516; ρ = **) and older firms (SE = 0.098; CE = 1.78; ρ = *) that SMEs age has a significant and positive effect to both groups (in the older groups is significant at 90% level), where it is slightly stronger in younger firms.

Table 5.14 Moderator estimations

Hypothesis	Group	Structural Path	Estimate	*p*-value	SE	CR	Decision
H5a	Younger firms	LO → CE	0.135	0.161 (n.s.)	0.13	1.402	Not supported
H5a	Older firms	LO → CE	0.264	0.012 **	0.087	2.522	Supported
H5b	Younger firms	OL → CE	0.242	0.012 **	0.107	2.516	Supported
H5b	Older firms	OL → CE	0.186	0.075 *	0.098	1.78	Supported

Note: Significance level *** = p<0.001; ** = p<0.05; = * p<0.1; n.s. = not significant

These results represent the analysis for each group separately. Therefore, by undertaking an interaction analysis about the relationship between 1) LO and CE, and 2) OL and CE, to check whether the difference between the younger and older groups is significant. The results

(see table 5.15) show that SMEs' age does not present an interaction effect between OL and CE. Therefore, the analysis of this relationship requires further studies considering the research context.

Table 5.15 Interaction effect of SMEs age

Test	Structural Path	Estimate	*p*-value	SE	CR
Interaction effect	LO*AGE → CE	0.017	0.815	0.072	0.234
Interaction effect	OL*AGE → CE	-0.047	0.512	0.073	-0.656

5.5.6 Control variables

This research evaluates some factors that can affect the Circular Economy practices implementation and competitive advantages generation. In the first place, the investigation evaluates the effect of environmentally sustainable strategies development on competitive advantages. This research focuses on the practical perspective of environmentally sustainable strategies as the Circular Economy. The CE implementation does not always come from an environmental business strategy or is developed with a strategic view of environmental sustainability. CE should be part of the SMEs strategy for building a competitive advantage but depends on the market conditions, stakeholders pressure, firm's resources, capabilities and competencies, and technological development (Prieto-Sandoval et al., 2019). CE can develop for multiples purposes: economic prosperity, environmental quality, social equity, and future generations' concern (Kirchherr et al., 2017). Therefore, it becomes relevant if the development of Environmental business strategies (reflected in their plan, objectives, products development) affects the lasting competitive advantages generation. The results show a significant positive effect of Environmental Business Strategies development in competitive advantages (see table 5.16), and shed light on the strategic importance of their development on SMEs

Table 5.16 Control effect variables: Environmental Business Strategies development

Control effect	Variable	Estimate	*p*-value	SE	CR	Decision
Environmental Business Strategies	CA	0.58	***	0.083	7.022	Supported

Note: Significance level *** = $p<0.001$; ** = $p<0.05$; = * $p<0.1$; n.s. = not significant

In the second place, the study evaluates the factors triggered by the pandemic that can affect the Circular Economy practices, such as income and employee reduction. There is still little knowledge of how firms adapt their business models to external threats and opportunities (Saebi et al., 2017). Regarding CE perception, 63.4% of SME managers consider that CE allows for more competitiveness. 33.2% of these managers believe that this competitiveness will be generated in the mid-long term, whereas only 3.4% believe that CE does not generate competitive advantages. However, the pandemic produces economic detriment on SMEs and becomes relevant to understanding their effects on environmental issues development.

The results for income reduction (SE = 0.062; CR = 0.094; ρ = n.s.), and employee reduction (SE = 0.062; CR = -0.264; ρ = n.s.) does not have a significant effect on the CE practices (see table 5.17). The results show that income reduction does not significantly affect

the development of Circular Economy practices. This finding can be explained from the perspective of how SMEs circular economy practices have a low degree of circularity, focused on the activities that do not involve financial resource investment (Garza-Reyes et al., 2019), considering that only 12.7% of SMEs have environmental certifications (e.g., IS0 14001).

Table 5.17 Control effect variables COVID-19 context

Control effect	Variable	Estimate	*p*-value	SE	CR	Decision
Incomes reduction	CE	0.09	0.925 (n.s.)	0.062	0.094	Not supported
Employees reduction	CE	-0.016	0.792 (n.s.)	0.062	-0.264	Not supported

Note: Significance level *** = ρ <0.001; ** = ρ <0.05; = * ρ <0.1; n.s. = not significant

5.6 Findings and discussion

This research aims to examine CE in SMEs, taking the Chilean case closely. It also: 1) explored the effects of learning orientation and organizational learning in circular economy development and 2) the influence of CE business strategies on competitive advantages and market performance. A full review of the variables was developed based on the literature. In a second step, it analyzes the SMEs' age role in CE. Therefore, this research employs SEM analysis to corroborate the proposed hypothesis.

The analysis of H1 found a significant and positive effect of LO in CE among managers in Chile. The findings are consistent with the literature about LO and environmental aspects on other latitudes (Ardito & Dangelico, 2018; Feng et al., 2014; J. Wang et al., 2020), considering CE's scarce evidence in SMEs. Furthermore, the findings reflect that SME managers consider the development of the learning process within the companies can be a mechanism in the transition to CE, consistent with Ünal et al. (2019). Thus, the LO represents an orientation to develop formal mechanisms to acquire and develop knowledge by SME managers. In this way, the development of LO should consider the contingency and constructivism theory perspectives. CE represents a contingency factor in this unexpected scenario. However, SMEs must develop CE, considering their experiences and under their business context, characteristics and cultural conditions (Cantú et al., 2021; Lesakova, 2019). LO represents a development factor of SMEs to respond to the complex challenges derived from CE.

In the case of H2, the findings support a significant effect of OL, the external knowledge assimilation and acquisition, and on CE (with a minor effect compared to LO). Moreover, the prevailing environmental literature supports this result (Aragón-Correa et al., 2008; Leonidou et al., 2017) and CE evidence (Scipioni et al., 2021; Yusoff et al., 2019). In this sense, OL is considered a required pre-condition to implement high circularity and environmental management systems due to the relevance of companies' predisposition to external learning (Burström Von Malmborg, 2002). SMEs managers recognize the relevance of learning about their environment, stakeholders, and other companies. However, it is important to denote the low valuation about the relationship with stakeholders to acquire knowledge. In this sense, the acquisition stage of the OL process show severe deficiencies at the company level, with SMEs developed under a limited context of collaboration. If the acquisition process does not present

a continuous flow in SMEs, it become extremely difficult to assimilate knowledge that can develop CE at the practical level; cognitive, routines and behavior that promote CE at the managerial level, in line with Argote's (2011) theoretical development of expected OL result stages.

Therefore, approaching RQ1, the learning process could generate new opportunities and resilience to drastic environmental changes, promoting CE implementation in SMEs. Internal and external sides of the learning process (LO and OL) are relevant for SMEs. In practical terms, these aspects are reflected in the need for formal mechanisms, which must be accomplished by a predisposition to learn from other society industrial actors.

Considering the relevance of the learning process previously mentioned, H5a and H5b hypotheses test the moderator effects of SMEs' age in learning process development, comparing younger firms (less than five operation years) and older firms (more than five operation years). In the case of Chile, according to a report from the Commercial and Policy division of the Ministry of Economy; 15.2% of SMEs do not survive the first year-life, 14.8% the second year, 9.4% the third year, with only 40% surviving more than five years (Arellano & Carrasco, 2014). Therefore, this aspect sustains the presented cut-off point, considering the country's characteristics.

The H5a proposes the moderator effect of SMEs' age in LO. According to the results, the SMEs' age is significant only for the older firms of the sample. These firms have more structured processes to knowledge management, having mechanisms to acquire, manage, and disseminate knowledge as a continuous and evolving process (Nunes et al., 2013; Sirén et al., 2017). These firms have more stable conditions and more solvency to invest in improving their internal structure and processes (Kücher et al., 2020) as the consolidation of LO. These results show the behavior for the groups separately. Therefore, an interaction analysis was performed to check this difference. The results do not show significant differences. In the literature, the interaction effect of SMEs age in the learning process has been studied on themes as innovation (Aziz & Samad, 2016) and internationalization (D'Angelo & Presutti, 2019; Lu & Beamish, 2006; Santoro et al., 2021). However, the evidence in environmental aspects is scarce (Laforet, 2013) and does not directly approach CE, requiring further studies.

In the case of H5b, the results show that the SMEs' age does not have a moderation role between OL and CE (presenting more significance in younger firms). This result is consistent with the transversal importance of learning from others, independent of their stage of maturity (Abdul-Halim et al., 2019; Altinay et al., 2016; Valdez-Juárez et al., 2019). In this context, this outcome aligns with the typologies of understanding development as seen in Örtenblad (2002). The climate and structures depend on the managerial characteristics of the companies, and the capability to learn from external sources is an essential condition for CE development. In this context, the managers' motivation represents the first little step to CE development.

Therefore, approaching RQ2, the OL and LO present differences in their development, whilst considering SME age within the groups (younger and older firms), but does not present an interaction effect. However, further research is required to deepen the relationship between these variables. Nonetheless, one counterpoint to consider in the approach of RQ2 is the

achievement of a genuine CE, reflected at the circularity level. SMEs can completely exploit their learning resources and capabilities from internal and external sources in a developed stage (Dada & Fogg, 2016). However, a developed learning structure is required to exploit inter-organizational learning processes to implement high circularity practices linked to technologies, environmental management systems, and measurement schemes (Scipioni et al., 2021). The organizational efforts to learn without a structure tends to be associated with low circularity actions (recycle, recover), generating a limited contribution to global decoupling and environmental degradation (Antikainen et al., 2018). This action can create rebound effects, where the less consumption of unsustainable goods is replaced by the incentive to consume greener or sustainable products, offsetting the benefits of CE (Junnila et al., 2018). Therefore, this research shows that the SMEs' age influences the internal side of the learning process within the groups. However, it requires deepening in the characteristics of this relationship. Nevertheless, care must be taken considering the limitations of the sample.

In the case of RQ3, this research found positive evidence for CE's effects in CA (H3). This finding is consistent with previous research (Cantele & Zardini, 2018; Chacón Vargas et al., 2018; Ko & Liu, 2017). In this way, CE implementation can provide cost savings and promote product/service differentiation while contributing to environmental situations (Brammer et al., 2012; Simpson et al., 2004). These positive associations of CE in CA highlight that Chilean SME managers strongly believe in CE's potential (shown in their valuation about their importance). However, some points are relevant to denote in this optimistic scenario. First, SME managers manifest the application of CE activities. However, there is a low conversion to environmental certifications. This aspect indicates that it does not have a differential aspect in the market, considering the low adoption level. Second, this environment is an incentive to develop low circularity activities (that do not involve higher investment or financial resources spent). Achieving a perfect circularity model becomes incompatible with economic growth. It requires that resource input come from sustainable sources and processes (recovered, renewable), and generally produces a reduction in material demand (Korhonen, Honkasalo, et al., 2018). However, the progression in CE hierarchy implies benefits for the environment.

Finally, this study found a positive and significant influence for CA in MP (H4), validating this hypothesis. The results indicate that a competitive advantage derived from CE development strengthens the market performance of SMEs, in the same line with Dey et al. (2020). However, the estimated value is relatively lower in comparison to the relationship between CE and CA. This result is consistent with Chilean SME managers' attitudes and beliefs. The managers consider that CE development (as a competitive advantage) can contribute to their business performance in the market but in the mid and long-term -a future perspective-. In this context, the customers recently are incorporating the environmental aspects in their purchasing behavior. Therefore, how SMEs respond to the customers' needs about the environmental information of products and services influence their perception and the evaluation of SMEs' environmental actions and behaviors (Francesco Caputo et al., 2018). In this context, the major challenge is transforming a competitive advantage based on CE into a differentiating factor in the market. This result reaffirms the relevance of developing competitive advantages based on CE practices, which can positively affect SMEs on customer's measurement (satisfaction, retention, loyalty, reputation) and market share

(Leonidou et al., 2017). However, it is a bidirectional relationship. SME managers need to believe in CE's potential to improve their market positions (Wijethilake, 2017), and their customers must be engaged with the global environmental situation.

In summary, the research findings of Chilean SME managers suggest that: 1) LO and OL have a positive and significant influence on CE, 2) SMEs' age has a moderator role only on LO (within the groups), not showing an interaction effect, 3) CE has a strong positive and significant influence on CA, and 4) CA has a positive and significant influence on MP.

5.7 Conclusions and limitations

The global environmental context is concerning, and the pandemic has generated detrimental economic and environmental effects that aggravate the situation. This research contributes by offering insights on: 1) SMEs' learning process and their role in CE development, 2) CE effects on competitive advantages and market performance.

From the business managers' and public-policies perspective, these research findings - performed in the pandemic context- provide some insight into CE development. First, an integrative view of LO and OL can encourage CE implementation in SMEs. The development of these orientations allows SMEs to achieve an upper level of circularity in their processes. However, the SMEs' age generates differences within the groups regarding LO. In this sense, SMEs in a stage of maturity can develop a formal mechanism to acquire knowledge, exploit, and disseminate from different sources. Therefore, it is essential to efficiently develop environmental public policies in SMEs, allocating resources on knowledge transfer processes. However, these findings require a deepen analysis in future research. The sample has some limitations due to the difficulties of collecting data in the pandemic context. For example, the age cut-off point between the two groups needs to be extended to ten years for a more robust comparison.

Second, SMEs are showing a positive attitude towards CE. These companies rely on their potential organizational benefits, independent of the pandemic context. In this way, there is a basis for CE development. However, creating an environmental network supporting their efforts and promoting a higher level of SME circularity is essential. SMEs need to cultivate capabilities and skills to leverage their flexibility in responding to market needs and social demands; if organizational initiatives do not follow the customer's environmental concern, this could harm the SMEs' resilience and sustainability (Gregurec et al., 2021). In this context, the way to transform CE as a market differentiator is only just beginning in the Chilean SMEs context. These findings could help SMEs, policymakers, and practitioners plan, design, and implement CE in SMEs.

This study, theoretically, analyzes CE development in SMEs by examining the learning process's role (through OL and LO) and their organizational consequences in CA and MP. The literature of CE in SMEs have either debated about drivers, barriers, and enablers of CE implementation (Caldera et al., 2019; de Jesus & Mendonça, 2018; Oncioiu et al., 2018; Ormazabal et al., 2018; Rizos et al., 2015) and has paid less attention to the study of the learning process that is actually limited (Scipioni et al., 2021). However, this study 1) provides

an integrated perspective of how SMEs develop, acquire, incorporate, and disseminate knowledge within the organization and their influence on CE adoption, and 2) examines the benefits of CE perception of SMEs in terms of CA and MP.

Moreover, this research studies the effect of SMEs' age in LO and OL. The literature does not entirely address this relevant link, which is a crucial part of the SMEs' evolution (Deakins & Freel, 1998; Wienbruch et al., 2018). Therefore, this contribution can offer fresh evidence and perspective of SMEs' development processes to deepen and enrich CE literature insights. Therefore, this study has several contributions from the CE's theoretical and managerial perspectives in a developing country as Chile.

Despite these research contributions, this study is subject to limitations that provide possible directions for future research. The cross-sectional nature of the sample is a limitation for understanding and testing the long-term implications of CE. Further research should consider a longitudinal characteristic. Moreover, the research sample is restricted to 205 respondents, due to the pandemic context and its inherent difficulties. Furthermore, this aspect generates a practical limitation regarding the SMEs' age distribution. Therefore, this research has a general focus, considering various economic sectors to explore the situation of Chilean SMEs. In this sense, a future investigation may target specific industries/sectors (e.g., textile, manufacture, supply-food, commerce) and determine a more extensive SME age distribution.

Another limitation is that performance indicators have been measured using self-reported data of the surveyed SME managers. Future research could consider objective indicators. Finally, the data was collected in Chile; hence further research should consider other regions to overcome this limitation.

CHAPTER 6:

THESIS GENERAL CONCLUSIONS

6. Thesis General conclusions

6.1 Main conclusions

This thesis aims to study the antecedents and organizational consequences of Sustainable Business Strategies (SBS) in SMEs while considering their limitations and resources. Under the objective to understand the behavior of SMEs, a two-phase study was undertaken.

The first phase consisted of a qualitative study that employed multiple case studies through in-depth interviews in Catalonia and Santiago; to better understand the complex phenomenon of environmental sustainability (ES). Using thematic analysis and nodes clusterization, we can interpret the perceptions, motivations, topics, and themes that emerged from the in-depth interviews. The second phase consisted of a quantitative study, conducted through surveys to SME managers, employing quantitative methodologies such as Covariance Based Structural Equation modeling (CB-SEM) to analyze the SMEs' responses.

The general conclusions of the thesis are that the development of environmentally sustainable business strategies in SMEs are highly conditioned by: 1) the engagement with SMEs' reality of environmental framework in the countries, 2) the attitudes and beliefs of SME managers of ES, and how it affects their business, 3) the stakeholder´s pressure on environmental themes, and 4) the learning process development to reduce the gap of environmental knowledge, and 5) the alignment of production and consumption patterns towards an environmental commitment. However, these diverse aspects have been partially and insufficiently addressed in the SME context.

The SME managers' mentality on environmental aspects and the perception of their benefits are crucial, which are moderated by the environmental client's pressures, consistent with Chen & Liu's (2020) research. This reality is developed under an environmental regulatory framework that does not consider the reality of SMEs, nor their lack of resources and capabilities (Filho et al., 2017; Parnell et al., 2015) -in lieu of the literature review by Margallo et al. (2019)-. This disconnection is heightened due to the gap in environmental knowledge; the lack of technical knowledge to extend the life cycle of their products and services hence reflected in a limited implementation of Circular Economy (CE) practices

. Furthermore, this aspect is seen in the current deficient level of SME waste management, which translates into low circularity actions and tactics such as recycling or recovery, focusing on mitigating environmental impacts instead of preventing or reducing waste (Korhonen, Honkasalo, et al., 2018). In this sense, the environmental learning process is critical. From the inner perspective of the learning process -the learning orientation (LO)- SME managers need to create formal mechanisms and structured processes within the companies to develop environmental knowledge and management, thus implementing the circular economy as a contingency factor under their perspective. This knowledge must be adopted as best as possible considering the companies resources and their business context. From the outer perspective of the learning process, organizational learning (OL), the external acquisition, and assimilation of knowledge from other sources show several deficiencies in SMEs, developed under a limited context of collaboration. If the acquisition process is not effective, the

development of CE at the practical level in SMEs is strongly reduced, reflected in attitudes, routines, and behavior that promote environmental practices. This process must be accompanied by adequate supporting infrastructure -composed of government institutions- and collaboration between the state, companies, and consumers. CE can represent a competitive advantage for SMEs. However, the current conditions (environmental framework, customer behavior about environmental themes, lack of environmental knowledge) do not promote their development, limiting their effect on SMEs' market performance.

6.1.1 Qualitative phase

The aforementioned qualitative stage explored environmental sustainability and the Circular Economy, their potential influencing factors, and their organizational consequences on competitiveness and performance. First, a thematic analysis was undertaken to identify the different categories, themes, sub-themes, and topics that emerged inductively from the interviews to analyze these aspects mentioned above. Next, clusterization nodes were utilized to analyze the patterns between the established and emerging themes to identify the word clusters derived by the interviewees' responses. From these qualitative methodologies -in the studied cases- the general results show important aspects to consider in the formulation of SBS:

- Customer orientation (CO) considers environmental themes only if they feel customer pressure, consistent with Lee et al. (2019) research. Nonetheless, when performing environmental activities, several difficulties were found in the method they illustrate and communicate their message due to their lack of knowledge and experience.

- Entrepreneurial orientation (EO) positively influences the inclusion of environmental aspects in the business, similar to Marshall et al. (2015) research, yet presenting a broad spectrum of valid reasons: cost reduction, law compliance, economic benefits, or an environmental commitment

- Corporate social responsibility (CSR) does not consider environmental practices, yet they are dependent on the SMEs' extension and understanding of the concept (Dias et al., 2019). An SME will generally prioritize the environment if its owner cares for the environment themselves. The conception of corporate social responsibility and their activities' mandatory -or voluntary- nature influences their practical extension.

SBS development and implementation are strongly associated with the development of the CE practices that are still in its infant stages, limited to individual efforts and unclear support by public policies -a critical aspect for their development in SMEs (Oncioiu et al., 2018)-. In this line, relevant aspects that must be considered emerges from this research. For instance, environmental regulation in SMEs is centered on waste management issues but does not provide support to comply with the law, generating problems in waste traceability (Sandvik & Stubbs, 2019), and tends to ignore the role of SMEs in the environmental problems and challenges. In addition, waste management system deficiencies -such as traceability- have

another complex linked effect: the quality and availability of sustainable raw materials. It must be considered that the characteristics of the waste management system determine the possibility of promoting recycled raw materials (Haupt et al., 2017; Kalaitzi et al., 2018).

These structural problems add to the SMEs' lack of technical knowledge about materials, limiting their possibilities to achieve higher levels of circularity. In essence, knowledge is a critical factor in achieving environmental benefits (Patricio et al., 2018). Between Spanish and Chilean SMEs, the main differences are based on:

- Spanish SMEs show a slightly more risk-taking and innovative behavior and a more entrepreneurial attitude than Chilean SMEs. Managers show positive attitudes and beliefs about environmental development and CE implementation, but the business context is not propitious.

- The developed environmental regulation in Spain forced SMEs only to comply with the norms (generating traceability problems and distrust in the system). In retrospect, Chile has a process that has just recently begun, with gradual implementation. This context generates opportunities and challenges; learning from other international experiences needs to be considered to reduce the potential problems in the following years.

- The waste management system generates problems with recycled raw materials for SMEs. In Spain, it is focused on their quality and availability, with higher prices and shrinkage due to the low quality. In Chile, the null recycling rate makes this topic not generate an elaborate discussion at the moment. As a consequence of this situation, the perception and beliefs about SBS can increase their competitiveness and improve their organizational performance, which is negatively affected from the SME manager's perspective.

These challenges can be solved by having clear standards, guidelines, and aid mechanisms that are central to promote environmental responses in SMEs (Lynch-Wood & Williamson, 2014). The solution does not transcend their exclusion, and participation is based: 1) according to their reality, 2) if it will bring them benefits or returns, and 3) if it becomes a strategic asset that favors their competitiveness and can thus promote their adoption and development in the context of SMEs.

6.1.2 Quantitative phase

Consequently, the quantitative phase of the research evaluates various aspects, and considers the insights obtained in the qualitative experiences as knowledge management. This phase includes -as control variables- some effects of the pandemic (income and employees reduction). The research focuses only on Chilean SMEs (due to the difficulties in collecting data in Spanish SMEs, which will be considered for the following research), proposing a model to evaluate antecedents, implementation, and consequences of sustainable business strategies through CE. In lieu, the results show different aspects to note:

- The learning process becomes relevant for SMEs in CE implementation. This learning orientation positively affects CE development, consistent with research in environmental management systems (Feng et al., 2014) and the sustainable supply chain (Ardito & Dangelico, 2018). However, said development in internal knowledge represents an individual effort of SME managers to promote environmental sustainability, mostly translated in low circularity activities. Furthermore, these actions can generate rebound effects as the consumption of sustainable goods increase (Junnila et al., 2018) while not changing the market's consumption patterns; limiting resource decoupling (Antikainen et al., 2018), hence diminishing the benefits of environmental CE (Korhonen, Honkasalo, et al., 2018).

- In the case of organizational learning, a positive effect on CE can be observed. Their extension depends on the company's characteristics and the environmental impact of their production process. This external knowledge is associated with the development of higher circularity actions (Yusoff et al., 2019). Thus, representing a way to exploit the potential benefits of environmental business strategies fully. However, the knowledge acquisition process must be supported, to which it is currently only an individual effort.

- The SMEs' age generates differences within the analyzed groups (younger and older SMEs). However, an interaction effect between the groups is not observed. In a developed stage, SMEs can exploit resources and capabilities that require higher organizational capabilities (Dada & Fogg, 2016). In light of the evidence, it becomes necessary to deepen the study of this relationship. For example, the analysis of specific economic sectors or similar development conditions contributes to this aspect. In addition, the limitations of the sample and the context in which the data was collected should be considered.

The SBS development is based on environmental practices development (not necessarily with strategic thinking, articulated by CE). SMEs are anchored in low circularity activities such as recycling and/or recovery, establishing a bridge on decoupling resources that need to be addressed. Currently, CE does not represent a competitive advantage for SMEs, clearly reflected in the low adoption rates of environmental certifications and the limited financial investment in environmental themes. Moreover, their implementation practices are not particularly measured. In addition, SMEs believe in the CE potential effects on market performance in the mid-long term, similar to (Cantele & Zardini, 2018; Chacón Vargas et al., 2018; Ko & Liu, 2017). These companies show a positive perspective regarding the future of CE while considering the pandemic context -in line with Gregurec et al.'s (2021) findings-. However, the need for public policies that accomplish SMEs along their development is clear. SMEs present different environmental challenges, according to their different stages that must be approached.

6.2 Implications

This thesis provides theoretical and practical contributions to the literature on sustainable business strategies developed in different chapters.

The qualitative studies in Spain and Chile extend the SMEs' environmental sustainability literature by examining entrepreneurial orientation, customer orientation, and the role of corporate social responsibility. In the case of entrepreneurial orientation, findings suggest a reactive attitude, depending on stakeholders' pressure. The managers' attitude about ES on their business focus on minimizing their impact instead of preventing them. However, we can recognize slight differences between the two cases:

- Regarding the innovative aspect, Spanish SMEs show a more innovative profile degree on ES, depending on the sectors and the tangible and intangible benefits obtained. In contrast, Chilean SMEs exhibit a less innovative degree, where ES is not considered part of their business development and growth.

- Regarding the risk-taker consideration, Spanish Regarding the risk-taker consideration, Spanish SMEs consider investing in ES, depending on the investment-return relationship. While Chilean SMEs do not consider financial investment due to their fragile financial structure.

Based on these aspects, several issues emerge that must be considered in both countries:

- The formation process on environmental aspects is scarce, and does not permeate in their employees; a pending issue conditioned by the lack of stakeholders' pressure.

- The decision-making process has a lower consideration to environmental themes in strategic decisions; this aspect is translated in scarce environmental certifications as ISO norms (Spanish SMEs present a slightly positive condition in this type of certifications).

Contextually, SMEs exhibit a passive attitude, where incentives are crucial. In the Spanish case, the issue is to focus on specific incentives according to their (the SMEs') reality; meanwhile, it is the lack of incentives in Chile.

CSR is not necessarily related to environmental aspects due to the SMEs' interpretation of the concept and their application. In the Spanish case, CSR is associated with social welfare and donations, while in Chile, it is associated with the SMEs' managers' charitable activities. In this sense, environmental sustainability does not permeate as a part of corporate behavior, which is crucial for their development (Dincer & Dincer, 2013). Therefore, this research clarifies the role of the factors mentioned above and suggests nuances in different realities in Chile and Spain.

In CO, the common pattern is the low relationship with the customer on environmental issues. In the isolated cases, when SMEs undertake environmental actions, their visibility and

communication are scarce. This aspect influences their environmental knowledge. If a company does not count on the appropriate tools regarding environmental aspects, it becomes a complex challenge to transmit this message to stakeholders as their customers. Regarding the specific differences between the countries, in Spanish SMEs, the problem is how to engage their customers when performing environmental actions. While in Chile, the deficiencies are centered in the scarce communication of environmental practices.

The findings of this research stage shed new light on the role of environmental regulation, an emerging structural aspect that affects SMEs' environmental sustainability development. This study performs a comparative analysis of the Chilean and Spanish situation and their effects on the SMEs. In this way, the investigation contributes theoretically (to an already bare research field) to developing an analytical scheme that provides a structured and detailed overview of the relationships between environmental legislation, waste management, and raw materials (Margallo et al., 2019). This graphical scheme can visualize the "bottlenecks" that generate obstacles and hamstrings a country's environmental situation. In addition, this research highlights their (countries) situation, contributing novel insights to the knowledge gap about scarce specific studies, while considering the size of the companies and their locational aspects (Bakos et al., 2020).

Regarding the specific situation of the countries, in Spain, environmental regulation is centered on strict compliance (not having incentives or rewards). Their extension in waste themes generates several issues. The monopolistic condition of separate waste collection and the scarcity of specific flows to take advantage of the potential of the raw materials -crucial to make the most of these resources (Haupt et al., 2017)- affects the recycled materials by: 1) increasing their price; 2) affecting their quality. These aspects shrink the use of these materials by SMEs. Furthermore, the final phase of waste traceability is another complex issue due to a certain lack of data on the whereabouts of their final destination, critical for any efficient waste system (Sandvik & Stubbs, 2019). These aspects affect the life-cycle of products and limit the possibilities of improving CE practices adoption, implementation, and their circularity level.

Moreover, the fixed fee paid by SMEs in the system does not generate incentives to reduce waste generation. The system's shortcomings should be revised to harmonize the waste systems, which consequently is a desire of the European Union (European Commission, 2020). It is important to note that waste legislation is the backbone for waste management in a country (Esmaeilian et al., 2018).

In the case of Chile, environmental regulation (one of the most advanced in the South-American region) has had a gradual degree of implementation. Independent of their environmental degree of advancement, the waste legislation has various points to denote. The ERP (Extended Responsibility of Producer) law represents a significant step towards separate waste collection through integrated waste management systems. However, it has a minor focus on SMEs by not considering their characteristics and limitations. This insufficient consideration extends into the waste management system, as they do not count with separate waste collection and proper systems, thus positioning SMEs in the same category and condition as households (not allowing any waste traceability). In addition, an empirical finding of this research is the recent discovery of the physical space limitation situation of SMEs. This aspect

is an adverse condition due to the difficulty of storing material or managing their waste, thus accelerating quick disposal. Therefore, the current waste legislation does not contribute to bolstering waste management in SMEs, considering their practical limitations.

This evidence suggests the importance of seeing waste management systems as a multidimensional issue and the need to consider environmental, social, cultural, legal, and institutional aspects in their implementation. Therefore, this research contributes to filling the existing gap literature regarding waste management factors (Zorpas, 2020) with empirical evidence.

From the unearthed waste management shortcomings, two hidden aspects that beg to be analyzed are the SMEs' environmental knowledge and their learning process. SMEs exhibit knowledge deficiencies in raw material management and waste environmental effects. These companies need to incorporate and manage environmental knowledge according to their resources, capabilities, and possibilities to close the resources cycle. Knowledge management is a cornerstone for SMEs' growth and development (Roxas & Chadee, 2016). Therefore, the legislation must include specific educational programs to provide the necessary knowledge.

This lack of knowledge affects the implementation of environmental sustainability in business strategies; the circular economy. In this line, the research has practical contributions to the circular economy, detailing the difficulties of SMEs in recognizing the circular economy's hierarchy levels. These companies limit their implementation to the final stage of the production process through low circularity activities (recycling, recovery). This aspect is interesting to analyze, considering the circular economy's critiques regarding their environmental benefits and consumption pattern changes (Antikainen et al., 2018; Korhonen, Honkasalo, et al., 2018). Furthermore, this research contributes to this discussion, by finding that SMEs in both countries are anchored in low circularity levels, being a challenge that extends the scope of their environmental actions.

The quantitative stage approaches the insights of the qualitative stage proposing a theoretical model to sustainable business strategy development through the circular economy implementation in Chilean SMEs. The proposed model was evaluated through a CB-SEM approach, using a sample of the surveyed SME managers. Moreover, this research includes the pandemic effects such as income and workforce reduction

The proposed model examines the role of learning as an enabler for CE implementation and the CE effects on market performance and competitive advantages. The research findings determine that the learning process has a positive and significant role in CE implementation. This process can be analyzed by the two sides of learning: learning orientation (internal knowledge) and organizational learning (external knowledge).

The internal knowledge developed by SME managers is the base step towards CE development, representing their personal motivation and effort and associated with low circularity practices (recycle, recovery). External knowledge represents the capability to assimilate knowledge from external sources (companies, public institutions, training). SMEs require an organizational structure capable of acquiring and disseminating this knowledge appropriately, which is associated with high circularity practices (reduce, rethink) (Guo et al.,

2019). This aspect is the pending debt in the Chilean SMEs. Furthermore, the lack of collaborative support contributes to stagnating knowledge development.

The SMEs' age has a moderating role within the younger and older SMEs group but does not present an interaction effect on LO and OL. Companies in the infant stage do not have internal structures for knowledge development, considering their resource allocation priorities. When the companies achieve a mature stage, they can acquire and assimilate knowledge from external sources (other companies, public institutions) that enrich their basal knowledge and permeate the organization. This extended basis allows SMEs to have a more integral development of CE (Kaya & Patton, 2011). While younger firms, considering the lack of a formal basis, acquire external knowledge without a structure, presenting deficiencies to exploit appropriately. These results are exploratory, considering the research context. Furthermore, although evidence is obtained, further research is required to understand the knowledge development according to SME development.

In lieu, these research findings contribute to the literature by illustrating the extensive role of learning and their conditions to improve environmental knowledge in SMEs. Moreover, these insights can be helpful for: 1) practitioners to acquire, disseminate and apply environmental knowledge within their organizations, and 2) for policy-makers to develop specific environmental programs.

Regarding the implementation of the circular economy, the concept is anchored in low circularity activities that do not represent a financial resource investment -thus being of little corporate interest, meaning that there is a long way to go-. Independent of this low degree of advancement, SMEs believe in the circular economy's potential of positive effects on market performance and competitive advantages in the pandemic context. Despite this positive assessment, only one in ten SMEs possess an environmental certification. This situation reflects that these companies' environmental actions do not produce a differentiating characteristic in the market relevant to promote environmental sustainability (Lahti et al., 2018). Therefore, the circular economy can become an SME asset if the ecosystem (production and consumption) aligns and collaborates for the objective of decoupling resource use. Hence, this study exposes the existing gap that needs to be approached by policy-makers and practitioners.

Based on the presented chapters, this thesis contributes to analyzing sustainable business strategies, understanding their antecedents and consequences, and the role of the circular economy in the implementation of these strategies.

6.3 Limitations

As all research, this work has some conceptual and practical limitations to denote. A theoretical limitation corresponds to the variables included in the analysis. This research focuses on the relationship between environmental and economic aspects of sustainability and their extension on business variables. Moreover, these include the environmental regulation aspect from a managerial perspective. Nonetheless, it does not include the social effects of sustainability.

This work has some empirical limitations. The qualitative stage was based on in-depth interviews with SME managers. This methodological approach has some requirements and objectivity aspects, based on the nature of the data and their declarative character (Diefenbach, 2009).

In addition, the quantitative stage of the research was produced in a different context than initially established. The pandemic strongly affected the ability to collect data, as the constant quarantines, lockdowns, and openings made the administration of the surveys a difficult task. Thus, the current situation has had a negative consequence on the survey response rate.

Moreover, this research was applied to the supply side, where contrasting it with the demand side allowed us to understand better -and approximate- a company's environmental concern. Furthermore, the contrast between customer responses and the companies' perceptions contributes to broadening this phenomenon's understanding.

6.4 Future research lines

Sustainable business strategies in SMEs are a field in continuous development. This research explores two countries, Spain and Chile, and proposes a model for SBS implementation model in the latter, considering the CE development. Future studies could expand to different countries within these regions and explore their similarities and differences, allowing comparison with the present research.

SBS represents a multidimensional concept that brings multiple research perspectives (Cantele & Zardini, 2018). Future research should consider an individual analysis of different economic sectors to approach the specific realities of SMEs, whilst considering the antecedents exposed in this work.

The research findings are a starting point for understanding SBS extension in SMEs and approaching specific managerial aspects of environmental sustainability. The SBS implementation through CE has multiple perspectives, meaning that CE is a dynamic concept. Their conceptualization does not have a unique vision (Kirchherr et al., 2017), and the social aspects, rebound effects, and equilibrium between growth and resource-use are continuous subjects of debate.

Other relevant considerations are the actors that interact with SMEs as suppliers and distributors. In this sense, future studies can expand this research, including multiples perspectives from SME stakeholders, which can be adopted to enrich the knowledge in a broader sense.

Moreover, considering the current pandemic context and the broad aspects that include SBS, using a longitudinal perspective can provide interesting findings and the evolution of production and consumption patterns. This approach can help the development of dynamic public policies, whilst considering the SMEs' life cycle and the possibilities to develop environmental sustainability as a differentiating aspect valued by the market.

APPENDIX

Appendix A: Chapter 2

Table 1. Summary of SME interviewees

Firm (ID)	Industry type	Employees	Company age	Turnover
01	Poultry	42	39	5.5M
02	Vineyard	40	85	4M
03	Pharmaceutical laboratory	250	30	50M
04	Hotel	11	38	1.2M
05	Textile	130	55	30M
06A	Textile	5	3	0.045M
06B	Textile	5	3	0.045M
07	Packaging	61	16	17.5M
08	Electronic	7	3	0.25M
09	Plastic confection	35	58	8.3M
10	Water management	80	40	12M
11	Waste management	34	25	6M
12	Textile	12	3	0.175M
13	Water treatment	190	38	25M
14	Mechanical	25	42	3M
15	Chemical	51	57	10M
16	Business services centre	34	17	2M
17	Chemical	130	50	50M

Table 2. Interview structure

1) Introduction

- Explain context and research purposes. Obtain consent for the recording and academic use of data.

2) General questions and company background

- N° employees, annual income, company age, history, origin, critical aspects of the company.

3) Environmental sustainability

3.1 Notions about sustainability

- If I ask you about the concept of sustainability, what does it represent for you? What do you understand by it?
- In developing your activity, to what extent are you concerned about the sustainability of your business for future generations?

3.2 Environmental sustainability in the company

- If I tell you about environmental sustainability in business strategy, what do you understand by it? What are your notions, your feelings?

- Based on the previous answer, inquire about which aspects of those mentioned above apply and in which they apply (product, business model, services).
- Which environmental aspects do you consider important for the development of your business?
- Does it integrate the economic, social, and environmental aspects? What do you think about it? What are your feelings?
- What do you consider is the impact of your business on the development of the community and the planet?

4) Circular economy

4.1 Introduction to the concept

- Could you describe the production process of your product or service from the moment it is produced until it is delivered to the consumer? (Introductory question to understand the cycle of the product or service)

4.2 Questions to understand what elements of the circular economy could be applied

- Once the buyer has consumed (or has finished using) your product, do you know or know what happens to your product?
- Have you considered the possibility of extending the useful life of your product once it is discarded by the buyer?

4.3 In-depth in the CE concept

- Have you heard of the circular economy?
- What do you understand about the circular economy?

4.4 Exemplifying the concept

- Next, I am going to show you a set of images that represent different meanings associated with the circular economy. I would like, from all these images, for you to choose the ones that your company or organization uses and/or adopts. Consider their business development, strategy, or actions.
- What do the chosen images represent? What do these circular economy tools realize? Question one by one the circular economy tools, reasons for applying/not applying.

4.5 After the sample, selection, and discussion of the selected images:

- Have you thought of ways to make it more efficient, that is, use fewer resources in your production processes?

5) Firm competitiveness

- Describe the position of your company considering the competition in general and in the environmental sustainability aspect.
- How does the introduction of more sustainable processes influence the competitiveness of your company?

Figure 1. Set of images to represent CE practices

Recovery

Recycle

Source: https://rccmex.com.mx/en/recuperacion-de-materiales-4/
Source: https://encolombia.com/medio-ambiente/interes-a/fomentar-reciclaje/

Reutilize

Remanufacture

Source: https://blog.greenuso.com/es/reutilizar-significado-e-importancia/
Source:https://www.deutschland.de/es/topic/medio-ambiente/reacondicionamiento-una-buena-idea-contra-la-chatarra-electronica

Refurbish

Repair

Source: http://dontpavemybay.org/2021/06/30/furniture-restoration/
Source: https://fixituae.org/watch-repair-service/

Reuse

Reduce

Source: https://www.gasanmamo.com/blog/being-eco-friendly/
Source: https://www.initial.com/blog/smart-hygiene/waste-footprint/

Rethink

Refuse

Source: https://www.dreamstime.com/stock-illustration-sharing-economy-smart-consumption-concept-vector-illustration-flat-style-people-save-money-share-resources-image65307864
Source: https://eco-circular.com/2020/07/06/las-5-r-del-movimiento-zero-waste/

Appendix B: Chapter 3

Table 1. SMEs interviewees in Catalonia

Firm (ID)	Industry type	Employees	Company age	Turnover
01	Electronic	7	3	0.25M
02	Mechanical	25	42	3M
03	Waste management	34	25	6M
04	Water treatment	80	40	12M
05	Textile	130	55	30M
06	Textile	12	3	0.175M
07	Chemical	51	57	10M
08	Pharmaceutical laboratory	250	30	50M
09A-09B	Textile	5	3	0.045M
10	Chemical	130	50	50M
11	Packaging	61	16	17.5M
12	Hotel	11	38	1.2M
13	Plastic confection	35	58	8.3M
14	Poultry	42	39	5.5M
15	Vineyard	40	85	4M
16	Water treatment	190	38	25M
17	Business services center	34	17	2M

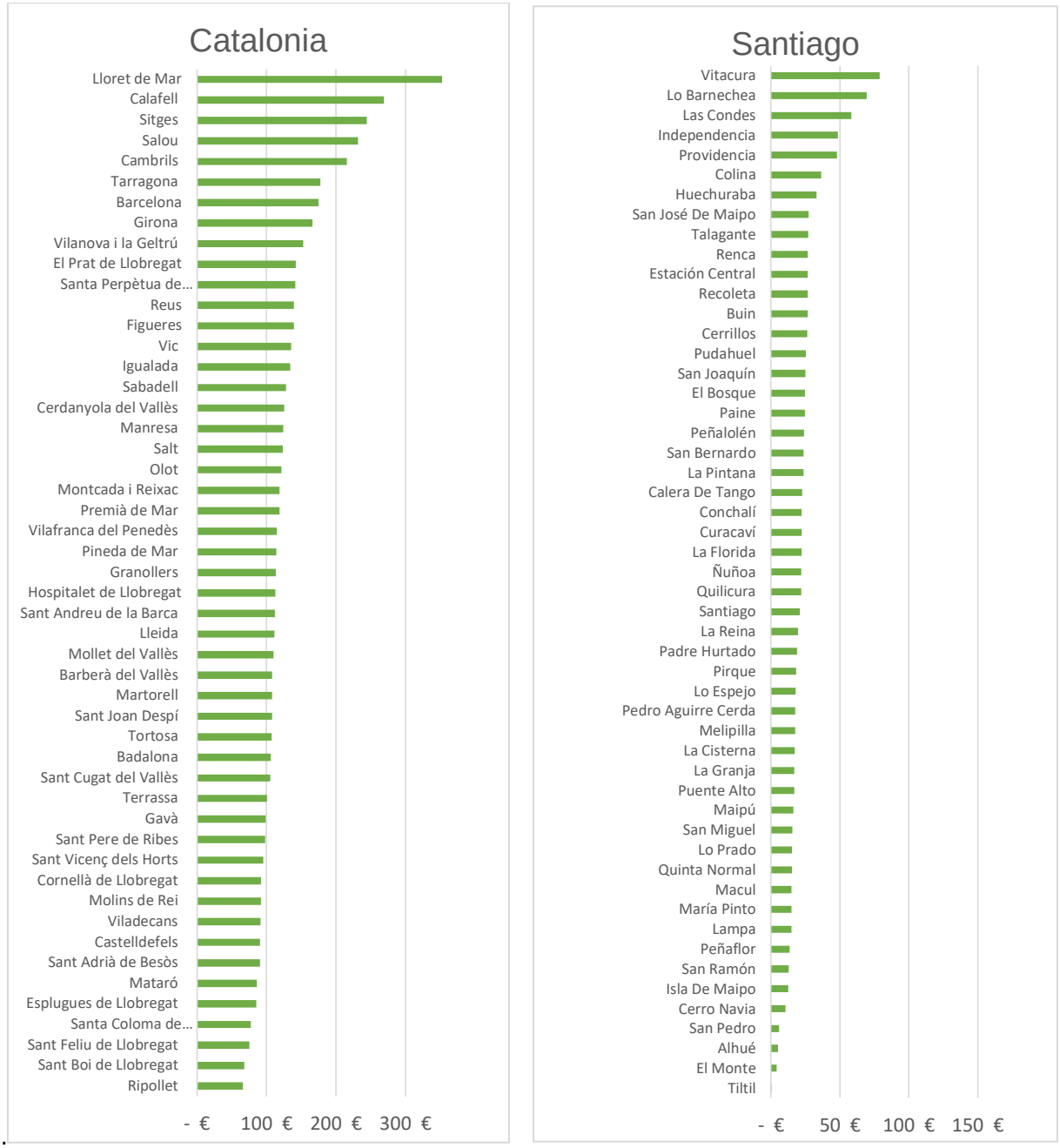
Table 2. SMEs interviewees in Santiago

Firm (ID)	Industry type	Employees	Company age	Turnover
01	Healthcare	15	6	0.504 M
02	Waste management	6	10	0.189 M
03	Retail	6	11	0.303 M
04	Textile	9	5	0.252 M
05	Sanitary products	7	3	0.454 M
06	Retail	16	8	0.442 M
07	Food-service	8	3	0.121 M
08	Consulting	8	3	0.29 M
09	Food-service	5	3	0.083 M
10	Craft	5	9	0.0257 M
11	Retail	5	20	0.015 M
12	Food-service	12	5	0.757 M
13	Financial	60	14	26.95 M
14	Cosmetic	85	3	5.04 M
15	Food-service	14	7	0.084 M
16A-16B-16C	Industrial	8	29	0.189 M
17A-17B	Consulting	10	3	0.126 M
18A-18B	Mechanical	6	6	0.121 M
19	Consulting	32	7	0.898 M
20	Food-service	22	55	0.757 M
21	Textile	6	10	0.151 M

22	Food-service	25	10	0.757 M
23	Food-service	15	4	0.454 M
24	Design	9	2	0.288 M
25	Industrial	21	28	0.898 M

Appendix C: Chapter 4

Figure 1. Per capita spending on waste management (50 most populated municipalities) in Catalonia (Spain) and Santiago (Chile)



Source: Authors, based on data from (Secretaría de Estado de Presupuestos y Gastos, 2018; Subsecretaría de Desarrollo Regional y Administrativo, 2019).

Appendix D: Chapter 5

Table 1. Construct and items description

Please rate the following statements, where 1= strongly disagree and 5= strongly agree.

Construct	Items	Description
Learning Orientation	LO1	Our company basically agrees that our organization's ability to learn is the key to our competitive advantage
	LO2	The basic values of this organization include learning as key to improvement
	LO3	The sense around here is that employee learning is an investment, not an expense
	LO4	Learning in my organization is seen as a key commodity necessary to guarantee organizational survival
Organizational Learning	OL1	We learn a lot from other organizations we work with
	OL2	We pass a lot of knowledge into organizations we work with
	OL3	Other SMEs are an important source of knowledge
	OL4	Our network of contacts is crucial for gaining knowledge
	OL5	We use alliances with larger firms to acquire knowledge
Circular Economy	CE1	Our products/services can be repaired
	CE2	Our products/services can be reused
	CE3	Our products/services can be redesign
	CE4	We dispose of a material recovery scheme
	CE5	We use efficient technologies for recovery of materials
	CE6	We increase ratio use of recycled materials/production
	CE7	We improve the recycling rate of solid waste
Competitive advantage	CA1	To be an environmentally-conscious firm can lead to cost advantages
	CA2	We have achieved important cost advantages by experimenting with the improvement of environmental quality
	CA3	Through systematic investment in R&D for environmentally friendly goods, our firm can be a market leader
	CA4	Our firm can enter new, lucrative markets with the adoption of environmental strategies
	CA5	Our firm can penetrate the market, by making existing goods more friendly to the environment
	CA6	By reducing the environmental impact of our firm's activities, the quality of the products will improve

How well has your business performed over the past 12 months? Evaluate the following items on a scale of 1- significantly worse; 4- At the same level; 7- Significantly better

Construct	Items	Description
Market Performance	MP1	Customer satisfaction
	MP2	Customer retention
	MP3	Customer loyalty
	MP4	Reputation among end-users
	MP5	Market share
	MP6	Market share growth
	MP7	Rate of market development

Please rate the following statements, where 1= strongly disagree and 5= strongly agree.

Construct	Items	Description
Environmental Business Strategy	EBS1	Our firm has incorporated environmental issues in its strategic planning process
	EBS2	In our firm, quality includes the reduction of the environmental impact of its products and processes
	EBS3	In our firm, we put every effort into connecting environmental objectives with other company objectives
	EBS4	Our firm is committed to developing products and processes that minimize environmental impact
	EBS5	The protection of the environment is the driving force that guides our business strategy
	EBS6	Environmental issues are always taken into consideration when developing new products
	EBS7	Our company develops products and processes that minimize the negative impact on the environment

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