Transitioning towards circular business models in South America

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Abstract

The goal of this study is to identify the challenges that can be encountered by companies engaged in a transition process towards circular business models, whilst operating in the Latin American market. With a qualitative approach, I conducted a multiple case study of two companies fitting to the aforementioned parameters and an industry expert in the field of circularity in Latin America. The findings provide evidence that all the companies analyzed faced or are facing challenges in several categories, namely social, contextual, institutional, logistical, technological, economical and organizational. The results suggest that the predominant challenges for these companies lay in the internal dimension, in the organizational and economical categories.

Dissertation title: What challenges companies operating in Latin America face when transitioning towards circular business models?

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Keywords: challenges, circular business model, transition process, Latin America

Sumarío

O objetivo deste estudo é determinar os desafios que podem ser encontrados por empresas envolvidas em um processo de transição para modelos de negócios circulares, enquanto operam no mercado latino-americano. Com uma abordagem qualitativa, realizei um estudo de caso múltiplo com duas empresas que se enquadram nos parâmetros acima mencionados e um especialista do setor no campo da circularidade na América Latina. Os resultados fornecem evidências de que todas as empresas analisadas enfrentaram ou enfrentam desafios em várias categorias, nomeadamente sociais, contextuais, institucionais, logísticos, tecnológicos, económicos e organizacionais. Os resultados sugerem que os desafios predominantes para estas empresas se situam na dimensão interna, nas categorias organizacional e económica.

Título da dissertação: Que desafios enfrentam as empresas que operam na América Latina na transição para modelos de negócio circulares?

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Palavras-chave: desafios, modelo empresarial circular, processo de transição, América Latina

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1. Introduction

"The circular economy is a tremendous opportunity for Latin America to boost economic growth while reducing environmental impacts. By adopting circular business models, companies can create value from waste, improve resource efficiency, and reduce greenhouse gas emissions." (Javier Fernández-Lasquetty - Chief Economist of the Inter-American Development bank - Forbes interview 2021). This statement shed light on the rising importance of circular economy in the Latin American region.

The world we are living in is currently facing a range of economic, social, and environmental challenges, such as climate change, resource scarcity, and population growth. Traditional linear business models, which rely on a "take-make-dispose" approach, are no longer sustainable and are contributing to these challenges. In contrast, circular business models have emerged as a promising alternative that can address these issues by keeping resources in use for as long as possible while reducing waste and pollution (Ellen MacArthur Foundation, 2013).

Latin America has historically always relied on linear business models to generate growth and drive economic development in the region, an economic model which has the potential to

damage the stability of local economies and the natural ecosystems (Schröder et al., 2020), in one of the most geographically diverse and biodiverse regions in the world.
Transitioning towards circular economy is therefore paramount for this region, a necessity that has been consecrated by the XXI Meeting of the Forum of Ministers of Environment of Latin America and the Caribbean in February 2021. Such a process would equip the region with more resilience, protection and inclusivity for the years to come (Carrasco & Ordóñez, 2023).

However, prior research fails to grasp the entirety of the relationship between circular business models and circular economy, especially on a transition process level from a traditional linear business model (Susur & Engwall, 2023). Furthermore, local socio-economic contexts play a huge role in implementing circular business models and diminishes the usefulness of implementation frameworks (Patwa et al., 2021). Indeed, emerging economies require high economic growth and their usual high population generates huge amounts of waste which need processing. The different context in developed economies thus makes it impossible for their own initiatives to be taken as a role model for regions such as Latin America (Patwa et al., 2021).

To contribute to fill this gap, I propose to answer the following research question:
What challenges companies operating in Latin America can face when transitioning towards circular business models?

I used a qualitative approach to answer this research question, relying on multiple case studies (Eisenhardt & Graebner, 2007). I analyzed three different case studies, consisting of Natura & Co, Company X and an industry expert.

Following this introductory part, I will review the existing literature related to this topic. The next part will be about the methodology used to answer my research question whilst the fourth part will be related to the empirical setting of the cases I will analyze. The fifth part of this thesis will be a presentation of my findings, which I will discuss further in a sixth part.

2. Literature review

The review of the literature shows multiple different definitions of the circular economy concept. Many researches have investigated the effects of circular economy in different industries and the challenges that come with implementing such practices but few progress has been made in regards to circular business models, especially in emerging economies and with a transition process.

First, I will present an overview of the circular economy concept and how it translates to circular business models. Then, I will address the specificities of circular economy in an emerging economies context.

2.1 Circular economy and business models

In the realm of sustainable development, the concept of the circular economy and circular business models have emerged as a pivotal focus of attention. The vast and rapidly growing body of research in this area has led to numerous definitions, each attempting to find the appropriate meaning of these concepts within their own paradigm. This chapter seeks to explore these different interpretations, their origins and their relevance.

2.1.1 A lack of consensus on the definition of circular economy

Although the first mention of circular economy appeared only in the late 20th century, with the first formal use of circular economy in 1990 (Pearce et al., 1991), the concept behind it was theorized many years before. Indeed, Kenneth Bouding published an essay in 1966 where he warned the world of the danger humans were pushing earth towards through their economic activities. He also envisioned a new kind of economy which would flourish through regenerating existing finite assets. This new kind of economy distinguishes itself from classical economy through the notions of reusing and replacing resources rather than stopping at consuming them (Gedam et al., 2021). The Ellen MacArthur Foundation (2013), a charity committed to the spread of circular economy, defined it as an economy that is “restorative and

regenerative by design". The very same foundation furthered this definition in 2019, stating that its philosophy was to eliminate waste from the economic system by building upon existing resources.

However, such a broad concept can be used by various stakeholders with different needs and perspectives, which would eventually lead to different definitions (Kirchherr et al., 2017). Yuan et al. (2008) state that no clear definition of circular economy yet exists. Kirchherr et al. (2017) tried to remedy this by analyzing 114 different definitions in order to establish one that would fit every possible stakeholder. They found that circular economy could be defined as an economic system functioning on the 4R basis: reducing, reusing, recycling and recovering materials in production, distribution and consumption processes. This definition of circular economy will be the basis of this research.

Nonetheless, an analysis of articles about circular economy published between 2004 and 2020 found that over 80 percent of those pertained to developed countries of the northern hemisphere and China (Muchangos, 2022), while the growth of such articles related to developing countries only started in 2016. This underrepresentation of emerging economies could cause a serious risk for them while trying to apply one of these definitions into their own socio-economic contexts (Grobler et al., 2022).

The various definitions of the circular economy reflect its broad scope and multifaceted nature. However, it also underlines the need for a contextually relevant understanding of the concept, especially in the case of developing economies. The next section will investigate the necessity of tailored business models to effectively implement the principles of the circular economy across various socio-economic contexts.

2.1.2 The need for tailored business models

The shift from a traditional linear economic system to a circular one necessitates a complete overhaul of the existing business models.

Business models are indeed paramount to transition from a linear economy to a circular one (Chrispim et al., 2023). The traditional purpose of business models is to create value for the company and this usually revolves around economic indicators, while a circular business model would need to expand its purpose to several different dimensions, ranging from environmental concerns to social well-being (Chrispim et al., 2023). But the integration of circular economy concepts can transform traditional business models into circular ones

(Pollard et al., 2023). Circular business models typically follow the principles of optimizing the use of resources, preserving natural capitals and promoting efficiency, usually under the conceptual framework of ReSOLVE (Carrasco & Ordóñez, 2023).This framework proposes six actions for implementing circular economy principles: Regenerate (transition to renewable resources), Share (maximize product use and lifespan), Optimise (increase product efficiency and reduce waste), Loop (keep materials in closed loops), Virtualize (deliver services virtually) and Exchange (replace outdated materials with advanced ones and adopt new technologies) (Lewandowski, 2016). Another common approach would be the Product-Service System (PSS), which focuses on increasing reuse, repurpose, remanufacture and recycle dimensions in order to better resource productivity and minimize the amount of waste generated (Michelini et al., 2017).

The relationship between circular business models and circular economy however still needs more understanding, especially regarding the link between structural and contextual components of the broader circular economy concept and the emergence of circular business models (Susur & Engwall, 2023). The challenges companies would face in implementing circular economy practices and models can also differ depending on the specific countries and sectors (Patwa et al., 2021). As a parallel with the many definitions of circular economy, the existing literature regarding circular business models is scattered, each proposed business model having its own perspectives, and there is a lack of overarching common typologies (Chen et al., 2020). Furthermore, the current literature still needs more expansion for a comprehensive review (Chen et al., 2020).

The adaptation of business models for the implementation of circular economy principles is of utmost importance. However, this is not a one-size-fits-all process as the complexities and nuances of socio-economic contexts need to be taken into account (Susur & Engwall, 2023).

2.2. The emerging economies context

Emerging economies are marked with tremendous economic growth and structural change, making them a critical context for the exploration of circular economy principles and business models.

2.2.1 The definition of an emerging economy

Emerging economies are a group of countries characterized by rapid economic growth and ongoing structural changes in their economic, social, and political institutions (Ayres et al., 2017). They typically are transitioning from low-income to middle-income status, which leads to an economic development often driven by industrialization, urbanization and globalization (Ayres et al., 2017). In this context, coupled to their usually large populations, emerging countries are generating tons of waste and while they could use it, they cannot simply import circular economy strategies used by developed countries (Patwa et al., 2021). Prior research indeed shows contradictions about the universality of the application of drivers and enablers of circular economy in different contexts. Khan et al., (2022) estimate in their paper that the key drivers of circular economy they found presented similarities with existing research, although they still suggest future researchers to confirm this hypothesis.

Research regarding circular business models has mostly focused on establishing frameworks to link typologies and help companies transition to those in a smoother fashion (Chen et al., 2020; Susur & Engwall, 2023). However, these works lack specificity regarding the different socio-economic contexts that many companies find themselves evolving in, which can impede the operationalization of those frameworks (Susur & Engwall, 2023).

In conclusion, while emerging economies present a dynamic and promising field for the application of circular economy principles, the process of transition requires a deep understanding of their unique socio-economic contexts. The complexity of these economies necessitates tailored strategies and frameworks that can accommodate the specific challenges they face, particularly in the realm of waste management and socio-economic disparity.

2.2.2 The specificities of the Latin American economy

Many of the prior investigations related to circular economy and business models in emerging economies have been made through data analysis coming from Asian and African

countries (Gedam et al., 2021; Khan et al., 2022; Mishra et al., 2019; Ngan et al., 2019). However, academic articles show that Latin America has some specificities over other emerging economies, especially in the context of circular economy and business models. Furthermore, studies about circular business models in Latin America focus on particular industries and lack a holistic view that could fit other types of industry as well (Motke et al., 2022).

First of all, Latin America is one of the most urbanized regions in the world, with around eighty percent of its population living in urban areas (Choclan & Ana, 2017). This factor can be directly translated to circular economy and environmental challenges as it is estimated that seventy percent of the world's global greenhouse gas emissions come from urban and suburban activities (Bellucci et al., 2012). Indeed, modern cities over the world are one of the major raw resources consumers and produce tons of waste annually (Lederer et al., 2020). Waste especially raises an issue in circular economy as its life cycle is usually considered as of a cradle-to-grave nature (Weitz et al., 2002). Furthermore, urban areas also crystallize numerous opportunities to implement circular economy initiatives, because of their concentration of resources and talents (Bolger & Doyon, 2019). Local municipalities also have the power to integrate circular economy into their urban framework (Ghisellini et al., 2016).

Additionally, while many Latin American countries or some of their local governments have started to implement policies related to circular economy, their enforcement can be quite weak depending on the parties involved (Schröder et al., 2020). Schröder et al. indeed mention that distrust towards local public entities is preeminent in Latin America, which can be a major challenge for implementing policy frameworks.

Finally, the {...}. High levels of inequality and poverty require tailored circular economy policies and business models, to integrate the whole population in it without having any part of the society left out (Schröder et al., 2020).

The Latin American economy, with its unique characteristics, presents both challenges and opportunities for the implementation of circular economy principles. Achieving the latter and implementing circular business models in this region will require an approach that takes into account these specificities.

2.2.3 Challenges for implementing circular economy in emerging economies

Research has been made regarding the possible challenges for circular economy implementation, usually in developed countries (Tura et al., 2019) but also in an emerging economies context in more recent years (Khan et al., 2022). Challenges in a business context can be referred to as a complex situation that will test a company's capabilities and resources, leading it to problem-solve and adapt to overcome the obstacles it will be facing and maintain a competitive advantage (Porter, 1980).

Prior research usually focused on seven broad categories to encompass all potential barriers and challenges rising from circular economy implementation, namely economic (refers to financial and market-related factors), technology and information (relates to the availability of technology and information), supply chain (factors associated with a company's network of suppliers and consumers), institutional (relates to government policies, legal requirements or institutional norms), social (pertains to societal pressures, culture and behaviors), organizational (internal company factors such as structure, culture or resources) and environmental, which relates to ecological concerns (Tura et al., 2019, Gedam et al., 2021).

These categories then include numerous factors that diverge depending on the focus of the studies. Since Gedam et al. (2021) focuses on the food supply chain, related factors such as "the lack of robust estimate about food waste" or "lack of packaging and cold chain", quite unique to this study, are preponderant. However, some factors can be found in most of the researches on this topic, such as "lack of technology and innovation" or "lack of policies, laws and standard system" (Tura et al., 2019, Gedam et al., 2021, Khan et al., 2022).

Regarding challenges more specific to Latin America, Carrasco & Ordóñez (2023) have established waste management as the most important. The cultural barrier, related to Latin American people's knowledge and attitude towards circular economy also stands out as paramount.

Below is a table summarizing the identification of challenges according to the seven aforementioned categories and their particular contexts of identification.

Category	Identification in developed countries	Identification in developing countries	Identification in South America
Economical	Yes	Yes	Yes

Environmental	Yes	Yes	
Institutional	Yes	Yes	
Social	Yes	Yes	Yes
Organizational	Yes	Yes	
Supply Chain	Yes	Yes	Yes
Technological	Yes	Yes	Yes

Table 1: *Identification of challenges and their particular setting*

Different socio-economic contexts call for different circular frameworks (Susur & Engwall, 2023) and the specificities of the Latin American context call for tailored circular business models. The lack of research on the challenges brought by a transition process towards circular business models, that could be generalized to all industries, has created a gap that I will try to bridge in this paper´

Following this, my research question is: what challenges companies operating in South America face when transitioning towards circular business models?

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3. Methodology

I will here discuss the methodology used to answer my research question. I will present the design of my research as well as the process to collect data and to analyze it.
I employed a qualitative approach to explore the challenges faced by companies in Latin America in transitioning towards circular business models.

3.1 Research design

For the purpose of this research, I decided to use a qualitative approach. Indeed, the process being relatively young, it would have been difficult to establish quantitative criterias to test out in surveys. I thus decided to conduct a multiple case study. Multiple case studies allow for a stronger base for theory building (Yin, 2003). Given that the nature of my investigation on the challenges that could be encountered by companies in Latin America transitioning towards circular business models implies the need for generalization, the robustness and more testable theory offered by a multiple case study made the most sense (Eisenhardt & Graebner, 2007).

To select the cases, I targeted ones that had or were about to embrace a transition towards a circular business model, since this is the phenomenon under study. For the same reason, I targeted companies operating fully or partly in Latin America. I decided to narrow this scope in priority to the Brazilian market, since it is the strongest and most developed economy out of the South American countries, while still trying to include the others. I then proceeded to search for companies, using combinations keywords such as “Brazil”, “circular economy”, “circular business models”, “transition”, “circular”. I executed these combinations both in Portuguese and in English to ensure grasping all potential candidates for this case study.

This web research led me to some companies straight away but also to sustainability-focused websites and organizations providing further data. However, because of the limited number of available companies still operating at the time of this research, I ended up with two companies operating in the whole Latin American market and engaged in a transition process. After contacting employees working in relevant sectors for my research question, I managed to get

two interviews for each of these companies. While talking with them, I always inquired for other suitable companies or actors and this led me towards an industry expert.

I thus focused on two multinational companies operating in the Latin America market namely, which are engaged fully or partially in a transitioning process towards a circular business model, company X and Natura & Co. The industry expert is a professor and researcher from the Universidade Estadual Paulista (UNESP), based in Sorocaba, Brazil.

3.2 Data Collection

I collected both primary and secondary sources for the purpose of this research. I collected primary data through four semi-structured interviews with employees from all companies studied and one semi-structured interview with a researcher in the field of circularity in Brazil. I selected the interviewees based on their job title in their LinkedIn profiles, considering professions relevant for the subject of this thesis.

For company X, I conducted two interviews, one with the Sustainability Coordinator for Latin America and the other with the Project Manager for a circular project in the Amazonian forest. The former shared her experience with the implementation of circular initiatives across Latin American countries and the overall strategy of company X regarding circularity whilst the latter provided more precise information on the operation of a fully circular business unit in Brazil. Regarding Natura & Co, I conducted the first interview with the Sustainability Director and the second one with the Responsible for the Circular Agenda. Natura & Co's Sustainability Director offered me valuable insights coming from his long experience in this field and on his company's transition process towards circularity, including its short and long-term strategy. The latter provided me with a detailed account coming from a day-to-day operational perspective which allowed for a more comprehensive understanding of the practical challenges encountered in their journey.
Finally, I interviewed the industry expert Sandro Donnini Dominici, teacher in environmental engineering and specialized in solid waste management at UNESP.

While the interviews conducted for this research offer valuable perspectives on the implementation of circular initiatives and processes within the studied companies, several

limitations should be acknowledged. First, the selection of interviewees based on their LinkedIn job titles may not fully capture the diversity of roles and experiences relevant to the subject matter. Additionally, the limited number of interviews conducted may not provide a full picture of the diverse challenges and nuances involved in the transition to circularity. Furthermore, the reliance on the interviewees' personal experiences and perceptions may lead to bias or subjective interpretations that could impact the generalizability of the findings. Finally, the absence of input from other stakeholders, such as customers, suppliers, or regulatory authorities, may limit the scope of understanding regarding the challenges faced by these companies in a transition towards circularity process.

The interviews were semi-structured and the questions open-ended to collect most enlightening data. Interviews lasted between forty to sixty minutes and were conducted through recorded teleconferencing, then manually transcribed. I prepared a list of themes to address and questions to guide the participants, which I adapted for the profiles of each interviewees, whilst encouraging the participants to develop freely developed answers on the subjects they deemed the most important. I paid extra care to ask questions which wouldn't lead to biased answers and adapted those as interviews progressed. Subsequently, I asked questions to better understand the answers, processes and challenges mentioned by the participants which were the most relevant to my subject of research. I excluded theoretical elements from my questions to open the way for concrete answers in each of the relevant themes.

Primary data						
Case	**Type of data**	**Name of the interviewee**	**Organization**	**Position in the organization**	**Date**	**Length**
Company X	Interview	Mrs Y	Company X	Sustainability coordinator for LatAm	13/03/2023	1h05
Company X	Interview	Mrs Z	Company X	Circular Project Manager	30/03/2023	42min
Natura & Co	Interview	Keyvan Macedo	Natura & Co	Sustainability Director	11/04/2023	58min
Natura & Co	Interview	Allan Foster	Natura & Co	Responsible of the Circular	12/04/2023	49min

				Agenda		
Industry expert	Interview	Adriano Santos	UNESP	Researcher	11/04/2023	45min

Table 1: *Primary data collected*

Regarding secondary sources, I investigated the aforementioned companies' websites, annual reports, relevant media articles and blogposts. I evaluated the sources to triangulate the data obtained through primary sources, ensuring the retention of the most relevant information while avoiding the exclusion of any pertinent material related to the research subject. The obtained secondary data proved invaluable to ensure the selection of adequate data. I selected the sources based on a combination of the following keywords: "circular", "circularity", "circular business model", and the respective names of the firms.

3.3 Data Analysis

The interviews were meticulously transcribed to maintain their original context, followed by a systematic organization of the data into codes and themes. These were derived from both existing theoretical frameworks and inductively generated through an iterative process. The data were initially assigned to 25 first order codes, which were subsequently clustered into seven second order themes and ultimately classified into two overarching dimensions.

The first order codes were initially generated based on existing theoretical constructs. "Lack of technology and innovation," "Lack of policy, law, and standard system," "Lack of quality in the circular product," "Lack of awareness and knowledge in consumers and suppliers," "Lack of consumer perception," "Lack of training and skills," and "Lack of scalability and replicability of the business model" were derived from Gedam et al. 2021. Moreover, "Lack of clear incentives" was adopted from Tura et al. 2019. Thus, the analysis incorporated pre-established, operationalized codes from existing literature as a point of comparison.

Additionally, I followed an inductive process to generate novel codes to better align with the data, such as "Portfolio diversity" and "Elongated supply chain," which have not been

previously operationalized. These first order codes were then organized into second order themes, many of which were influenced by the work of Tuna et al. (2019), to enhance clarity and facilitate interpretation, namely social, contextual, institutional, logistical, technological, economical and organizational. The contextual category was added to the classification made by Tuna et al. (2019). Indeed, the particular frame of this thesis on Latin America led to the realization in both the literature review and the analysis of data, of this category's importance for companies undergoing a transition process. Even though contextual elements may appear in each of the aforementioned categories and some of their factors can also pertain to the Contextual category, I created this dedicated category to better illustrate the emphasis given to contextual concerns and barriers by the interviewees. This category and its challenges will thus be defined as obstacles rising from specific cultural, institutional, cultural or environmental contexts. It will encompass the unique combination of conditions and factors specific to the time, place and broader environment that impede a transition process towards a circular business model. Ultimately, these themes were consolidated into two principal dimensions to be employed for classification purposes.
Below is an example of the coding process.

Quotations	**First order codes**	**Second order codes**	**Aggregated dimension**
"Companies also need to be concerned about designing products in a closed loop which can be reused but without being downcycled"	Lack of awareness, knowledge in consumer and supplier	Social	External challenges
"There is a bad image about recycled products and that's a factor that hinders the whole process"	Lack of consumer perception		

Table 2: *Coding example*

4. Empirical setting

I selected two cases presented in the next chapter in order to answer my research question. The objective was to understand the contextual factors employed for analysis in the findings

section. All companies operate on the Latin American market and are engaged partially or full in a transition process. The companies I will address are Company X and Natura.

4.1 Company X

Company X (*the identities of this company, of the interviewees and the mention of related projects have been anonymized at the request of the interviewees*) is a German multinational company, headquartered in Germany. The company was founded in 2003 as a result of the merger of two German companies, Haarmann & Reimer and Dragoco, with Haarmann & Reimer established in 1874 and Dragoco founded in 1919. This merger created one of the largest fragrance and flavor companies in the world.

Company X offers a wide range of products, including fragrances, flavors, cosmetic ingredients, and sensory solutions. Their fragrances are used in perfumes, household products, and personal care items, while their flavors are used in food and beverages, as well as in oral care and tobacco products. Additionally, Company X provides ingredients and solutions for the cosmetics and personal care industries.

The company has expanded its operations through organic growth and acquisitions, such as the acquisition of the fragrance division of Bayer in 2007, which helped to strengthen its position in the fragrance industry. In 2012, Company X acquired the cosmetic ingredients company, Darmstadt, which expanded its capabilities in the cosmetic and personal care industries. Company X also acquired Diana in 2014, one of the leading manufacturers of natural flavors for pet food solutions, leading them to expand on their already existing Flavor and Nutrition division. Lastly, Company X acquired in 2022 the Dutch company Schaffelaarbos, a market leader for egg protein in pet food in the European Union. This company uses the by-products from egg production to incorporate them in pet food products, a step to include circular practices in Company X's business model.

As of 2021, Company X has over 12,000 employees worldwide and operates in more than 100 countries. They have factories in Mexico, Ecuador, Argentina, Chile, Colombia, Venezuela and Brazil. In 2022, the company generated revenues of €4.618 billion, improving by €800

millions compared to 2021 and grew at a rate of 11.4% (*Creating resources with circular economy, 2023)*. Company X continues to innovate and invest in research and development, especially in the sustainability area, to stay ahead of the competition and meet the changing needs of its customers (*A positive product impact*).

Company X's sustainability strategy is based around 4 pillars: footprint, innovation, sourcing and care. It has committed to reach climate positivity by 2030 and will therefore work closely linked with circularity to achieve this objective (*Annual Report 2022*). Company X is incorporating circular principles to every stage of its value creation chain and especially in Latin America where most of its raw materials are extracted (Annual Report 2022). Many of its business units are already involved in these kinds of projects and they are looking to incorporate more and more circular practices in their business model as part of their innovation strategy (*Interview Environmental Coordinator*).

4.2 Natura & Co

Natura & Co is a Brazilian multinational company headquartered in São Paulo, Brazil. The company was founded in 1969 by Luiz Seabra as a small cosmetics store in São Paulo, and has since grown steadily to become a leading producer and seller of natural and sustainable beauty and personal care products.

Natura & Co offers a wide range of beauty and personal care products made from natural and sustainable ingredients, including skincare, haircare, body care, makeup, and fragrances. The company is committed to using environmentally friendly and socially responsible practices in all aspects of its business.

Natura & Co has expanded its operations through strategic acquisitions, such as the acquisition of The Body Shop in 2017, which expanded its global reach and gave it a presence in over 60 countries. In 2020, Natura & Co acquired Avon Products, Inc. to further expand its presence in the beauty and personal care industry.

As of 2022, Natura & Co has over 32,000 employees worldwide and operates in more than 100 countries, including 18 countries in South America. In 2020, the company generated

revenues of R$36.9 billion (approximately €6.8 billion). Natura & Co remains committed to sustainability and social responsibility and has publicly committed to achieving net-zero emissions by 2030 (*Commitment to Life*).

As part of this commitment, Natura & Co wants to reach a fully circular business model across all its divisions and entities, including packaging circularity and more than 95% of natural ingredients and biodegradable formulas (*Annual Report 2022*). This transition will therefore come through all aspects of Natura & Co's value chain, from the production of raw materials to the packaging delivered with the final products (*Interview Natura & Co's Sustainability Director*).

This strategy embedded in Natura & Co's way of work has made progressive results. In 2022, 81.1% of Natura's entire portfolio is reusable, recyclable or compostable. In Brazil, 49% of their materials were reclaimed using reverse logistics (*Annual report, 2022*).

4.3 Industry expert

For the purpose of this research, I have also interviewed an industry expert in the domain of circularity in South America in the person of Sandro Donnini Mancini.
Sandro Donnini Mancini is an environmental engineering professor at UNESP in Sorocaba, Brazil.
Sandro holds a degree in Materials Engineering from the Federal University of São Paulo (UFSCar) and a master's degree in Materials Science and Engineering from UFSCar. He then followed this path with an increasing interest in plastic and polymer recycling with a doctorate in Materials Science and Engineering (UFSCar) as well as an Habilitation in Materials and Recycling from UNESP. To pursue the research path alongside his professoring career, he obtained a specialization in Scientific Journalism from Unicamp. He has been an associate teacher in environmental engineering at UNESP since 2018. Regarding his research career, he has been focusing since his doctorate on solid waste management.
In 2021 he concurred to the creation of a new journal, namely "Circular Economy and Sustainability", that is "*getting more and more international recognition"* (interview of Sandro Donnini Mancini) and of which he has been an editor since.

Sandro Donnini Mancini has been published many times in the field of solid waste recycling and management in journals such as the Journal of Cleaner production (Mancini et al., 2010) or the Waste Management & Research journal (S.d et al., 2007). He is also publishing about the circular economy topic applied to Brazil in his own journal (Mancini et al., 2021).

5. Findings

In this section, I will answer my research question through the analysis of two different companies engaged in a partial or full transition towards circular business models in Latin America.
When transitioning towards circular business models, companies will be facing two broad dimensions of challenges, internal and external challenges. I have subdivided these dimensions into seven areas where challenges could rise. Of course, some challenges are cross-divisional and could be impacting several of these areas at once. I therefore classified those according to the area the most affected by the bulk of the challenges.

5.1 External challenges

5.1.1 Social challenges

The results show that one of the greatest challenges companies have to face when transitioning towards circular business models in Latin America is the lack of awareness and knowledge concerning this particular topic from consumers and active businesses.
Indeed, as opposed to the developed countries, the circular culture and even the sustainability concept as a whole hasn't yet penetrated the consumer's conscience. "*There isn't a culture for the people to care about circularity. They are not used to it and they do not demand it to be done*" *(Interview Industry Expert).* This leads to many issues, as companies engaged with a circular business model need the support of the consumers to recover their used products or materials, a process that can be done only through the consumers own actions. *"They are not willing to voluntarily take this waste and go to any place to send it back to us" (Interview Sustainability Director Natura & Co)*. Even without returning the materials, consumers won't usually partake in selective sorting, a process which would help and incentivize companies to reuse materials instead of using virgin ones. *"There is a lack of understanding from the population, such as why segregate waste or return your empty bottles. So they just don't do it" (Interview Industry Expert)*. This lack of awareness can also be expanded to other businesses evolving in Latin America, as having more circular business models in the industry can enable more cooperation between companies, which is a huge facilitator in a transition process. Having more of those companies around any specific industry ecosystem will also

help companies find adequate circular solutions for their products, without having to downcycle them, meaning lowering the quality of a reused product compared to a virgin one. *"Companies also need to be concerned about designing products in a closed loop which can be reused but without being downcycled" (Interview Responsible for the Circular Agenda Natura & Co); "A major barrier to the implementation of a circular economy agenda in LAC is the lack of private-sector involvement. Firms are still broadly skeptical of the circularity concept, which is still frequently perceived as an 'environmental tax' on productive activity" (The circular economy in Latin America and the Caribbean, 2020).*

Moreover, the tendency for recycled products to be downcycled also comes from the lack of consumer perception present in Latin America. Indeed, customers tend to have a negative image quality-wise of recycled products which will damage the possible sales and revenues of companies engaged in such circular products. *"There is a bad image about recycled products and that's a factor that hinders the whole process" (Interview Industry Expert).* The same issue regarding the consumer mindset also lies with the packaging of products with already recycled materials or with some better suited to the circular economy than traditional ones, a key element to fit one companies' product into a circular stream, which is often evaluated as of low quality. *"We need to recognize that it is a nightmare to enable sustainable packaging because the customer mindset is that makeup in paper packages cannot have quality" (Interview Sustainability Director Natura & Co).*

This consumer mindset, more common in Latin America than in other regions, is also preventing the use of already tested and approved techniques that are applied in developed countries, thus creating the need for more innovation and reducing the number of viable existing solutions for circular business models. *"Some techniques used in Europe will never work in Latin America because of the different consumer mindset" (Interview Sustainability Director Natura & Co).*

The particular mindset of Latin American consumers and companies, not yet pervious to circular economy principles, therefore creates a major issue for companies considering a circular business model and trying to change it is a key point of focus for the latter. *"I do consider that customers will need to understand that if they do not change their behaviors, we will suffer consequences, but there is no conscience yet about their personal behaviors" (Interview Sustainability Director Natura & Co).*

5.1.2 Contextual challenges

The results show that the great diversity in cultural and socio-economic contexts within Latin America and even within this region's countries is a major hindrance for the application of circular strategies and initiatives. Indeed, it creates the need for tailored solutions whilst reducing the replicability of already existing solutions that are put into place in countries with a different picture. *"We have some local issues specific to Latin America, so we can use works from countries with the same picture but not everything is adaptable. Especially works from developed countries, which have different points of focus" (Interview Industry Expert).*
While developed countries often put emphasis on environmental protection, circular businesses in Latin America have to greatly consider the social impact they can have with their business models, further reducing the applicability of known strategies. *"When you try to address these {circular} issues in Latin America, it is not only about the environmental agenda but mostly the social agenda" (Interview Sustainability Director Natura & Co).*
This lack of replicability forces companies that are transitioning towards circular business models to innovate and function on a trial-and-error basis, which is reducing the number of companies willing to undertake this process, especially because they cannot draw inspiration from neighboring countries, even though these have a much more similar picture, because of the particular and specific legislations going on in each countries. This also is an issue for multinational companies that operate in the whole Latin American market, as they cannot follow a silver lining concept that would provide equivalent results in the whole region. *"The specific countries legislations in Latin America prevent you from applying the same solutions from one country to another" (Interview Sustainability Director Natura & Co).*
National legislations also tend to fail to differentiate accordingly between the different companies and different industries, thus creating a misalignment that acts as a barrier for companies considering a circular business model, an issue that I will develop further in the following part. *"Public policies are always something anxious, especially regarding taxation. The governments tend to put every company in the same bag, even though we know that these businesses' realities are different" (Interview Circular Project Manager Company X); "I think circularity isn't at the same level in all markets, because of specific legislations and restrictions. Some of those help and some don't" (Interview Sustainability Coordinator Company X).*

5.1.3 Institutional challenges

The results show that many issues flow down from the institutional level in Latin America, whether they are caused by the lack of policies or of a standard system, the lack of circular economy know-how from the policy-makers or even plain restrictions for circular companies. While there has been progress across all Latin American countries' legislations regarding the integration of circular economy, the shift is still recent and is very slow to reach a fully favorable environment for circular business models. Moreover, this slowness also participates to the creation and maintenance of traditional cradle-to-grave business models, much more focused on the intensive use of resources, while pertaining the consumer mindset aforementioned. *"Government policies across LAC have generally been slow to introduce resource- efficient production practices, as a result the region's economies and industries are characterized by an intensive use of natural resources" (The circular economy in Latin America and the Caribbean, 2020); "The legislation isn't moving at the pace it should be: in Brazil, the legislation hasn't changed in ten years" (Interview Sustainability Director Natura & Co).*

Whilst the policy makers have a great responsibility in easing the process towards circularity for companies (*"The only way to standardize this and shift the market entirely will be through regulations" - Interview Sustainability Director Natura & Co*; *"Public fiscal policies can provide macroeconomic support to industries and businesses that aim to shift to the circular economy model" - The circular economy in Latin America and the Caribbean, 2020*), they suffer still from a lack of knowledge regarding the circular economy concept and its subsequent strategies and techniques, thus preventing many companies to favorably engage in a transition process towards a circular business model. *"I think public policies are a critical point for the circular economy, but it is a totally new market for the public policers" (Interview Sustainability Coordinator Company X).*

Furthermore, some legislations even hinder the testing of circular initiatives and limit the possible innovations in this area, through standards and apparels focused on the traditional economy. "We *have lots of ideas for implementing circularity but we have standards and laws to follow, such as sanitary standards for instance, which prevent us from testing those" (Interview Sustainability Coordinator Company X).*

5.1.4 Logistical challenges

Logistical challenges lie in elongated supply chains, lack of infrastructure and the scarcity of circular supply chains.

The results show that in Latin America, most of the circular infrastructures, namely recycling and recollecting ones, are concentrated in the major cities, leading to a very disparate network especially damaging for rural areas and smaller and medium cities. This not only leads to the complete absence of possibilities for the latter regions to fit in the circular process but also prevents companies from actively using those infrastructures. *"Then there are logistics. Most infrastructures to recycle and recollect will be centralized in the major cities, leaving the other regions without any solution" (Interview Industry Expert)*. Indeed, while these infrastructures are all concentrated in the same place, manufacturing and production facilities can spawn the entire Latin American region. For the companies owning these facilities, this means that engaging in recycling and recollecting would instantly become a major challenge, because of the supply chains' length. *"It's very hard to close the loop and recollect everything because of the size of the regions and the lack of infrastructures" (Interview Responsible for the Circular Agenda Natura & Co)*. Furthermore, some areas crucial for the circular economy as a whole such as the Amazon forest which covers around 40% of the South American continent, have not been adapted with the required infrastructures to help the recycling and recollection of materials. *"Some regions {Amazon forest} are really hard to access and they lack infrastructures, which makes it a major point of focus for us" (Circular Project Manager Company X).*

Such elongated supply chains will provoke not only a financial burden on the companies aiming at recollecting their products or using recycling infrastructures, but also an environmental cost, since the Latin American region still relies heavily on motorized supply chains. The combination of those two parameters thus acts as another barrier to the implementation of a circular business model for Latin American companies. *"Looking at the size of Brazil, recollecting all our products is impossible because of the huge distances. That wouldn't be worth the effort, even just from an environmental perspective" (Interview Sustainability Director Natura & Co).*

On top of the lengthy roads to lead materials towards recycling infrastructures, the latter also fail to incorporate as many different materials as their European counterparts in its recycling processes, further reducing the interest for companies to transition towards circularity.

Furthermore, those infrastructures are also lacking proper segregation processes which would lead to more recycled materials and more reusing options. *"If the waste were to be separated properly before reaching landfills, almost 92 percent could be recycled. However, once the waste is mixed, that number goes down to 30 percent." (Inter-American Development Bank Study); "In Latin America, the recycling infrastructure should be much better to collect and segregate materials" (Interview Responsible for the Circular Agenda Natura & Co).*
Moreover, circular supply chains are still scarce in Latin America, which leads to further issues. Indeed, the few numbers of active circular supply chains make it harder for them to compete for attractivity against the well-established traditional ones. This leads to another barrier for companies considering transitioning towards circular business models as the cost estimations, the delays and all related parameters of circular supply chains aren't well-known, hindering these companies' decision-making and planning options. *"Another key challenge is about the supply chain. Old and traditional supply chains are very established, so you know the costs, the delays and so on. Circular supply chains have a hard time competing because not a lot of those exist so we don't have the parameters necessary to evaluate them against the numerous old ones" (Interview Sustainability Coordinator Company X).*

5.2 Internal challenges

5.2.1 Technological challenges

Technology acts as a major enabler for circular business models in Latin America (*"Technology is mostly a way to improve your income for small businesses on their path towards circularity. With new machinery and techniques, they can find ways to use all parts of a product, reducing waste and generating added value in the process" - Interview Circular Project Manager Company X*) and lack of existing technology, innovation or the costs to implement those can thus prove to be a major challenge for companies.
The results show that technology and innovation are disparate across the different industries and materials, making some easier to fit into circularity at the expense of others. For companies engaged in a process to fully transition towards a circular business model, this represents a major issue as huge work has to be made innovation-wise on those materials to fit them into circularity. For companies exclusively involved with such materials, this represents a major barrier to engage in this process. *"Technology is not yet at the same level for raw*

materials, some are easiest to include into circularity than others" (Interview Circular Project Manager Company X).

In other areas, the lack of existing innovation or technology prevents companies' business models to turn circular as there isn't demand yet for their circular product as there already is in regions more developed circularity-wise. This further restricts the possibilities of Latin American companies. *"There are technical challenges because we can find ways to compost waste for instance but it is impossible to find clients to sell this to. They don't have the technology required to fit the compost in their operations" (Interview Industry Expert).*

Concurrently, innovation and technology are essential to also help shifting the local mindsets and facilitate the integration of circular economy in the economy as a whole. *"We have responsibilities to raise conscience and we cannot do that without a circular solution" (Interview Sustainability Director Natura & Co).*

However, even when some solutions already exist, companies are faced with huge investment costs to incorporate those into their operations, thus preventing small and middle-sized companies from entering the circular loop. *"The difficulty lies with the expensiveness of implementing technology" (Interview Circular Project Manager Company X).* Even for bigger-sized companies, this leads to further costs in research and development, acting as a first financial barrier to a transition process. *"Internally, we don't make a lot of investments on machinery but we spend a lot with our vendors and suppliers to try to develop new solutions. The same goes with our research and development department" (Interview Sustainability Director Natura & Co).*

5.2.2 Economical challenges

The results show that one of the key issues underlying economical challenges is the lack of clear economic benefit for transitioning towards a circular business model. Indeed, if some materials can be easily fitted in the circular chain financially, most of the others don't hold the same properties. Such a disparity will prevent certain companies and industries as a whole from partaking into the circularity processes. *"If it makes sense financially, it is going to develop by itself but it's not the case for all the products and materials" (Interview Responsible for the Circular Agenda Natura & Co).*

Moreover, while undertaking transition processes, companies have to bear great financial costs from turning their products into circular ones. Indeed, expanded production costs, coupled to the required investment costs, will cause the revenues of these products to drop

down, sometimes significantly. *"With circularity, it has been demonstrated that you can find some solutions which will get you at 66% of the sales performance but never 100%", "When coming up with a new and more circular product, we have to massively invest to make sure they will achieve the same performance as the old portfolio product" (Interview Sustainability Director Natura & Co).* Furthermore, turning existing products into circular ones represents a leap in the unknown for companies as they have no comparison points to evaluate the future sales performance of the adapted product, making such decisions financially debatable. *"We could shift 50% of our portfolio to solid bars {easier to fit into circularity} but we would drop down 95% of our revenues" (Interview Sustainability Director Natura & Co).*

Changing the nature of these products can also cause price reductions, especially because of the aforementioned lack of consumer perception. The perceived lack of quality of circular products thus makes it harder for companies engaged in this process to compete on their own markets against companies following a traditional model. *"Even though we could shift the whole mindset internally, we would still have to figure out how to engage the customers, because of competition" (Interview Sustainability Director Natura & Co).*

Notwithstanding the costs of recollecting and recycling, companies have a hard time using materials that have been through these processes in products without lowering their perceived final quality, which causes an impact on the product's whole value chain. This impact will be even greater for companies operating in luxury industries where quality and packaging are paramount. *"Even if we could recollect all materials, it is very hard to reinsert those without downcycling. All the premium uses of the materials are likely to be with virgin materials" (Interview Responsible for the Circular Agenda Natura & Co).*

The Latin-American economic market is also very price-sensitive, which means that the additional costs of delivering a circular product cannot be passed on to the consumer as it is usually done in northern countries. The costs therefore have to be borne by the companies, preventing those with limited financial capabilities from entering this transition process. *"Price continues to be one of the biggest challenges to sustainable production in the region. This immediately limits (or restricts) sustainable products from achieving mass consumption in a region full of very price-sensitive consumers." (Navigating Sustainability in Latin America, 2021).*

Lastly, this financial burden could be eased by a circular permissive legislation but Latin American public policies fail to provide incentives to promote circularity. *"We don't have any financial incentives from the legislation and that presents a great challenge for implementing circularity" (Interview Sustainability Coordinator Company X).* These tax incentives also fail

to target the use of materials, reducing further the attractivity of choosing recycled materials for companies and even further the choice of recollecting or recycling those themselves. *"In Latin America, you don't have any tax incentives so it is easier to buy virgin materials than recycle or recollect old ones" (Interview Sustainability Director Natura & Co); "Lastly, it is also important to evaluate and remove potential fiscal barriers. In Brazil, for example, recycled material is subject to double taxation, thus removing any incentive to use it as opposed to virgin materials" (The circular economy in Latin America and the Caribbean, 2020).*

Finally, this also impacts the recollecting chain as legislations fail to promote the latter to the consumers which would lead companies operating in Latin America to undergo this promoting process themselves, adding further costs to the implementation of circularity. *"There are no incentives or cash-back for the customer to help us recollect the product" (Interview Sustainability Director Natura & Co).*

5.2.3 Organizational challenges

The last of the internal challenges recovered from the data lies pertains to the structure and type of a company.

The results show that the size of the company is a major challenge to face for companies when transitioning their business models. Indeed, the issues lie with their replicability across the whole value chain of a large organization. Smaller companies with limited portfolios may devise circular solutions but their implementation on a more extensive scale is an issue for larger companies. *"Finding solutions is doable for niche or smaller companies but the scalability of the solutions is an issue", "We are still struggling with some of the components that we use and we can come up with solutions but it doesn't fit the whole portfolio" (Interview Sustainability Director Natura & Co).* Having an expansive portfolio which can encompass products in different industries, each with unique production processes creates the need for individual solutions. Such processes will lead to increased research and development costs coupled with higher time investment, thus creating an organizational challenge proportional to not only the size of the company but also the diversity of its portfolio. The preexistent business model can also present a company with more difficulty for transitioning, such as ones relying on intensive resource-extracting or resource-costly products with a limited lifespan. *"I think it is impossible for a big company to fully transition towards a circular business model because of the portfolio size, the different markets and the different*

operating contexts" (Interview Environmental Coordinator Company X); "Business models and size create a big challenge for circularity. So we try to pilot and experiment some solutions but these are never 100% doable for the whole portfolio" (Sustainability Director Natura & Co).

While the challenge intensity may increase with the size of a company, smaller companies are still facing an organizational barrier, once again depending on the firm's portfolio and active business model. *"It is easier for a small company to make changes and to get more circular but it can still present hard challenges. It depends not only on the size but the accessibility of a firm's portfolio platforms" (Circular Agenda Coordinator Natura & Co).*

Companies also need to invest in employee training on circular practices to facilitate the transition process. This need is exacerbated when a company operates in multinational markets or has different internal entities, so that they can each follow the process without relying on top-down management. *"We need trainings in organizational development and management to reach more independence in these processes" (Circular Project Manager Company X).*

Below is a representation of each categorie's relevance for the cases studied.

Case	External challenges				Internal challenges		
	Social	Contextual	Institutional	Logistical	Technological	Economical	Organizational
Company X		x	x	x	x	x	x
Natura & Co	x	x	x	x	x	x	x
Industry Expert	x	x		x	x		

Table 3: *Identified categories of challenges within studied cases*

6. Discussion

The aim of this study was to shed light on the specific challenges a company operating in Latin America could face in a transition process towards a circular business model. Based on the findings section which is derived from the interviews of two companies' employees and an industry expert, the results are in accordance with previous literature, with some particularities specific to this topic.

The case studies allowed me to answer my research question by providing evidence of what the main challenges companies can encounter in the transition process are. My findings confirm the importance of four of the categories defined by Tura et al. (2019) namely, organizational, technological, economical and institutional. Within these categories, my results further the ones found regarding barriers to the implementation of circular economy, both in developing countries and emerging economies. My findings show consistence with the results of studies such as Gedam et al. (2021), Tura et al. (2019) and Khan et al. (2022) regarding the importance of factors such as "lack of technology and innovation", "lack of economic benefit" or "lack of policies, law and standard system".

The environmental category used in the three aforementioned studies was removed as the case studies showed no relevance to challenges related to this subject. In the same manner, the category Supply Chain was turned into Logistical challenges to better reflect the points of focus of the interviewees, while the Contextual challenges category was added to illustrate one of the major concerns of the companies studied.

Subsequently, one of the major differences between a transition process towards circular business models and the implementation of circular economy is related to the inherent structure of a company. The size, the business model and a firm's portfolio are paramount considerations for companies considering a transition process. The importance given by the interviewees to local differences between Latin American countries, in their legislations, markets and social behaviors and the broader difference between this region and developed countries diverged as well from prior research (Gedam et al., (2019), Khan et al., (2022)).

Lastly, my results reflect the ones of Carrasco & Ordóñez (2023) in the importance of culture, legislation, market and technology for the implementation of circular economy specifically in Latin America. Business-oriented deviations were however found in the organizational and logistical departments.

The following table summarizes the main conclusions covered from the findings, which concurrently answer my research question.

<table>
<tr><th></th><th></th><th>Company X</th><th>Natura & Co</th><th>Industry Expert</th></tr>
<tr><td rowspan="4">External challenges</td><td>Social</td><td></td><td colspan="2">Lack of awareness and knowledge from the relevant actors, coupled with a negative perception of circular products from the consumers create a challenge</td></tr>
<tr><td>Contextual</td><td colspan="3">The countries-specific and region specific legislations, market and social differences form up a contextual challenge for companies</td></tr>
<tr><td>Institutional</td><td colspan="2">The lack of circular policies and standard system, added to a lack of circlar economuy knowledge from the policy-makers and some restrictions from the legislation constitue the challenge.</td><td></td></tr>
<tr><td>Logistical</td><td colspan="3">The challenge here lies in the elongated supply chains, the lack of infrastructures and the scarcity of circular supply chains compared to the traditional ones</td></tr>
<tr><td>Internal challenges</td><td>Technological</td><td colspan="3">The lack of relevant technology and innovation and the costs of implementing existing technology or to develop new ones create a challenge for the companies</td></tr>
</table>

	Economical	Lack of clear economic incentives, of economic benefit of investing in circularity, the downcycling tendency of circular products to be downcycled all add up to form economical challenges	
	Organizational	The advantages and disadvantages of both centralization and decentralization strategies, the lack of scalability and replicability of circular business models, the lack of trainings and skills of the firm's employees and the diversity of a company's portfolio are the components of the organizational challenge	

Table 4: *Summary of main findings*

7. Conclusion

The overarching aim of this study was to pinpoint the challenges that companies can encounter when transitioning towards circular business models in the Latin American context. I therefore analyzed two companies engaged in a full or partial transition process towards a circular business model and an industry expert in the field of circularity in Latin America. These results were combined with existing literature to develop a structured layout of context-specific challenges.

Latin America will have a great role to play in a worldwide context of climate change and circular principles will be key to help this region progress towards more resilience and efficiency. Circular business models will be key in this process to effectively tackle rising environmental and social concerns. Yet, there is a lack of understanding of the possible interactions between circular economy and circular business models. Furthermore, Latin America presents unique socio-economic contexts and its people show signs of particular cultures, which creates parameters not yet explored from a business perspective.

My findings show that the challenges encountered span seven broader categories, encompassed in external and internal dimensions, namely social, contextual, institutional, logistical, technological, economical and organizational. The results provide evidence that these challenges are common to companies willing to undertake this transition process towards circularity and that there are not fit-for-all solutions yet.

This study is subjected to certain limitations which should be acknowledged for a comprehensive understanding of the research process and its outcomes. The primary limitation is the number of companies examined. Analyzing two companies, while providing valuable insights, may not represent the full spectrum of challenges that companies could face. Furthermore, this study focuses on companies already engaged in a transition process and thus may not reflect the challenges that a company at a contemplation stage could encounter. Moreover, the study is focused on the Latin American context, which might limit the generalizability of the findings to other regions.

Further research could therefore explore companies at a different transition stage and in different regions to investigate the impact of these contextual elements. Another insightful lead would be to look after possible solutions for these issues and try adapting the ones put into place in the northern hemisphere to Latin America.

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9. Appendixes

Appendix 1: Secondary data collected

Secondary data					
Case	**Type of data**	**Title**	**Name of the author**	**Name of the organization**	**Date of publication**
Natura & Co	Annual report	2022 Annual Report	N/A	Natura & Co	2022
Natura & Co	Blogpost	Breakthrough Innovation Challenges - Natura	Eduardo Eiger	Project Breakthrough	14/02/2017
Natura & Co	Blogpost	Evolving towards education, diversity and environmental conservation	N/A	SustainableIndustry	04/05/2022
Natura & Co	Blogpost	Natura's carbon neutral program	N/A	UNCC	N/A
Natura & Co	Interview	Natura’s Head of Environmental Impact spells out ambitious packaging goals	Katie Nichol	Luxe Packaging Insight	15/07/2020
Natura & Co	Magazine Article	The Circular Economy in Latin America: An Interview with Ana Maria Vieira, Founder of the Brazilian Business Council for Sustainable Development" by the Ellen MacArthur Foundation	Kacey Culliney	CosmeticsDesign	17/11/2021
Natura & Co	Report	Natura & Co Latin America Integrated Report	N/A	Natura & Co	13/07/1905

Natura & Co	Web article	Commitment to Life	N/A	Natura & Co	N/A
Company X	Annual report	Sharing resources: creating resources with circular economy	X	Company X	2023
Company X	Blogpost	A positive product impact	X	Company X	N/A
Company X	Internal document	Cosméticos Sustentáveis da Amazônia	X	Giz	01/12/2018
Company X	Interview	Creating resources with circular economy	X	Company X	2023
Company X	Blogpost	Sustainable comsetics of the Amazon	X	Giz	01/12/2021
Company X	Web article	Company X AG successfully closes acquisition of Diana Group	X	Company X	29/07/2014
	Article	Navigating Sustainability in Latin America	Jorge Araya, Jorge Zuniga	Euromonitor International	13/04/2021
	Article	Six Success Stories For The Circular Economy in Mexico and Latin America	Eduardo Enrique Aguiñaga Maldonado	EGADE Business School	16/08/2022
	Blogpost	Building towards regenerative and inclusive growth	N/A	Ellen MacArthur Foundation	N/A
	Blogpost	Latin America and the Caribbean launches the Circular Economy Coalition	N/A	Circular Economy Coalition	22/04/2021
	Blogpost	Mexico City's Circular Economy Law enters	Roberto	Garrigues	09/03/2023

		into force	Torres		
	Blogpost	New Study Urges Action to Promote Latin America's Circular Economy	N/A	IDB	29/03/2023
	Blogpost	Peru's Production Ministry's transition to the circular economy	N/A	Enel	20/05/2022
	Documentary	Seiva bruta	Fernanda Petro	Asmamj	01/03/2023
	Expert blog	World Recycling day: How much is recycled in Latin America?	Erika Moyer	NRDC	17/05/2018
	Report	Circular economy in Colombia	Dane	Gobierno de Colombia	Feb-20
	Report	Circular economy in Latin American and the Carribean: A shared vision	N/A	UNEP	25/02/2022
	Report	The circularity gap report	N/A	Circle economy	2021
	Website	5 leaders on how Latin America is driving sustainability across its value chains	Felipe Bezamat	World economic forum	24/10/2022

Table 5: *Secondary data collected*

Appendix 2: Coding table

Coding table	
Quotations	**First order codes**
"Companies also need to be concerned about designing products in a closed loop which can be reused but without being downcycled"	Lack of awareness, knowledge in consumer and supplier
"There isn't a culture for the people to care about circularity. They are not used to it and they do not demand for it to be done"	
"There is a lack of understanding from the population, such as why segregate waste or return your empty bottles. So they just don't do it"	
"I do consider that customers will need to understand that if they do not change their behaviors, we will suffer consequences, but there is no conscience yet about their personal behaviors"	Lack of consumer perception
"There is a bad image about recycled products and that's a factor that hinders the whole process"	
"We need to recognize that it is a nightmare to enable sustainable packaging because the customer mindset is that makeup in paper packages cannot have quality"	
"Some techniques used in Europe will never work in Latin America because of the different consumer mindset"	
"We have some local issues specific to Latin America, so we can use works from countries with the same picture but not everything is adaptable. Especially works from developed countries, which have different points of focus"	Local differences

"The specific countries legislations in Latin America prevent you from applying the same solutions from one country to another"	Local legislation differences
"Public policies are always something anxious, especially regarding taxation. The governments tend to put every company in the same bag, even though we know that these businesses' realities are different"	
"The logistics are completely different and you need to take that into account. These local differences bring a lot of challenge to bring circular economy to our country"	Local logistical differences
"When you try to address these {circular} issues in Latin America, it is not only about the environmental agenda but mostly the social agenda"	Local social differences
"I think circularity isn't at the same level in all markets, because of specific legislations and restrictions. Some of those help and some don't"	Market differences
"The only way to standardize this and shift the market entirely will be through regulations"	Lack of policies, law and standard system
"The legislation isn't moving at the pace it should be: in Brazil, the legislation hasn't changed in ten years"	
"I think public policies are a critical point for the circular economy, but it is a totally new market for the public policers"	Lack of CE know-how of political decision-makers
"We have lots of ideas for implementing circularity but we have standards and laws to follow, such as sanitary standards for instance, which prevent us from testing those"	Restrictions from legislation
"Looking at the size of Brazil, recollecting all our products is impossible because of the huge distances. That wouldn't be worth the effort, even just from an environmental perspective"	Elongated supply chains

"It's very hard to close the loop and recollect everything because of the size of the regions and the lack of infrastructures"	
"Some regions are really hard to access and they lack infrastructures, which makes it a major point of focus for us"	
"Then there are logistics. Most infrastructures to recycle and recollect will be centralized in the major cities, leaving the other regions without any solution"	
"In Latin America, the recycling infrastructure should be much better to collect and segregate materials"	Lack of infrastructures
"Another key challenge is about the supply chain. Old and traditional supply chains are very established, so you know the costs, the delays and so on. Circular supply chains have a hard time competing because not a lot of those exist so we don't have the parameters necessary to evaluate them against the numerous old ones"	Scarcity of circular supply chains
"Internally, we don't make a lot of investments on machinery but we spend a lot with our vendors and suppliers to try to develop new solutions. The same goes with our research and development department"	Costs of implementing technology
"The difficulty lies with the expensiveness of implementing technology"	
"We have responsibilities to raise conscience and we cannot do that without a circular solution"	Lack of technology and innovation
"Technology is not yet at the same level for raw materials, some are easiest to include into circularity than others"	

"Technology is mostly a way to improve your income for small business on their path towards circularity. With new machinery and techniques, they can find ways to use all parts of a product, reducing waste and generating added value in the process"	Implementation of technology
"There are technical challenges because we can find ways to compost waste for instance but it is impossible to find clients to sell this to. They don't have the technology required to fit the compost in their operations"	Lack of technology and innovation
"In Latin America, you don't have any tax incentives so it is easier to buy virgin materials than recycle or recollect old ones"	Lack of clear incentives
"We don't have any financial incentives from the legislation and that presents a great challenge for implementing circularity"	
"There are no incentives or cash-back for the customer to help us recollect the product so they are not willing to voluntarily take this waste and go to any place to send it back to us"	
"If it makes sense financially, it is going to develop by itself but it's not the case for all the products and materials"	Lack of economic benefit
"The distances and lack of infrastructures make everything much more expensive and therefore very hard to put into place"	
"With circularity, it has been demonstrated that you can find some solutions which will get you at 66% of the sales performance but never 100%"	
"We could shift 50% of our portfolio to solid bars {easier to fit into circularity} but we would drop down 95% of our revenues"	

"When coming up with a new and more circular product, we have to massively invest to make sure they will achieve the same performance as the old portfolio product"	
"Even though we could shift the whole mindset internally, we would still have to figure out how to engage the customers, because of competition"	Lack of quality in the circular product
"Even if we could recollect all materials, it is very hard to reinsert those without downcycling. All the premium uses of the materials are likely to be with virgin materials"	
"Having autonomous entities inside your organization is definitely a challenge because you lose the single approach that comes from centralization"	Centralization vs decentralization
"Another issue with decentralization is with the research and development departments which can have different approaches depending on the brands even though they are all in the same business sector"	
"The idea is to centralize all the production to ensure a quality standard for our circular solutions"	
"Finding solutions is doable for niche or smaller companies but the scalability of the solutions are an issue"	Lack of scalability and replicability of the business model
"There are some field solutions but the major challenge is to engage the consumers to change their habits"	
"I think it is impossible for a big company to fully transition towards a circular business model because of the portfolio size, the different markets and the different operating contexts"	
"We need trainings in organizational development and management to reach more independence in these processes"	Lack of training and skills

"Business models and size create a big challenge for circularity. So we try to pilot and experiment some solutions but these are never 100% doable for the whole portfolio"	Portfolio diversity
"We are still struggling with some of the components that we use and we can come up with solutions but it doesn't fit the whole portfolio"	
"It is easier for a small company to make changes and to get more circular but it can still present hard challenges. It depends not only on the size but the accessibility of a firm's portfolio platforms"	

Table 6: *Coding table*

Appendix 3: Coding tree

<table>
<tr><th>First order codes</th><th>Second order codes</th><th>Aggregated dimension</th></tr>
<tr><td>Lack of awareness, knowledge in consumer and supplier</td><td rowspan="2">Social</td><td rowspan="6">External challenges</td></tr>
<tr><td>Lack of consumer perception</td></tr>
<tr><td>Local differences</td><td rowspan="4">Contextual</td></tr>
<tr><td>Local legislation differences</td></tr>
<tr><td>Local logistical differences</td></tr>
<tr><td>Local social differences</td></tr>
<tr><td>Market differences</td></tr>
</table>

Lack of policies, law and standard system	Institutional	
Lack of CE know-how of political decision-makers		
Restrictions from legislation		
Elongated supply chains	Logistical	
Lack of infrastructures		
Scarcity of circular supply chains		
Costs of implementing technology	Technological	Internal challenges
Lack of technology and innovation		
Implementation of technology		
Lack of technology and innovation		

Lack of clear incentives	Economical	
Lack of economic benefit		
Lack of quality in the circular product		
Centralization vs decentralization	Organizational	
Lack of scalability and replicability of the business model		

Lack of training and skills		
Portfolio diversity		

Table 7: *Coding tree*

Appendix 4: Identified challenges amongst the studied cases

First order codes	Company X	Natura & Co	Industry Expert	Second order themes
Lack of awareness, knowledge in consumer and supplier		x	x	Social
Lack of consumer perception		x	x	
Local differences			x	Contextual
Local legislation differences	x	x		
Local logistical differences			x	
Local social differences		x		

Market differences	x			
Lack of policies, law and standard system		x		Institutional
Lack of CE know-how of political decision-makers	x			
Restrictions from legislation	x			
Elongated supply chains	x	x	x	Logistical
Lack of infrastructures		x		
Scarcity of circular supply chains	x			
Costs of implementing technology	x	x		Technological
Lack of technology and innovation	x	x	x	

Implementation of technology	x			
Lack of clear incentives	x	x		Economical
Lack of economic benefit	x	x		
Lack of quality in the circular product	x	x		
Centralization vs decentralization	x	x		Organizational
	x	x		

Lack of scalability and replicability of the business model				
Lack of training and skills	x			
Portfolio diversity	x	x		

Table 8: *Identified challenges amongst the studied cases*