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Rodrigo Rodrigo Barra Novoa Barra Novoa

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Rodrigo Rodrigo Barra Novoa Barra Novoa. The Circular Economy as a Strategy for Local Economic Sustainability: A Conceptual Approach to MSMEs: The Circular Economy as a Strategy for Local Economic Sustainability: A Conceptual Approach to MSMEs. 2023. hal-04328106

HAL Id: hal-04328106

<https://hal.science/hal-04328106>

Preprint submitted on 7 Dec 2023

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The Circular Economy as a Strategy for Local Economic Sustainability: A Conceptual Approach to MSMEs

Vol. 2 - No 1

Received: 18/07/2023 - Approved: 30/11/2023

Rodrigo Barra Novoa, Ph.D

Doctor in Economic Sciences at Camilo José Cela University

Social Economist

<https://orcid.org/0000-0002-7204-1528>

ABSTRACT

This article examines the conceptual basis of the circular economy and its impact on MSMEs and regional economies. The circular economy emerges as a response to current challenges in search of a sustainable future, where well-being and economic prosperity are guaranteed while reducing environmental impact.

Through an exhaustive literature review, the contributions of the circular economy in reducing environmental impact, generating green jobs, and improving productive efficiency are analyzed. In addition, the synergies generated by implementing circular practices in local economies are identified, thus mitigating the negative impacts of traditional industrial practices.

The results reveal that more and more companies and governments are adopting this approach to improve their environmental and economic performance. It also highlights the importance of broadening the debate on the opportunities offered by the circular economy within the framework of the Sustainable Development Goals (SDGs) and the new economy.

Keywords: circular economy, sustainability, inclusive development, green economy, MSMEs.

JEL Codes: D16 Collaborative Consumption, D22 Firm behavior, O43 Institutions and growth, O44 Environment and Growth, R11 Regional economic activity.

Introduction

This article examines the main theoretical contributions of the circular economy and its implications for the sustainable development of regional economies. Although, the field of study is relatively new and is in full expansion and in permanent redefinition, the research work proposes a theoretical review on the origins, evolution, and implications of the circular economy in companies and territories. This includes the review of scientific articles, technical reports, books, and relevant publications. Transversally, it is supported by the identification of case studies, analyzing circular economy practices in Europe, the United States and Chile. This includes a selection of representative cases from different productive sectors and triple impact gazelle companies (Barra, 2022).

The paper also systematizes some key elements to be deployed especially in the circular transition of economic and industrial agents in the territories, considering the main benefits and practical applications to foster a more sustainable economic paradigm and aiming to counteract linear economic models in order to democratize knowledge and understand how circular practices help to prolong the availability of ecological resources and intelligently supply demographic needs at the international level.

Finally, the article discusses the advantages, co-benefits, and synergies of the circular economy, especially in terms of designing innovative solutions to achieve greater clarity on the challenges of economic development and local sustainability.

Literature review

The circular economy is a concept that seeks to change the way goods and services are produced and consumed, with the aim of reducing environmental impact and promoting sustainability. According to the Ellen MacArthur Foundation (2015), “the circular economy is a regenerative system in which resources and materials are kept in use as long as possible, as few resources as possible are extracted, and waste is eliminated”.

The literature establishes that the circular economy is based on the idea that waste can be considered as resources and should therefore be reintegrated into the productive cycle. As Walter R. Stahel (2016) points out, “the circular economy is an industrial system that seeks to maximize the efficiency of resource use by reducing, reusing, recycling, and recovering materials and energy”.

The circular economy also implies a change in the way economic value is conceived. Rather than focusing solely on the production and consumption of goods and services, the circular economy seeks to maximize value across the entire life cycle of products. As McDonough et al., (2013) points out, “the circular economy seeks to create a system of production and consumption in which everything that is produced is designed to be reused or recycled”.

The circular economy is an economic approach that seeks to reduce waste and maximize efficiency in the use of natural resources. Unlike the traditional linear economy, which is based on the extraction, production, consumption and disposal of resources, the circular economy promotes the reuse, repair, and recycling of materials to create a closed cycle of production and consumption.

The circular economy is an approach that involves a comprehensive look at economic activities within the framework of environmental sustainability. This paradigm shift from the linear model, where you demand, produce, consume, and dispose, to the circular one implies avoiding waste generation by proposing a chain of processes and principles that operate throughout the product's life cycle. In this way, it is expected that producers will adopt product designs so that their materials generate less waste, are more environmentally friendly, have a longer useful life, allow repair and, in this framework, take responsibility for the waste generated by the products.

The concept is aligned with the Paris agreement within the framework of the Convention on Climate Change and at the same time with the Sustainable Development Goals of the 2030 agenda of the United Nations Development Program (UNDP), number 12 which states:

“Ensure sustainable consumption and production patterns and through change in the methods of production and consumption of goods and resources can reduce the ecological footprint to ensure sustainable growth and development.”

This approach involves a wide range of fields in which production processes, consumption patterns, the type and use of materials, transportation, energy generation, waste generation and treatment, among many other things, are rethought. It is expected that this approach will contribute to reducing environmental impacts, promoting resource efficiency, and enhancing economic competitiveness.

The circular economy model represents a systemic change in the way we produce and consume goods and services. It is based on three principles: designing out waste and pollution, keeping products and materials in use, and regenerating natural systems. These principles are applied throughout the value chain of goods and services.

Origins and evolution of the circular economy

The origins of the circular economy date back to the 1970s, when Swiss economist Walter R. Stahel coined the term "function economy" in a report for the European Commission. This report proposed an economic model that focused on the reuse and recycling of materials to create a closed cycle of production and consumption, rather than the traditional linear economic model of extraction, production, consumption, and disposal.

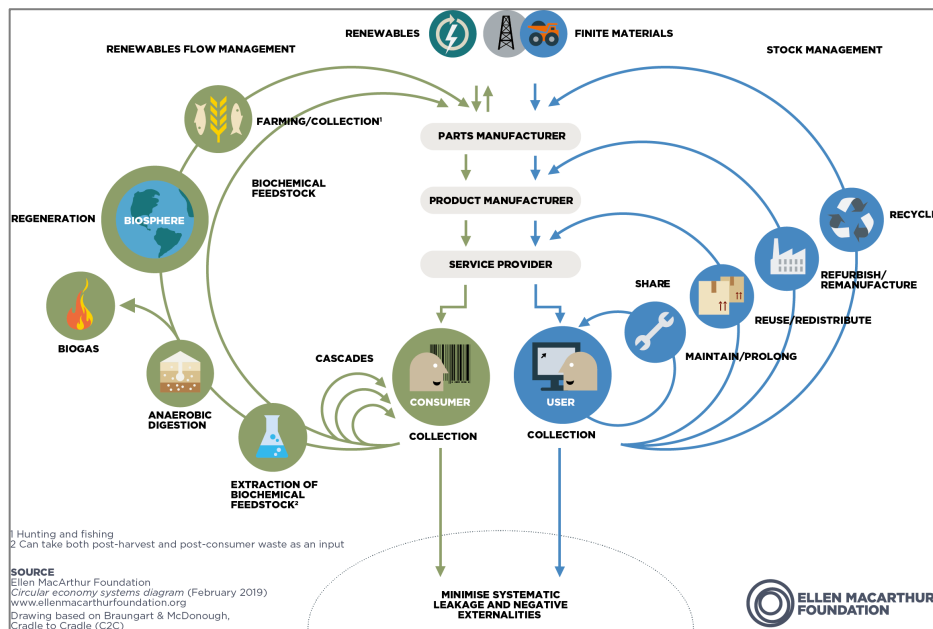
Later, in the 1990s, Stahel founded the Circular Economy Institute, which focused on promoting the circular economy through research and practical projects. Since then, other authors and organizations have contributed to the development of circular economy theory, including Ellen MacArthur and her foundation, which has worked to promote the circular economy worldwide.

Today, the circular economy shows that companies and governments are adopting this approach to reduce their environmental impact and improve the efficiency of their processes. In the European Union (2012), for example, a circular economy action plan has been established that includes ambitious targets for reducing waste and increasing recycling.

Development of the concept and implications

According to the Ellen MacArthur Foundation (2013), it is not possible to trace the beginning of this concept or to find a single author who coined it at some point in time, however it is associated with some currents of thoughts such as "regenerative design", "economic performance or functional service economy", "Cradle to Cradle" (cradle to cradle which could also be thought of as origin to origin), "industrial ecology or science and sustainability", "blue economy", "biomimicry", and "permaculture". The circular economy approach starts to be mentioned more strongly in the last decade. Between 2013 and 2015 several action plans and reports are published and previously in 2008 China enacts the Circular Economy Law. Figure 1 presents one of several schemes found in the literature review.

Figure 1 Circular Economy Systems Diagram



Source: Ellen MacArthur Foundation, 2019.

In addition, as established by the OECD, the circular economy is based on three design-driven circles, corresponding to: a) eliminating waste and pollution, b) circulating materials and products, i.e., keeping products and materials in use, and c) regenerating natural systems. This implies that economic activities are planned and carried out in such a way that along the value chain the circles are closing, slowing down and becoming smaller (OECD, 2020).

All in all, the circular economy is a very broad concept that can have different meanings for different people. Kirchherr et al., (2017) collected 114 definitions which they coded into 17 dimensions and after analyzing definitions written in academic articles, reports and public policy articles came up with the following definition:

"A circular economy describes an economic system that is based on business models that replace the concept of 'end-of-life' by reducing, alternatively reusing, recycling and recovering materials in production / distribution and consumption processes, thus operating at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and more), with the objective of achieving sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations."

Theoretical approaches of circular economy

Cradle-to-cradle¹ (C2C): This approach focuses on the design of products and processes that enable the reuse and recycling of materials. It seeks to create a closed production and consumption cycle in which materials remain in use for as long as possible.

Functional economy: This approach focuses on the provision of services rather than the sale of products. It seeks to extend the useful life of products and reduce waste generation through the design of durable and repairable products.

Circular bioeconomy: This approach focuses on the sustainable use of biological resources, such as agriculture, forestry, and fisheries, to create products and services. It seeks to reduce waste and maximize the value of biological resources through reuse, recycling, and regeneration.

Industrial symbiosis: This approach focuses on collaboration between companies to share resources and reduce waste. It seeks to create a business ecosystem in which waste from one company becomes resources for another company.

These theoretical approaches complement each other and can be applied together to achieve a more effective circular economy (See more evolution of terminology in the table N°1).

Table 1. Evolution of terminology

| Year | Main contributions or approaches |
|------|---|
| 1976 | Walter R. Stahel coined the term "function economics" in a report for the European Commission. |
| 1990 | Stahel founds the Institute for the Circular Economy to promote the circular economy through research and practical projects. |
| 2002 | The European Union adopts a circular economy strategy to promote the reuse and recycling of materials and reduce waste. |
| 2010 | The Ellen MacArthur Foundation is established to promote the circular economy worldwide. |

¹ Cradle to Cradle is about seeing waste as an eternal resource and doing the right thing from the start. It is about making community and product development work in the same way as a healthy ecological system where all resources are used effectively and cyclically (as opposed to the current linear system which can best be described as a Cradle to Grave system). SVID, Swedish Industrial Design Foundation, 2018. <https://sustainabilityguide.eu/methods/cradle-to-cradle/>

| | |
|------|---|
| 2012 | The European Commission presents a package of circular economy measures to encourage reuse, recycling, and waste reduction. |
| 2015 | The UN adopts the Sustainable Development Goals, which include a specific goal on sustainable consumption and production. |
| 2018 | China announces ban on importing foreign plastic waste to promote waste management in the country. |
| 2020 | COVID-19 pandemic generates increased demand for sustainable products and accelerates the transition to a circular economy. |
| 2021 | Global Alliance for Circular Economy and Resource Efficiency (GACERE) launched. |

Source: own elaboration.

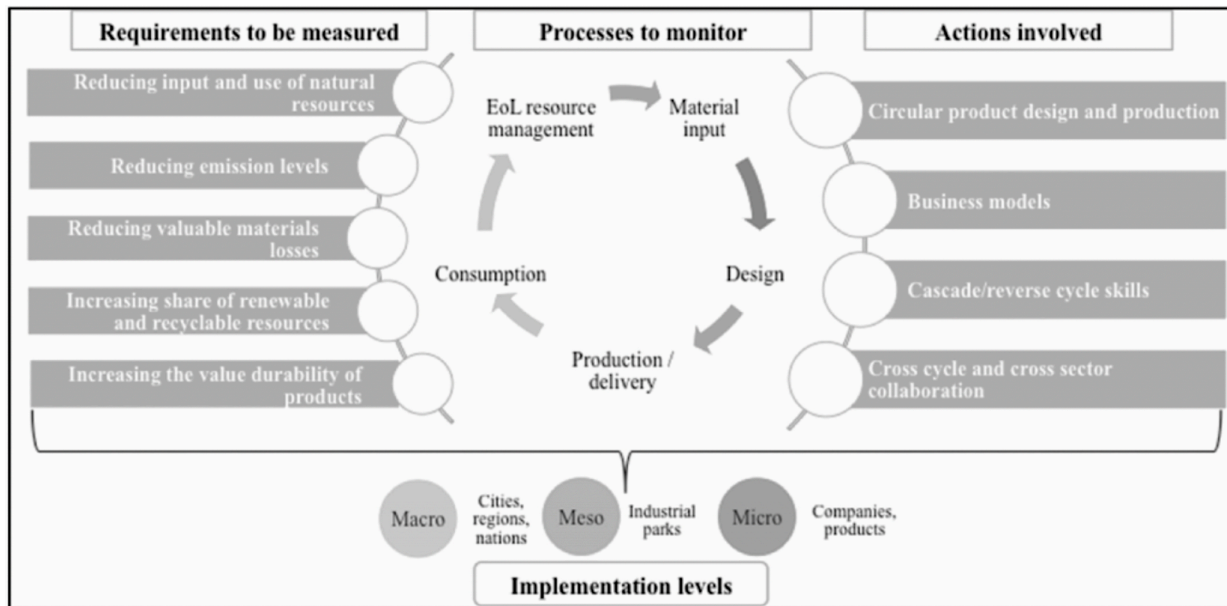
Based on evolving theoretical and practical approaches to the field of analysis, the goal of the circular economy is to maximize products and services that are already in use. This includes all phases of a product's life cycle. Simplistically, the phases of a product's life cycle are:

- The extraction of natural resources.
- The conversion of natural resources into products.
- The reconversion of disused materials, as well as waste, into sources of resources for new products.

The framework of Elia et al., (2017), shown in Figure 2, can be used to support the measurement of Circular Economy adoption. According to this framework, there are four action components involved that support the adoption of the Circular Economy:

- Circular product design and production, including, for example, eco-design that takes place in the production planning phase. Eco-design aims to consider the environmental impacts of a product from the outset and facilitates the reuse of a product and its materials.
- Business models for the circular economy are alternative ways of producing and marketing goods, for example, by providing product service systems instead of ownership of a product and considering collaboration and transparency along the value chain of a product.

Figure 2. The framework of the circular economy



Source: Elia et al. 2017

Circular Economy Indicators and Monitoring Systems

Considering the various areas analyzed in the literature, monitoring systems with multiple indicators have been developed to measure the progress of circular economy implementation as well as to raise awareness of sustainability and encourage further progress. In line with the above, there is diversity not only in the indicators but also in the principles, aspects, or perspectives on which they are measured. The following is a brief table of indicators that can be used by companies and institutional agents in the territories.

Table 2. Indicators and Monitoring Systems

| Indicators | Description |
|--------------------------|--|
| Resource consumption | This indicator measures the amount of natural resources a company uses to produce its products or services. By adopting circular economy practices, resource consumption is expected to decrease. |
| Waste generated | This indicator measures the amount of waste a company generates during its production process. By adopting circular economy practices, the amount of waste generated is expected to decrease. |
| Recycling | This indicator measures the amount of materials that a company recycles in its production process. By adopting circular economy practices, the amount of recycled materials is expected to increase. |
| Reuse | This indicator measures the amount of materials a company reuses in its production process. By adopting circular economy practices, the amount of reused materials is expected to increase. |
| Energy efficiency | This indicator measures the amount of energy a company uses to produce its products or services. By adopting circular economy practices, energy efficiency is expected to increase. |
| Greenhouse gas emissions | This indicator measures the amount of greenhouse gases a company emits during its production process. By adopting circular economy practices, greenhouse gas emissions are expected to decrease. |
| Carbon footprint | This indicator measures the total amount of greenhouse gases a company emits during its entire life cycle, including production, transportation, and waste disposal. By adopting circular economy practices, the carbon footprint is expected to decrease. |

Source: own elaboration.

According to the table there are several indicators that can be measured in circular economy such as resource consumption, waste generated, recycling, reuse, energy efficiency, greenhouse gas emissions and carbon footprint. These indicators can help companies measure their environmental performance and identify areas for improvement in their production and business processes.

SDGs and circular economy

The circular economy is a key tool for achieving the Sustainable Development Goals (SDGs) set by the United Nations, especially for addressing sustainable development challenges and achieving a more equitable and sustainable future. International sustainability practices confirm that the circular economy can contribute to the achievement of multiple SDGs, including decent work and economic growth, industry, innovation and infrastructure, responsible production and consumption, and climate action.

By linking directly to various challenges underpinning the Sustainable Development Goals (SDGs), the circular economy additionally supports the negative effects of climate change, poverty and inequality, and ecosystem degradation and biodiversity loss.

Some ways in which the circular economy contributes to the achievement of the SDGs are described below:

SDG 8: Decent work and economic growth. The circular economy can foster local job creation and sustainable economic development through the reuse and recycling of materials. In addition, the circular economy can reduce production costs, which can help businesses become more competitive and create more jobs.

SDG 9: Industry, innovation, and infrastructure. The circular economy can foster innovation and the development of new sustainable technologies to improve efficiency and reduce waste. In addition, the circular economy can encourage investment in sustainable infrastructure and clean technologies.

SDG 12: Responsible production and consumption. The circular economy can encourage responsible production and consumption by reusing and recycling materials, thereby reducing the amount of waste generated. In addition, the circular economy can encourage the production and consumption of sustainable products and reduce food waste.

SDG 13: Climate action. The circular economy can contribute significantly to the reduction of greenhouse gas emissions by reducing the need to extract new resources and minimizing the amount of waste generated. In addition, the circular economy can encourage the transition to renewable energy sources and reduce the carbon footprint of businesses.

Green jobs and sustainable value chains

The circular economy has great potential to generate green jobs worldwide. According to a report by the United Nations Environment Program, the transition to a circular economy could create up to 18 million green jobs worldwide by 2030.

In the same vein, the Ellen MacArthur Foundation published a report entitled “Jobs and Skills in the Circular Economy” estimating that the transition to a circular economy could create up to 6 million additional jobs in Europe by 2030 (Ellen MacArthur Foundation, 2019).

These jobs could be in a variety of sectors, such as waste management, product repair and maintenance, recycled manufacturing, and renewable energy generation. In addition, the circular economy can also drive innovation and the creation of new triple-impact gazelle companies in various sectors of the economy.

Moreover, around the world, more sustainable value chains are being developed thanks to the circular economy. Examples include:

Europe: The European Union has adopted a Circular Economy Action Plan that sets ambitious targets to reduce waste and increase recycling. This has led to the creation of new businesses and jobs in waste management, recycled manufacturing, and product repair.

Latin America: Several Latin American countries, such as Chile, Colombia, and Brazil, have adopted policies and programs to promote the circular economy. This has led to the creation of new businesses in sectors such as waste management and renewable energy generation.

Asia: countries such as Japan, South Korea and Singapore have adopted policies and programs to foster the circular economy. This has led to the creation of new companies in sectors such as the manufacture of recycled products and waste management.

In short, the circular economy is gaining momentum around the world and is generating jobs and more sustainable value chains that are supporting the SDG indicators.

Benefits of circular economy in the SMEs sector

The circular economy is an innovative approach that has become increasingly popular in the business sector due to the benefits it can offer. This article will discuss some of the benefits of the circular economy for SMEs.

According to a study by Geissdoerfer et al. (2017), the circular economy can help SMEs reduce their production costs by promoting the reuse and recycling of materials. By reducing the need for new raw materials, SMEs can save money on material purchases and waste disposal. In addition, the circular economy can help SMEs improve the efficiency of their production processes. By focusing on the reuse and recycling of materials, SMEs can optimize their processes and reduce waste.

The circular economy can also foster innovation in SMEs by promoting the design of sustainable products and processes. According to a study by Kirchherr et al. (2018), SMEs can develop new products and services that fit the needs of a circular economy. This can help SMEs access new markets by promoting the creation of more sustainable supply chains. SMEs that adopt sustainable practices can be more attractive to consumers and investors looking for more sustainable products and services.

The circular economy can also help SMEs comply with environmental regulations and reduce their environmental impact. According to a study by Ghisellini et al. (2016), by adopting sustainable practices, SMEs can reduce their carbon footprint and improve their reputation in the business community and among consumers.

Benefits of the circular economy in governments and local economies

The circular economy is an innovative approach that has gained popularity in governments and local economies due to the benefits it can offer. According to a study by Ellen MacArthur Foundation (2015), the circular economy can help governments and regional economies reduce their environmental impact by promoting reuse, recycling, and waste reduction. This can contribute to climate change mitigation, natural resource conservation and biodiversity protection.

The circular economy can also foster innovation in governments and regional economies by promoting the development of sustainable technologies and practices. According to a study by Ellen MacArthur Foundation this can contribute to the creation of green jobs and sustainable economic growth.

In addition, the circular economy can help governments and regional economies to improve resource efficiency by promoting sustainable practices in productive sectors.

Finally, the circular economy can facilitate compliance with environmental regulations and reduce its environmental impact. According to a study by Ellen MacArthur Foundation (2015), by adopting sustainable practices, governments and regional economies can improve their reputation and their ability to attract sustainability-intensive investments.

Implementation of the circular economy at the micro, meso and macro levels

At the micro level, the Circular Economy is implemented, for example, through cleaner production and eco-design practices. Cleaner production involves pollution prevention, reduction of hazardous materials or Design for the Environment as interrelated practices, among others. At the same time, cleaner production practices provide environmental and economic benefits to companies by reducing production and waste disposal costs. Furthermore, eco-design takes place in the production planning phase and aims to consider the environmental impacts of a product from the outset. Therefore, eco-design can promote the circular economy approach by supporting the improved use of materials and resources.

At the meso level, the implementation of the circular economy refers to production sites, including industrial parks and networks of companies. In such industrial systems, industries that normally operate as separate units become part of an "industrial symbiosis" in which various resources (such as materials, energy, water, and by-products) are exchanged between the units. Industrial symbiosis is intended to achieve economic and environmental benefits.

The implementation of the circular economy at the macro level, comprising cities, regions, or nations, involves the concept of eco-cities, innovative approaches to waste management and zero waste programs. Importantly, there is evidence on the evolution of the circular economy in eco-cities in terms of resource efficiency (e.g., energy intensity per GDP and water intensity per capita indicators), municipal waste production, waste treatment and recovery (e.g., wastewater rate). treatment, reuse rate of industrial solid waste). In some eco-cities analyzed through the case studies, very significant contributions to the circular economy and its contribution to the SDGs can be identified.

Growth and prospects for the circular economy

The circular economy has experienced significant growth worldwide in recent years, and this growth is expected to continue in the future. According to a report by the Ellen MacArthur Foundation, the circular economy is expected to grow at an annual rate of 4.5% through 2030, representing a \$4.5 trillion business opportunity.

In terms of the impact of COVID-19 on the creation of circular businesses, there have been both challenges and opportunities (Barra, 2021). On the one hand, the pandemic has affected many companies and created uncertainty in the market. On the other hand, there has been an increased awareness of the importance of sustainability and the need to reduce waste and greenhouse gas emissions.

Considering the outlook for the scope of analysis in the new economy (Barra, 2021), sustainability is expected to be an increasingly important factor in business decision making. The circular economy offers an opportunity to reduce costs and improve efficiency while reducing environmental impact. In addition, consumers are increasingly interested in sustainable products and are willing to pay more for them. Therefore, the circular economy is expected to play an important role in the new economy.

Circular transition in the SMEs sector

The stages for the transition to the circular economy in small and medium-sized enterprises (SMEs) may vary depending on the sector and the specific business context, but in general the available literature considers the following stages:

- Identification of material and energy flows: the first stage consists of identifying the material and energy flows into and out of the production process. This includes the analysis of production processes, identification of the materials and resources used, and environmental impact assessment.
- Evaluation of reuse and recycling potential: The second stage consists of evaluating the reuse and recycling potential of the materials identified in the first stage. This includes analysis of the potential for reuse and recycling of materials, identification of technical and economic barriers, and environmental impact assessment.

- Design of sustainable products and processes: The third stage consists of the design of sustainable products and processes that allow the reuse and recycling of the materials identified in the previous stages. This includes the design of durable and repairable products, the use of recycled and biodegradable materials, and the optimization of production processes.
- Implementation of sustainable practices: The fourth stage consists of the implementation of sustainable practices in the production processes. This includes the adoption of clean technologies, reduction of energy and water consumption, and efficient waste management.
- Training and awareness-raising: The fifth stage consists of training and sensitization of company personnel on the sustainable practices implemented. This includes training on the use of clean technologies, efficient resource management and the importance of the circular economy.
- Monitoring and evaluation: The sixth stage consist of monitoring and evaluating the environmental and economic performance of the implemented practices. This includes measuring sustainability indicators, assessing the environmental and economic impact, and identifying opportunities for continuous improvement.

In summary, the transition to a circular economy in SMEs involves a series of steps ranging from the identification of material and energy flows, to training and awareness-raising of personnel, to the design of sustainable products and processes, to the implementation of sustainable practices. The transition to a circular economy can improve competitiveness, reduce costs, and improve the environmental performance of SMEs.

Main constraints and opportunities of the circular economy

Throughout the article we have explored different concepts, which enable the transition to the circular economy in companies and local economies. At this point there are still barriers to the transition to circular. various research agrees that there are three types of barriers to the implementation of the circular economy, including regulatory, normative, and cultural-cognitive barriers. As an example, regulatory barriers include rules, laws, and sanctions. Certifications and accreditations are examples of normative aspects and common beliefs and shared logics of action belong to cultural-cognitive barriers.

Other research suggests that the implementation of circular economy practices may be difficult to apply in some territories and companies due to several factors, including a). Lack of awareness and commitment: In some cases, businesses and communities may not be aware of the benefits of the circular economy or may not be committed to implementing sustainable practices. This may be due to a lack of information or the perception that the circular economy is costly or difficult to implement; b). Lack of infrastructure: The implementation of circular economy practices requires specific infrastructure, such as recycling plants, waste management systems and clean technologies. In some territories and companies, this infrastructure may be lacking or may be insufficient to meet the needs of the circular economy; c). Regulatory barriers: Government regulations may be a barrier to the implementation of circular economy practices in some territories and companies. In some cases, regulations may not be adapted to the circular economy or may be too restrictive, making it difficult to implement sustainable practices; d). Financial barriers: The implementation of circular economy practices may require significant investments in infrastructure, technology, and training. In some cases, companies and communities may not have the financial resources to make these investments; e). Resistance to change: The implementation of circular economy practices may require significant changes in corporate culture, business models (Osterwalder, 2010) and operating practices. In some cases, companies may resist these changes due to uncertainty or lack of understanding about the benefits of the circular economy.

Overcoming these barriers requires a collaborative approach and a combination of specific tools and strategies tailored to the needs and characteristics of each territory and company.

The following are a series of actions and practices to neutralize these constraints in the field of the business economy:

- Identify opportunities: Small and medium-sized enterprises can identify circular economy opportunities through the review of their production processes and the identification of waste and by-products that can be reused or recycled. They can also explore opportunities for collaboration and cooperation with other companies and local actors.
- Design for circularity: Small and medium-sized enterprises can apply design for circularity principles in their production processes, such as design for recycling,

reuse, and repair. This can involve selecting sustainable materials, optimizing resource use, and reducing waste.

- **Implement waste management practices:** Small and medium-sized enterprises can implement waste management practices such as source separation, recycling, and reuse of materials. This can reduce the amount of waste sent to landfills and improve environmental performance.
- **Promote the circular economy in the supply chain:** Small and medium-sized enterprises can promote the circular economy in their supply chain by selecting sustainable suppliers, promoting recycling and reuse of materials, and encouraging sustainable practices in their business partners.
- **Training and awareness-raising:** Small and medium-sized enterprises can train their staff on circular economy principles and practices and raise awareness among their customers about the importance of the circular economy and how they can contribute to it.
- **Access to financing:** Small and medium-sized enterprises can access financing to implement circular economy practices through government programs, investment funds and other sources of financing.

Considering the above, SMEs can apply these circular economy practices, as they offer environmental, social, and economic benefits in the medium and long term that can contribute to their future sustainability.

Circular economy case studies

So far, only 8.6% of the world economy is considered circular. The most widely used definition of Circular Economy is based on the 3R framework: reduce, reuse, and recycle. Others extend it to a 4R framework by adding 'recover' to these principles of circular economic activities. According to the European Commission's Circular Economy Action Plan, the Circular Economy is described as preserving the value of product, materials, and resources in the economy over a long period of time with decreasing production of waste.

According to Kirchherr et al. (2017), a Circular Economy is an economic system that replaces the "end-of-life" concept with the reduction, reuse, recycling, and recovery of materials in the processes in which products and services are produced and consumed. These authors explain that the Circular Economy operates at three levels: the micro level, which refers to individual customers or companies; the meso level, which refers to eco-industrial parks; and the macro level, which captures anything between cities and nations.

Considering the three levels mentioned above, some case studies that can help illustrate this area are illustrated below:

The city of Amsterdam, the Netherlands: The city of Amsterdam has implemented a circular economy strategy that includes the use of renewable energy, reuse and recycling of materials, and promotion of sustainable practices in businesses and households. A prominent example is the initiative "Amsterdam Circular: 2018-2022 Program," which seeks to reduce resource and waste consumption in the city.

Patagonia Company, USA: Patagonia Company is a leading example of circular economy in the textile sector. The company has implemented sustainable practices at all stages of the production process, from the selection of organic and recycled materials to the repair and reuse of used products.

MUD Jeans, The Netherlands: MUD Jeans is a company that has implemented a circular economy strategy in the textile sector. The company offers a jeans rental service, which reduces the amount of waste generated by the textile industry and promotes the reuse of materials.

Interface, United Kingdom: Interface is a company that has implemented a circular economy strategy in the carpet sector. The company has developed a materials recovery and recycling system that promotes the reuse and recycling of materials and reduces the amount of waste generated by the industry.

The city of San Francisco, USA: The city of San Francisco has implemented a zero-waste strategy that promotes the reduction, reuse, and recycling of materials. The city has been able to significantly reduce the amount of waste sent to landfills through composting and recycling programs.

The Chilean experience

In Chile, there are some recent circular economy models linked to different productive sectors. Some case studies are presented below:

B Companies: B Companies are companies that seek to generate a positive social and environmental impact through their economic activity. In Chile, there are several B companies that have implemented circular economy practices in their production processes, such as the company TriCiclos, which is dedicated to waste management and promotes circular economy through recycling and reuse programs.

Recycling industry: The recycling industry in Chile has experienced significant growth in recent years. Companies such as Recupac, Ecoplast and ReciclaChile are examples of companies that have implemented circular economy practices in their production processes, promoting the reuse and recycling of materials and reducing the amount of waste sent to landfills.

Circular agriculture: Circular agriculture is an agricultural production model that seeks to reduce environmental impact and improve efficiency through the reuse of organic waste. In Chile, there are several circular agriculture initiatives, such as the "Ecofertilizers" project of the company BioFutura, which produces organic fertilizers from agro-industrial waste.

Circular economy in construction: Construction is a productive sector that generates large amounts of waste and consumes many natural resources. In Chile, there are initiatives to promote the circular economy in construction, such as the "Circular Construction" project of Fundación Chile, which seeks to promote the reuse and recycling of materials in construction.

Circular economy in mining: Mining is a key productive sector in Chile, but it also generates large environmental and social impacts. In this context, the circular economy can offer opportunities to reduce the consumption of natural resources and minimize environmental impacts. Companies such as Codelco and BHP Billiton have implemented circular economy practices in their production processes, such as water recycling and waste reuse.

The selected case studies demonstrate that the implementation of circular economy practices can offer long-term environmental, social, and economic benefits.

In summary, these are just a few examples of successful circular economy case studies. Each presents different approaches and strategies for implementing sustainable practices in different productive sectors and business contexts.

Hypothesis

This article answers the following questions

1. Is the circular economy an effective tool for improving economic growth and sustainability of SMEs and local economies by promoting resource efficiency and encouraging circular practices in productive sectors?
2. By reducing production costs and improving competitiveness, can the circular economy contribute to sustainable economic growth and the creation of green jobs?
3. Is the circular economy an effective tool for improving the sustainability of territories, while promoting economic diversification, reducing costs, and contributing to environmental conservation?

Research Methodology

The research methodology is qualitative and descriptive and focuses on critically analyzing the literature related to the circular economy and its relationship with the sustainable development of small businesses and local economies. To this end, a narrative framework is created to understand the theoretical scope and evidence related to the practical application of the circular economy, analyzing variables, indicators, and small case studies.

Research results

The results of the research suggest that the circular economy is difficult to achieve by the interests of individual actors alone and if they remain independent of each other. The transition to a circular economy requires new types of value creation between economic and institutional actors in the territory, new roles for existing local communities and new types of collaboration between them. The co-creation of value requires companies to create new collaborative networks to transit to more sustainable economic models (Sitra, 2019).

In this sense, efforts for a circular economy require special attention in national and local political agendas, so that institutional actors have the authorized support to make effective decisions for the circular transition and can stimulate the SME sector in a key agent to guarantee a more sustainable economic growth and with positive externalities in their environmental surroundings.

Finally, the results of this theoretical approach account for the hypotheses preliminarily established and although the challenges and limitations are a bottleneck for different local economies, the prospects for circular transition are very promising, especially to gradually contribute to the SDGs and their impact on the generation of more sustainable and resilient enterprises with the capacity to induce new consumption habits.

Discussion

Considering the aspects analyzed in this article, it is confirmed that the circular economy is an economic model that seeks to reduce the generation of waste and the intensive extraction of natural resources, while promoting the reuse and recycling of materials. This approach is particularly relevant for SMEs and local economies, as they can take advantage of the business opportunities offered by the circular economy to improve their efficiency, competitiveness, and sustainability.

Moreover, the circular economy is presented as an effective tool to strengthen the resilience of territories in the face of current environmental and economic challenges, by promoting economic diversification and the development of new productive sectors. Moreover, recent evidence suggests that the circular economy fosters collaboration between companies and sectors, can contribute to the creation of more sustainable supply chains, improve productive structures, and contribute to the achievement of the Sustainable Development Goals (SDGs).

As for the specific contribution of the circular economy in business, recent reports by the Ellen MacArthur Foundation (2020) have shown that it can reduce costs and improve business efficiency in a sustainable way. In addition, consumers are showing an increasing interest in sustainable products and are willing to pay more for them. Therefore, companies that adopt circular business models can reap greater economic benefits compared to more conventional companies.

Conclusion

The circular economy has gradually become a key tool for promoting sustainability and the development of local economies. This strategy enables small businesses to implement more efficient and environmentally responsible practices, allowing them to reduce costs and increase their long-term profitability. In addition, the circular economy also fosters local job creation and technological innovation, thus contributing to the sustainable economic growth of communities.

Research suggests that the circular economy is fundamental to achieving a transition to a more sustainable and equitable economic model. This involves rethinking production processes, consumption patterns, type and use of materials, transportation, energy generation, value chains, waste generation and treatment, among many other areas.

Moving towards a circular economy requires both innovation and socio-institutional changes. Innovation occurs with existing technologies to achieve improvements in the efficiency and specifications of products demanded by the market. In addition, innovations in product design and new business models are important to achieve higher levels of circularity, as discussed in the application of circular practices and case studies.

By examining local stakeholders, especially SMEs and institutional actors, the research confirms that they can act as drivers to enable circular systems. However, there are barriers to circularity in today's economic systems, such as economic, health and political crises. For example, the Covid-19 crisis revealed several problems in our current economic systems, requiring changes for the future. Furthermore, moving towards a circular economy in current production systems is increasingly important as it facilitates resilience to international economic crises.

Theoretical approaches to the circular economy have placed emphasis on exploring how to implement circularity in business systems at the micro level and how at the macro level it can contribute to propose new rules to change the linear economic paradigm.

Future lines of research

In the field of research, the following lines of research are proposed:

Delve into the benefits of the circular economy in conventional and gazelle companies, focusing on cost reduction, increased efficiency, and profitability of business operations with an emphasis on sustainability and circularity.

Investigate barriers that prevent companies from adopting circular economy practices, such as lack of resources, training, and infrastructure. Case study analysis can be a useful tool to facilitate the adoption of good circular economy practices.

Identify and analyze specific tools and strategies to help companies and society to implement circular economy practices, developing practical guides, manuals and applying sustainable performance indicators.

Analyze the social and environmental impact of the circular economy on small and medium enterprises, using statistical and econometric tools to assess local job creation, cost reduction, revenue increase, environmental improvement, and carbon footprint reduction.

Conduct a comparative analysis of circular economy practices in different regions of the world to critically examine their contributions and their relationship to the most pressing problems of local industries and economies.

While theory and practice guide us towards a new economic horizon and paradigm, there are numerous potential lines of research on the circular economy and its implications for small and medium-sized enterprises. This research can improve our understanding of the most important factors of the circular economy, establishing the basis for advancing scientific evidence at the micro, meso and macro levels, thus validating interventions derived from the circular economy.

Acknowledgements

The comments and suggestions of Lou-Anne Leclercq and Arthur Métayer on their appreciative view on sustainability and circular economy from a clear and inspiring perspective to create a more sustainable future are gratefully acknowledged.

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