BUSINESS MODELS FOR SOCIAL ENTREPRENEURS IN THE CIRCULAR ECONOMY

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Abstract
Business models and the circular economy are two critical aspects of management practice that have recently sparked a lot of study attention. This research explores circular business models while presenting various methods organizations may apply to develop a circular business model. The move of giant corporations from the linear economic model to the circular model has lately acquired traction, with every practitioner in the market attempting to make their environment as sustainable as possible. The financial, social, and environmental benefits motivate them to transform. In reality, small firms are making the macroeconomic shift from one economic model to another. A thorough understanding of building circular business models is required to encourage and foster the adoption of the circular economy. Existing circular economy business models are restricted in their transferability, and there is no comprehensive framework to assist all types of enterprises in developing a circular business model.

Keywords
business models; circular economy; environmental sustainability; social entrepreneurship.

Introduction

The circular economy is founded on the premise that by rethinking and rebuilding all areas of the value chain from production to consumption, economic activity can be decoupled from its environmental consequences. There is a growing amount of study on circular economy from both the scientific and social sciences. A private think tank

has influenced corporate businesses' interest in circular economy, and national governments and regions (such as the European Union) have produced circular economy action plans (Bellemare et al., 2022).

The circular economy is receiving much attention in the academic world and society in general. It focuses on maximizing the value and utility of resources and energy in manufacturing systems, based on the assumption that natural resources are limited and that products at the end of their life cycle (End-of-Life (EoL)) can retain a specific value. Because it is well-informed in many scientific fields, such as industrial ecology and environmental economics, the circular economy is not defined solidly in specialized literature. However, it is formed by a set of general principles that reoccur in many definitions (Wasserbaur, Sakao, & Milios, 2022).

Because circular resources produce value, the circular economy opens up new options in the realm of management. According to the literature, the circular economy comprises issues ranging from relative waste management, which allows for developing new business models, to a greater focus on consumption and production efficiency. The circular economy is becoming more economically feasible as it evolves and develops in various directions, integrating with established business models (Ellen MacArthur Foundation, 2015; Lakatos et al., 2016). The circular economy can extract a significant fraction of valuable materials from waste streams as it focuses on reusing, repairing, and developing restorative industrial systems (Ruggieri et al., 2018; Pacurariu et al., 2021).

The circular economy has grown fast over the previous decade, as indicated by the reuse, reduction, and recycling of materials in production and consumption processes. According to the National Resources Institute, the circular economy may cut the usage of new materials by 32% in 15 years and 53% by 2050 (Ellen MacArthur Foundation, 2015). The circular economy, which is gaining traction in increasing sectors and industries, stands out as a realistic model in organizations' visions of material reuse since it is considered a method to divorce economic growth from excessive resource consumption. It has been proved in the United States that implementing the circular economy in the business sector may improve GDP by USD 4.5 trillion by 2030 (Lacy et al., 2014).

The notion of CE business model (abbreviated to CEBM for this study) has been introduced in the literature. CEBM is seen as a facilitator of the shift from a linear, take-make-waste economy to a CE economy. Furthermore, there is an increasing demand for items containing recycled components. This creates additional obstacles for small and medium-sized businesses to innovate and adapt old business processes. The circular economy is discussed in the literature in terms of both economic and environmental considerations. The move to a more circular economy is projected to promote Sustainable Development Goals (SDGs) such as SDG 12 (sustainable production and consumption patterns) (Lieder et al., 2020). Several authors have emphasized the need to include sustainability in CE business strategies (Alhawari et al., 2021). A circular economy, on the other hand, necessitates a full grasp of the infrastructure that allows recycling and remanufacturing (Awan, 2022).

To best represent the picture of sustainability, the circular economy debates a wide range of issues concerning production-consumption systems. To make the circular

economy as well-defined and as precise as possible about its effects, Planing (2015) highlights the need for preconditions that have links and interactions between them. Thus, the transition process towards a circular economy should include the following fundamental elements: materials and product design - widespread use of eco-design principles in product design and careful material selection practices, combined with a product life extension mindset that keeps products, components, and materials at their highest possible utility and value, as opposed to planned obsolescence principles; Circular commercial Models (CBMs) are commercial offers that focus on collecting residual value in items, encouraging take-back systems, and designing circular products. This comprises function-based business solutions such as leasing, sharing, pay-per-use, and pay-per-result; reverse supply networks: incorporating reverse logistics into traditional supply chains to allow businesses to optimize their operations by profiting from the recovery of old items; enabling conditions: A variety of enablers may support a CE transition, including regulations, financing, market support for secondary materials or products, raising consumer awareness, and effective use of digital technologies (Wasserbaur, Sakao, & Milios, 2022).

A circular business model is defined as "a business model in which the conceptual logic for value creation is based on the use of the economic value retained in products after use in the production of new offerings" by Linder and Williander (2017) (Linder & Williander, 2017). According to Mentink (2014), the circular economy is "an economic system with closed material loops," and a circular business model is "the logic of how an organization creates, delivers, and captures value with and within closed material loops" (Mentink, 2014). He contends that, unlike traditional business models, circular business models do not always attempt to reconcile ecological, social, and environmental demands, but they can serve sustainability goals (Mentink, 2014; Danciu et al., 2019). A business model for the circular economy is defined as "a module in which a company creates, captures, and delivers value, with the goal of improving resource efficiency by contributing to the extension of the useful life of products and pieces (for example, through long-term planning, repair, and refabrication) and by reducing material waste" (Nußholz, 2017).

Thus, this paper aims to complement the literature by discussing two main objectives. The first objective aims to highlight new circular business models in several industries by presenting the implications of these circular models in the sector discussed. The second objective is to show the effects and results of circular models by implementing them in several industries, thus presenting the benefits of a shift towards a circular business model.

Methodology

A systematic review aims to synthesize all empirical data on a certain issue that matches a set of criteria. Established criteria are used to produce new information or models. The goal of any theoretical review is to employ a replicable approach while seeking to discover all studies that may match the eligibility requirements and criteria to offer a summary of the research subject under consideration. The Google Scholar search engine was used for literature research.

The following papers were not considered: Papers presented at conferences, technical reports, and book chapters; Articles that do not define data sources or where data

collection is unclear; Articles that do not address consumption/production in the circular economy; Articles published before 2010. Figure 1 depicts the methodological approach used in this work. The total sample consisted of 28 items.

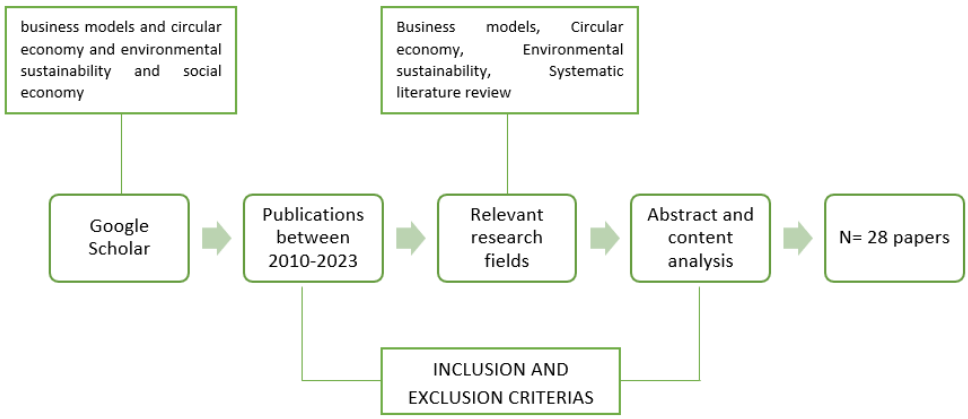

Figure 1. Methodological approach
(Source: Authors' own research results)

Results and discussion

While the underlying concepts of the circular economy date back to 1980, there has been little scientific research on how the announced economic revolution would translate into new business models at the microeconomic level. On the other hand, establishing a new economic structure with a clear focus on recovering material flows rather than producing excessive amounts of trash will necessitate a fundamental shift in consumer behavior. In addition to shifting purchase habits, this will require customer acceptance of reverse business models as well as new kinds of remanufacturing and upgrading.

Analyzing the current articles highlights the need for further methods and research on circular business models and more precise and well-defined categories of studies aimed at the transition to a more circular economy. Certain sets of categories can thus be emphasized by looking at analyses geared at implementing business models in practice. Most authors generally agree on the hierarchical order of business model types. The starting point for the transition process is more efficient and more prolonged usage of current products. Reverse networks are set up on this basis to recover either the product itself or its components and materials. Finally, energy recovery is the last alternative for keeping things out of landfills (Planing, 2015).

The core concepts of the circular economy may be used to develop the essential constructions and building elements of circular business models. Such components are described and understood variously in the literature, for example, the ReSOLVE framework (regeneration, sharing, optimization, looping, virtualization, exchange), methods of producing circular value, normative criteria for business models, and integration domains (Lewandowski, 2016).

The ReSOLVE framework describes six business activities that apply the circular economy principles and represent key circular business prospects. Regeneration entails using renewable energy and resources. It is associated with the reintroduction of rescued biological resources into the ecosystem. As a result, it seeks to restore, protect, and regenerate ecological health. Share activities aim to increase the use of items by distributing them among consumers. This can be accomplished by peer-to-peer sharing of private items or public sharing of a pool of products. Sharing also includes reusing items as long as they are technically suitable (e.g., second-hand) and prolonging their life through maintenance, repair, and design improvements that improve durability. Optimization measures aim to enhance a product's performance/efficiency while removing manufacturing and supply chain waste. They are also relevant to extensive data, automation, remote sensing, and driving. Most importantly, optimization does not necessitate a change in product or technology. Loop operations aim to maintain components and materials in closed loops. Inner loops are given more importance. Virtualization offers some benefits virtually rather than physically (Lewandowski, 2016).

Similar methods of creating circular value have been identified, referring to the short cycle in which products and services are maintained, repaired, and adjusted, the long cycle in which existing products and processes are extended in life, cascades based on the creation of new combinations of resources and material components and the purchase of recycled waste streams, pure circles in which resources and materials are 100% reused, and dematerialized services offered instead of physical goods.

Table 1. Approach to analyze and assess circular social business models for social entrepreneurs.
(Source: Authors' own research results)

Domain	Approach
1. Mapping The Circular Value Chain	Before we delve into specific business models, it's essential to map out the circular value chain. This encompasses the journey of a product from its creation, usage, and post-usage stages. Key stages include: • Product design (with eco-design principles) • Production (utilizing sustainable materials and processes) • Consumption (enhancing product longevity) • Post-consumption (repair, refurbish, recycle)
2. Circular Business Model Canvas	We can develop a 'Circular Business Model Canvas' to aid businesses in effectively adopting a circular model. This would be an adaptation of the traditional business model canvas, emphasizing the circular elements. Key components might include: • **Circular Value Proposition:** How does the product/service offer circularity? • **Key Circular Activities:** What actions prioritize sustainability? • **Key Circular Resources:** What resources enhance circularity? • **Circular Customer Segments:** Who are the

	target consumers that value sustainability? • **Circular Cost Structure & Revenue Streams:** How does circularity affect the costs and revenues?
3. Digital Integration for Circular Economy	Harnessing technology will be pivotal. Use AI and IoT to track product life cycles, from raw materials to end-of-life. This data can be crucial in: • Understanding product use and longevity. • Efficiently managing reverse logistics. • Predicting when products are nearing end-of-life for preemptive action.
4. Industry-specific Circular Business Model Archetypes	Different industries have unique challenges. It's essential to develop industry-specific archetypes. For instance: • **Fashion Industry:** Subscription models where consumers can swap out old clothes for newer, recycled ones. • **Tech Industry:** Modular designs allowing easy part replacements, extending device lifetimes.
5. Circular Business KPIs	Measurement is crucial for success. Develop a set of KPIs for businesses to assess their circularity, such as: • Percentage of recycled materials used. • Percentage of products recovered post-use. • Reduction in waste production year-on-year.
6. Stakeholder Engagement Workshops	Organize workshops bringing together various stakeholders from designers to end-users. These platforms can act as ideation hubs to understand challenges in circularity and develop collaborative solutions.
7. Pilot Projects & Case Studies	Before a full-fledged shift, businesses can initiate pilot projects. These serve as testing grounds, providing insights into challenges and required optimizations. Successful pilot projects can be documented as case studies, providing a roadmap for other businesses.
8. Public-Private Partnerships	Encourage collaboration between governmental bodies and businesses. Governments can offer incentives and subsidies to firms adopting circular models, thus speeding up the adoption rate.
9. Education & Awareness	Lastly, consumers play an integral role in a circular economy. Conduct campaigns, webinars, and workshops to educate consumers about the importance of circularity and how they can contribute.
In conclusion, the circular economy holds vast potential not only for sustainability but also as a significant business opportunity. Adapting to it requires an innovative approach, and the above methodology offers a comprehensive way for social entrepreneurs to understand, assess, and adopt circular business models effectively.	

Mentink (2014) followed in the footsteps of Frankenberger et al. and detailed the business model component adjustments required to establish a more circular service model, such as: What are value propositions? - goods should be fully reused or recycled, which necessitates reverse logistics systems; alternatively, businesses could transition to the product-service system (PSS) and sell performance connected to the goods served; actions, processes, resources, and competencies (how?)-Products must be manufactured using specific processes, recycled materials, and resources, which may necessitate not only specific capabilities, but also the development of reverse logistics systems and the maintenance of relationships with other companies and customers to ensure material loops are closed; Models of revenue (why?)-providing product-based services for a fee depending on consumption; Customers or customer interfaces (who?) - Selling "circular" products or services may need altering customer behaviors or, if that is not feasible, changing customers (Mentink, 2014; Frankenberger et al., 2013).

Laubscher and Marinelli (2014) highlighted six essential areas for incorporating concepts of the circular economy into the company strategy: Sales model - a move from selling large quantities of things to selling services and recovering products from clients after their initial life; Product design/material composition - change refers to how goods are planned and constructed to maximize high quality reuse of the product, its components, and materials; IT/data management - the capacity to keep track of product, component, and material data is a vital capability necessary to allow resource optimization; Supply loops entail maximizing the recovery of own assets, when profitable, and maximizing the usage of recycled materials/components to create additional value from product, component, and material streams; Strategic sourcing for internal operations entails developing trustworthy alliances and long-term relationships with suppliers and customers, including co-creation; Human resources - Change necessitates adequate cultural adaptation and capacity development, which may be strengthened through training and reward programs.

Scott presented the 7-P model as a beginning point for understanding and utilizing the circular economy mechanism within a corporation. The practitioner's method is used in this model, which defines seven basic components that may be separated into three stages. The first step is to study and comprehend the foundations of the circular economy and what the shift entails, as well as to decide to make sustainability a goal (preparation). The following phase is to organize and implement circular economy systems for process, conservation, people, location, product, and production. The next phase is to allow and support CE implementation, mainly accomplished through team development and change management (Scott, 2017).

The value proposition is the key component of the circular business model. De Jong et al. (2015) define the circular value proposition as providing a product, a product-related service, or a pure service. This offer should allow the user/consumer to perform what is required, decrease the consumer/user's inconvenience, and give extra advantages (Osterwalder et al., 2015).

It was highlighted that circular business models necessitate implementing a systematic approach to applying management abilities across all dimensions of value and the requirement for additional partnerships across the value chain. The relationship between stakeholders and the enterprise is critical at the enterprise level since this

link can facilitate the move to circular business. When it comes to the transition to a circular business model, policymakers and governments bear a great deal of responsibility, not only because their actions can be considered real drivers in this transition but also because their specific contribution can remove some existing barriers, thereby supporting the implementation of measures dedicated to the transition to a circular economy (Centobelli et al., 2020).

There has been a paradigm change from selling items to servicing in recent decades. This paradigm shift is founded on the concept that corporate value is not always linked with manufacturing and distributing tangible items but rather with the use and functionality that products give. This differs from traditional business models in that it stresses the integration of products and services into a single system to meet consumer demand (Ceschin, 2012). It is vital to emphasize that servitization-based business models encompass far more than "product leasing"; in fact, there are several so-called product service systems (Van Boerdonk, 2021).

Product-service systems (PSS) are frequently highlighted as one of the possible accelerators for developing new business models for the circular economy, driving life extension and product take-back (Nußholz, 2017). The most difficult challenges that organizations face during the design and evaluation stages are systematically applying efforts to reinvent the logic of how their business operates to achieve economic and resource efficiency/effectiveness goals simultaneously and transferring conceptual knowledge/learning about PSS and the circular economy to real-world practice in an efficient, useful, and straightforward manner (Lieder & Rashid, 2016; Pieroni et al., 2020). Compared to traditional sales, PSSs focus more on the product's usage phase. Suppliers' greater engagement and duties are frequently accompanied by a shift in ownership (Ceschin, 2012). As a result, rather than being considered consumables, items are classified as capital assets. This establishes a handle for managing the product's life cycle and adding services.

PSS can promote more reuse, refurbishment, remanufacturing, recycling, and waste reduction (Michelini et al., 2017). Customers must be willing to convert from purchasing new items to purchasing reused, remanufactured, or otherwise reused products to support the growth of the circular economy.

Following Bocken et al. (2016), we regard circular economy business models as a general strategy for long-term company models. Close, narrow, delay, intensify, and dematerialize loops to reduce resource inputs, waste, and leakage emissions from the organizational system and, thus, increase sustainability performance. Closing, narrowing, and slowing down loops refer to the circular economy's biological and technical nutrient cycles, which include recycling measures (closing), efficiency improvements (narrowing), and use-phase expansions (slowing or broadening) (Broken et al., 2016).

Conclusions

The existing literature on developing circular business models has identified numerous circular business models, certain business activities important to the circular economy, and some guidance on adapting the existing business model to the circular economy. These studies, however, were mainly case-based and gave unique business models

with limits in terms of transferability. As a result, a thorough conceptual framework for the circular business model is required to assist practitioners in transitioning their firms to the circular economy.

Despite this, the literature on the meaning and significance of circularity from the perspective of business models has just lately emerged. The emphasis on business models evolved solely due to implementing circular economy and sustainability concepts. According to Geissdoerfer et al., fully utilizing business models' strategic, analytical, and communicational capabilities to transition to the circular economy necessitates three additional dimensions: long-term value creation, proactive stakeholder management, network extension, and a long-term perspective. The research has also identified a number of adoption variables, design and management tools, and assessment models required for circular business models to succeed.

This article examines the perspective of circular business models that help firms move to a more circular economy, offering the concepts businesses may use to establish a circular business model. The conceptual framework of the circular business model described in this study adds to the debate on circular economy implementation. It assists practitioners in accelerating the transition from linearity to circularity at the micro level.

This analysis has limitations, particularly since it is qualitative. Even though the study selection process was documented to assure replicability and transparency, researcher bias naturally impacts study categorization. To solve this issue, the study specifies inclusion and exclusion criteria. Another point to consider is the decision to evaluate publications published in journals exclusively, which precludes the examination of grey literature, which might contribute to the analytic aims. Furthermore, it is possible that the literature evaluation we did ignored numerous papers pertinent to the investigation. This restriction may be attributable to the way the database query was built since we picked articles based on their actual application of the ideas of business models, circular economy, and environmental sustainability.

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