

## CIRCULAR BUSINESS MODELS FOR INCREASING PRODUCT USAGE

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**Abstract.** *Economic development and globalization have brought our planet into a dramatic situation both from the perspective of the impact on the environment and from the perspective of the rapid depletion of limited natural resources. The excessive private consumption of the population of most countries in the world, who live in an abundance of material things, is far from sustainable and calls into question the existence of future generations. Population behavior and consumption and production choices have a negative impact on the environment and other people, for this reason the global challenges we face require the development of new lifestyles and business models that would be more sustainable and responsible towards the environment.*

*The need to move in a prompt manner from a linear economy to circular economy practices is rapidly intensifying every year, and this is currently seen as the only solution to slow down the negative developments. The circular economy means extracting value throughout the product life cycle by repairing, reusing, upgrading and recycling products in a profitable and sustainable way, with the aim of reducing the amount of exhaustible resources consumed, the volume of waste generated and the harmful impact on climate. The transition to a circular economy requires a fundamental change in the way we think and use goods. A real change refers to the adoption of business models and behaviors that would also aim to optimize and increase the rate of use of products. In this work, we aimed to describe the main circular business models that can be implemented, highlighting among them those that directly aim to increase the rate of use of products, this being one of the essential ways of transitioning to a circular economy. This paper is written within the state project 20.80009.0807.22. Developing the mechanism for the circular economy creation in the RM*

**Keywords:** circular economy, circular business models, increasing product usage, sustainable development, product-life extension

**JEL Classification:** Q01, Q32, Q57

### Introduction

Evidence shows that global climate change is primarily caused by human activities, which calls for a rethinking of the interaction between humans and the world around them by reducing the footprint of human and economic activities on the environment. Climate changes and their effects have highlighted the vulnerability of traditional consumption and production systems and the necessity to identify new strategies that would allow the moderation of climate changes.

As people's awareness of environmental impact has increased, a trend towards sustainable innovation has been identified (Suchek, 2021; Jakhar, 2018). One of the most supported alternative ideas to a linear economy is the circular economy, the aim of which is to preserve the value of products, raw materials and materials for as long as possible, while reducing waste (European Commission, 2018).

Circular economy aims to extract value throughout the product life cycle by repairing, reusing, upgrading and recycling goods in a profitable and sustainable way. This requires a certain type of business model combined with the right technical solutions. According to Bonnedahl (2018), companies have a significant role to take responsibility for the environmental problems

that exist in society today, because consumption and trade are one of the factors that contribute to environmental problems. Interesting being the possibilities from a business point of view to create more sustainable products, so as to decrease the amount of natural resources used and the pressure exerted on the environment.

One way to explore these possibilities would be to study the concept of a business model, which combines the view of how a business operates with how it interacts with the world around it. According to Zott, Amit and Massa (2011), business models provide a systemic perspective on business, which is crucial when trying to find out how to achieve systemic change towards product sustainability in business. For this purpose, it is important to analyze existing business models and the real possibilities they have for extending the life of products, contributing to the reduction of environmental damage and still remaining profitable. For this we will study what types of business models that extend the life of a product are and highlight those essential features of these business models compared to other business models.

### **Some empirical and theoretical evidence of circular business models**

Increasing awareness of the need to reduce resource use and change consumption patterns provides strong incentives for companies to revise their linear business model in favor of a circular business model, which is gaining more and more attention.

According to Nußholz (2017) a circular business model is about how a company creates, captures and delivers value with the value creation logic aimed at improving resource efficiency by helping to extend the useful life of products and parts (e.g., through long-term design, repair and remanufacturing).

There are different types of circular business models that a company can implement to become more circular. They can work on extending the product life cycle, using waste, creating sharing platforms, creating more efficient use of resources, using renewable energy or offering a product as a service. (Bocken et al., 2016; Ellen MacArthur Foundation, 2015; Tukker, 2015).

There are many benefits to implementing a circular business model. These include, but are not limited to: cost savings in production, improved customer relationships and understanding, higher margins, reduced environmental impact and a stronger brand (Linder and Willander, 2017). Despite the benefits, many are skeptical that companies will adapt their business model beyond shareholder interests, but research still shows great potential for the future (Lahiti et al. 2018). Smol et al (2017) state that the basic idea of a circular business model is to preserve the value of the product as much as possible to avoid unnecessary waste. Bocken et al. (2016) develop the idea of a circular business model and define it as a regenerative process in which resource use, waste, emissions and energy waste are reduced by slowing, closing and reducing the raw material and energy cycle. This is possible by creating long-lasting design, as well as working with maintenance, repair, reuse, recreation and recycling.

Linder & Willander (2017) also describe that resource value can cycle through different actors. Stahel (2010) believes that the circular business model consists of a cycle with two closed loops, one about the reuse of goods and the other about the recycling of materials. With the reuse of goods, he refers to an extended lifetime and period of use of a product and believes this is achieved by creating long-lasting design, but also by repairing, refurbishing and updating the

technology in the products. By recycling materials, the idea is to create a closed loop between waste after use and production. Smol et al. (2017), Bocken et al. (2016), Linder and Willander (2017) and Stahel (2010) thus describe the central aspect of a circular business model as extending the life of products and keeping them longer in their cycle.

In the specialized literature, five circular business models are proposed for the implementation of the strategy of switching to ecological business models: circular supply, resource recovery and recycling, product life extension, collaborative economy and product as a service. All these models try to reduce the pressure exerted on limited natural resources, thus reducing the need to extract exhaustible resources, and eliminate the generation of waste. The boundaries between these circular models in reality are not so sharp, some companies adopt a combination of business models.

Business models that integrate circular economy principles operate at different stages of the value chain. Each of those business models intervenes at different stages of the value chain. By closing the resource loop and slowing down and limiting resource circuits, business models that integrate circular economy principles can reduce the environmental footprint of production and consumption. For example, extending the life of a product mainly targets the design and use phase of the product. And collaborative consumption aiming to increase the utilization rate of resources is essentially related to the stage of use and maintenance.

To optimize the use of resources and limit waste, companies can implement the circular business model based on extending the life of a product and preventing it from becoming waste. This circular business model mainly targets the design and use phase of the product.

No negative social effects of product life extension have been found. The only negative effect on the environment comes from the delay in the use of more resource-efficient products during the use phase, (rapidly changing the boiler on fossil fuels with another one that uses renewable energies).

At the same time, for many businesses the limited number of negative effects, compared to the positive effects, is not a decisive factor for the implementation of strategies to extend the time life of products. The negative effects being directly related to manufacturers' reluctance to change their business model by emphasizing sustainability, offering transparent terms of sale, extended warranty periods, providing means to repair or refurbish products, etc., so implement those business strategies aimed at extending the life of products.

### **Business strategies for extending product lifecycle**

To implement the business model that aims to products lifetime, companies can adopt one or a complex of sustainable strategies, the main ones being: renovation, upcycling, remanufacturing, repair or the second-hand market.

Based on our research, the sectors that can implement these strategies with relatively affordable costs would be: repairs and maintenance of machines and equipment - specialized repairs of professional goods produced in the production sector with the aim of restoring machines, equipment and other products to working condition; waste collection, treatment and disposal activities - local waste transport and operation of material recovery facilities; scientific research and development - three types of R&D&I: basic research, applied research and experimental development; rental and leasing activities - rental of motor vehicles, leisure and

sports, personal and household equipment, equipment; leasing of professional machinery and equipment, other transport equipment; leasing of intellectual property products and similar products; computer repairs and personal and household goods - repair of communication equipment, consumer electronics, home and garden equipment, footwear and leather goods, furniture and home furnishings, clothing and clothing accessories, sporting goods, musical instruments, hobby items etc.

We notice the absence from this list of many manufacturing sectors: textiles, wood products, paper, fossil fuels, chemicals, pharmaceuticals, rubber and plastics, construction materials, metals and metal products, electronics, electrical equipment, machinery, equipment cars, other transport equipment, furniture, other manufacturing and construction products. These production sectors, of course, have both benefits and losses following the extension of the life of the products, being very reluctant to change. At the same time, by implementing new, innovative technologies and using various circular strategies, these sectors can obtain the most considerable economic, social and environmental benefits.

Extending products lifetime can be achieved both at the level of producers and at the level of consumers, through several actions. Increasing their total lifetime through "sustainability". That is, to increase the quality of the products, their repairability (the ability to repair them), their compatibility with other systems (such as the standardization of phones) and their ability to evolve. This aspect mainly concerns manufacturers. More responsible consumption, consistent with real needs, by maintaining products and decreasing sensitivity to the effects of fashion that encourage premature renewals. This aspect mainly concerns consumers. And optimizing use and promoting reuse, giving products a new life. By sharing occasionally used equipment (gardening equipment, etc.), it is possible to increase the use of a product and encourage the purchase of a more robust design. This action is addressed to all interested parties.

## **Conclusion**

Increasing product usage is closely related to Product Lifetime Extension, which is a viable business model that can be implemented in companies of different industries and of different size and structure, from small individual enterprises to large and very large. This business model that follows the increased use of the product can be implemented in any country, regardless of the existence of a developed legislative framework in the field, based only on the voluntary desire of producers and consumers.

Implementing this model involves a radical transformation of product design processes to extend their durability over time and at the end of their life cycle to reduce their environmental footprint. Without a radical change in consumer behaviors and lifestyles, most circular business models will not be viable. The gradual implementation of sustainable business models, as well as the transition from a linear to a circular model, will not occur without supporting policies and regulations. Encouraging examples can be identified (such as the strong push given by the EU circular economy strategy or specific regulations such as the Swedish tax system favoring models based on maintenance and repair).

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