DEVELOPMENT OF THEORETICAL APPROACHES OF CIRCULAR BUSINESS MODELS

Ph.D., Cristina UNGUR
National Institute for Economic Research, Republic of Moldova
E-mail: cristinaungur@ymail.com

Abstract: *The rapid exhaustion of natural resources has created the need to reconsider business in the direction of extending products life by reuse, repair and recycle. Thus, it was necessary to adopt new business strategies to create circular and sustainable economic systems. This study aims to help describe the concept of circular business model in order to help entrepreneurs to apply them in practice. The article analyzes the latest scientific papers, which have developed this concept. The differences between traditional and circular business models are identified. This study clarifies which are the specific modalities of value proposition, value creation and value capture in a circular business model. By conceptualizing circular business models, the study contributes to theoretical approaches development and effective application of this concept in a circular economic system.*

Key words*: business model, circular economy, circular business model.*
JEL Classification*:Q5, M2.*

1. Introduction

A few decades ago, people were carrying out their activities and businesses, believing that natural resources could be used indefinitely. The basic concept was "take, make, waste" and this led to the depletion of resources, large quantity of waste and environmental pollution. Aware of these problems, people have started to look for solutions to change things. Therefore, there was a need to change behavior and apply new business models that would ensure the circulation of resources and reduce the impact on the environment.

In 2012, the Ellen MacArthur Foundation outlined the idea of the circular economy as a new business opportunity (Ellen MacArthur Foundation, 2012). This study has provoked a natural scientific interest in business models that can be used effectively in a circular economy. Thus, various studies have appeared that aimed to encourage entrepreneurs to adopt the concept of business circularity (Accenture, 2014; Geissdoerfer et al., 2017).

Since the emergence of the circular economy as a major policy issue in Europe (EC, 2015, 2020), interest in the potential of circular business models has grown strongly among decision-makers, companies, entrepreneurs and other stakeholders.

The implementation of circular business models could help achieve the Sustainable Development Goals, the goals of the Paris Climate Agreement, the ambitions of the European Green Pact and achieve carbon neutrality in Europe by 2050.

2. Literature Review

For this study, more than 20 scientific papers were analyzed, including: articles published in Scopus journals, monographs, studies and reports prepared by international organizations specializing in the circular economy, as well as international statistics.

Over the years, more and more knowledge has become available about the opportunities for implementing circular business models, as well as the barriers and risks associated with this implementation. With the growth of research field, variations in definitions and typologies of circular business models have increased. As a result, there is no clear and unique definition of the concept, but rather a variety of scientific interpretations.

Following the Ellen MacArthur Foundation, 2012, many important works have emerged that established the basic concepts of the circular economy. Among them is Accenture, 2014 that presented a comprehensive study on circular business models and represent the conceptual framework of these models to which many authors still refer today.

A conceptualization derived from the most important scientific papers is presented by Alhawari et al. They describe the circular economy "as the set of organizational planning processes for creating, delivering products, components, and materials at their highest utility for customers and society through effective and efficient utilization of ecosystem, economic, and product cycles by closing loops for all the related resource flows" (Alhawari et al., 2021).

Important scientific studies that have approached the development and implementation of business models in recent times are conducted by teams led by A. Osterwalder, M. Moreno, N Boken, J.L.K. Nubholz. In this paper, we will refer to the works of these authors.

One of the fundamental works on which our study is based is the work of Osterwalder and coauthors (Osterwalder et al., 2005) which defined business models as "the rationale of how an organization creates, delivers, and captures economic, social, and other forms of value."

3. Research Design and Methodology

In this study, we started from the definition of the concept of circular economy in order to analyze the business models that could be applied in such an economy. In order to present a theoretical substantiation of the circular business models, we analyzed and systematized multiple researches, which we reflected in the "Results" section of the paper.

The research was based on academic studies that explicitly referred to the concept of circular business model. An example of this is the work of Lewandowski (Lewandowski, 2016) in which the substantiation of the term "circular business model" is found. In addition, studies on implementation or transition to circular business models were analyzed, here we can mention Linder and Williander, 2015 (Linder and Williander, 2015), but also PA Consulting in collaboration with Ellen MacArthur Foundation who developed a practical guide in this regard. Our searches were limited to the terms "circular business model", "closed loop business models" and "circular business types". Other terms such as "circular business case" were omitted for research purposes in our further studies.

In the study we analyzed all the classifications of circular business models that we found and we presented (in the section "Types of circular business models") a systematization of them.

The main reference sources used are the journals indexed within Scopus database, such as *Sustainability*, *Journal of Cleaner Production, Business Strategy and the Environment, Harvard Business Review and others.* Since the research is focused on the theoretical approach of the concept of circular business models, no timeframe was applied.

For the theoretical and practical substantiation of the circular business models, we investigated the elements of these models and we described the stages of implementation of one of the models in Figure 2 of the paper.

The author believes that the applied research methodology were appropriate to realize the aim of this study and capture the current understanding of circular business models in academic discourse.

4. Results

Based on the reasoning of the authors Magretta, 2002; Osterwalder et al. , 2005; Bocken et al. , 2014 et al. we find it necessary to establish what a **traditional business model** is in order to drift towards circular models. Thus, in 2002, Magretta (Magretta, 2002) argued: "*A business model is a conceptual tool that describes how business is conducted*." It explains how an organization creates, delivers and captures value (Osterwalder et al., 2005).

Authors concerned with describing business models (Bocken et al., 2014; Osterwalder and Pigneur, 2010; Richardson, 2008), identify three **main elements**:

• *value proposition*: the product or service offer and the target customer - what value is offered to whom;

• *value creation and delivery*: specific characteristics of the product or service and distribution channels - how value is provided; resources, suppliers and partners;

• *value capture*: cost structure and revenue streams - how does the company generate value?

In traditional business models, the emphasis is on capturing the economic value expressed by turnover and profit (Teece, 2010; Osterwalder et al., 2005). For sustainable business models, the idea of value capture is extended to the level of environmental and social value (Nußholz, 2017; Bocken et al., 2016, 2014).

A generally accepted way of structuring a business model was developed by Osterwalder in 2005 and then in 2010 with his colleague Pigneur (Osterwalder, 2010). They identified the elements on which a company creates value: *Business Model Canvas*. This model is a functional tool for developing new business models or structuring existing businesses. This model consists of 9 elements that come to describe the key factors of a business (Figure1).

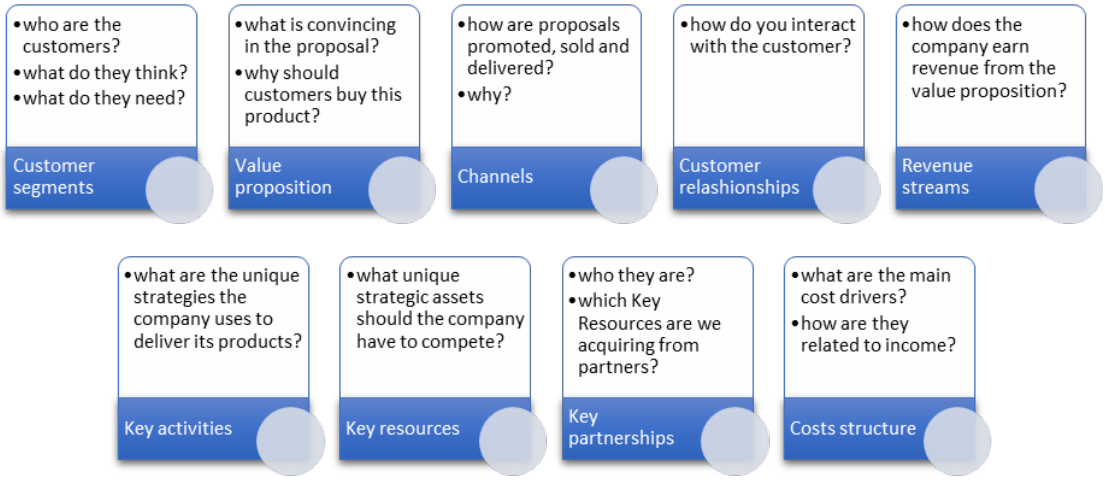

Fig. 1. Business Model Canvas
Source: Adapted from (Osterwalder, 2010)

By answering the questions in the Business Model Canvas, the design of any business, including a circular business, can be created. It is only necessary to determine the specific elements of circular business models.

The main difference between traditional business and circular models is that companies are starting to look at their business through a much wider lens. By evaluating

the full potential life of a commodity, companies discover ways to extract more value through previously unknown revenue streams, while reducing their dependence on a steady stream of virgin commodities.

Therefore, circular business models require a business vision that aims to reduce, reuse and recycle as much as possible. All of these elements are found in Julia's L.K. Nußholz: *"A circular business model is how a company creates, captures, and delivers value with the value creation logic designed to improve resource efficiency through contributing to extending useful life of products and parts (e.g., through long-life design, repair and remanufacturing) and closing material loops."* (Nußholz, 2017).

Types of circular business models

The analysis of the scientific literature carried out by us in this study allowed us to find that, at the current stage, there are several types of circular business models. Their classification is done in various ways, depending on the views of the authors. We present below a synthesis of the typology of circular business models.

The British organization Forum for the Future, which specializes in identifying and solving the challenges of sustainability, has developed a guide to 10 business models based on the principles of the circular economy. In addition, the multinational company Accenture, which offers business support services worldwide, has outlined 5 circular business models that, in practice, are the most commonly used.

In scientific articles published in Scopus journals we find classifications of circular business models in Moreno et al. (2016), Bocken et al. (2016) and Bakker et al. (2014). Julia L. K. Nußholz (2017), (Table 1), made a systematization of these classifications

Table 1. Classification of circular business models

Authors	**Circular business model types**				
Moreno et al. (2016)			Circular supplies	Product life-extension Extending product value Sharing platforms	Resource value
Boken et al. (2016)	Encourage sufficiency	Industrial symbiosis		Access and performance model Classic long-life Extending product value	Extending resource value
Bakker et al. (2014)				The access model The performance model The hybrid model The classic long-life model The gap-exploiter model	
Life cycle stages	***Material extraction***	***Material extraction***	***Production***	***Use phase***	***End-of-life treatment***

Source: Based on Nußholz, 2017.

In April 2019, the OECD published one of the latest global policy documents in this area - "Business Models for the Circular Economy: Opportunities and Challenges for Policy" (OECD, 2019).

In our subsequent studies, we took the OECD report as a benchmark and consider it correct to divide circular business models into 5 following categories:

1. Circular supplies
2. Resource recovery

3. Extending the product life cycle
4. Sharing platforms
5. The product as a service

To illustrate how value is created, proposed, and captured in a circular business model, we will focus on the Circular Supplies Business Model (Figure 2).

The main feature of the Circular Suppliers business model is the replacement of traditional material and energy inputs used in the production process with renewable, recoverable or biodegradable ones.

Therefore, the Circular Supplies Model assumes that a business can become more circular if it is reoriented from the use of limited resources to those whose value can be re-exploited in new production cycles. For example, by using a renewable energy source or a recycled and reused raw material from other production cycles during the production process.

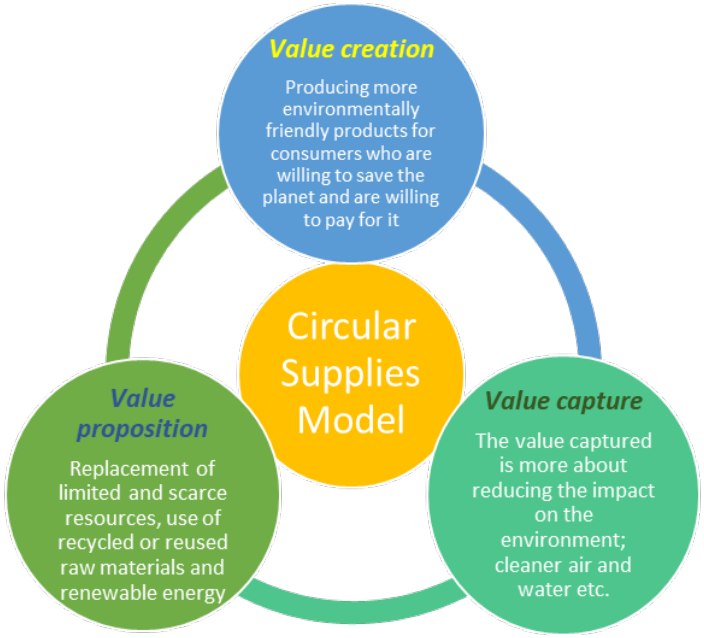

Fig. 2. Description of the Circular Supplies Business Model in terms of value creation and delivery, value proposition and value capture
Source: prepared by the author

One of the main factors for companies that adopt the Circular Supplies model is the reduction of environmental impact. Under this model, they become sustainable and can attract consumers who require harmless and less polluting technologies and who are willing to pay for more expensive green products.

5. Discussions on the applicability of circular business models

In recent decades, the interest in researching innovative business models in the context of the circular economy has been accentuated. Businesses are facing the need to refocus their business to the use of renewable, recyclable and reusable materials. Adopting circular business approaches has become more than just a fashion that adds value to a company's image. This is often a requirement of the law in countries that adopt the circular way of conducting economic activities. This study allowed us to discover that there are some **limitations** against circular business models implementation. Among them, we can mention the aspects related to the education of consumers and the responsibility of producers. The most important step towards circularity is to learn to think differently, to

see good materials for reuse in everything, to design products taking into account the impact on the environment. Therefore, the applicability of new business models focused on circularity depends largely on awareness and change in consumer behavior.

Another barrier in implementing circular business models are investment costs. In order to replace traditional energy resources with renewable ones, it is necessary to invest in equipment such as photovoltaic systems, wind installations, etc. These investments are very large and have a much longer return on investment than traditional energy investments. In this context, we go back to the change of way of thinking, namely the orientation towards the impact on the environment and not towards the term of recovery of the investment.

Another contradictory element is the use of recyclable raw materials, which sometimes reduces the life of the product and therefore increases the quantity of waste. For example, boots with soles made from recyclable materials wear out faster and the consumer has to buy a new pair, which is contrary to the idea of repairing or reducing consumption. It is important to use the raw material rationally, choose the most sustainable one, but also track the waste.

All these contradictory aspects represent **the future research direction** that we will focus on in our further research.

6. Conclusions

As a result of this study, our goal to contribute to the development of theoretical approaches to circular business models was achieved. The final purpose was to help entrepreneurs to understand what circular business models are, what their elements are and how they can be implemented in practice. We believe that by analyzing the concept of circular business model and especially by systematizing the types of existing models, we have contributed to a better perception of them not only by businessmen, but also by decision-makers at the government level.

Scientific studies in the field of circular economy have a fairly short history, as this concept was scientifically recognized a few decades ago. Thus, there are no unique definitions and classifications of the concepts of circular economy or circular business model. For this reason, we presented in the paper our vision on the mentioned concepts that was based on the existing research previously carried out by experts and scientists.

We consider important the development of the theoretical approach of the concept of circular business model because the lack of unique vision in this field creates the risk that the concept is used arbitrarily, and the importance of efficient use of resources is not fully realized.

The main difference between traditional and circular business models is changing the way resources are used, ie their use until the value of those resources is completely exhausted. The main pillars of circular business become: reuse, recycling, ecodesign and use of renewable energy,. Companies that will be able to reorient their processes in the direction of circularity will be in line with the new requirements and legislation approved at European level and will be able to align with new global trends to reduce environmental impact.

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