

HOW DO STARTUPS EMBRACE THE CIRCULAR ECONOMY?

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Abstract: The main goal of this research is to investigate the way circular start-ups incorporate innovation into their business plans in order to facilitate transitions to a circular economy and have a positive impact on the environment. For this qualitative study we did exploratory investigation of few circular start-ups in Romania. Wide-ranging interviews with start-up founders, articles, and other sources were used to collect data. This paper demonstrates the value of using circular business strategies in the growth of start-ups for a variety of stakeholders. Circularity can be viewed as an important component of the new approach to improving sustainability.

Keywords: circular economy, startups, circular startups, pandemic

1 INTRODUCTION

As a regenerative and restorative economic model, a circular economy preserves the value of materials for as long as possible (Ranta et al., 2018). It is a solution for businesses that want to balance the preservation of social and biological systems for following generations with economic growth (Hobson, 2016; Bocken, de Pauw, Bakker, & van der Grinten). Despite the fact that knowledge exists on the practical and technical flows of materials and energy that minimize emissions, waste, and energy losses, the necessary changes at the level of institutions for the transition to a circular economy are currently underdeveloped (Merli,

Preziosi, & Acampora, 2018; Ghisellini, Cialani, & Ulgiati, 2016; Korhonen, Honkasalo, & Seppälä, 2018). To facilitate the transition to a circular economy and implement choices among this path, we should first comprehend the flow of energy and materials which enter, are consumed, transformed, or are stocked. (Bîrgovan et al., 2022).

In other words, instead of focusing exclusively on resource cycles and methods for reducing, reusing, recycling, and repurposing, understanding the underlying barriers and drivers as well as the actors involved in the transition, is required.

Companies have already begun to recognize how their initiatives can generate

financial value while also contributing to a more sustainable environment. They discover that by incorporating circular economy principles, they can reduce costs, improve customer and employee relations, gain a competitive advantage, and drive innovation. The circular economy, however, means something different to each company in different geographies and industries. As a result, the manner in which they can implement certain circular economy principles varies depending on a number of factors.

Until recently, specialized studies focused on large businesses, with little interest in circular start-ups. As a result, we want to highlight a few key aspects of circular startups and how they can help with the transition to a more circular economy in this paper.

2 CIRCULAR ECONOMY

A circular economy proposes moving away from the linear business model of take-make-dispose and toward a system in which materials are introduced in closed-loop production systems to reduce natural resource depletion and waste. The circular economy is a framework for addressing the concerns to global issues such as climate change, biodiversity loss, waste, and pollution. Every aspect of our take-make-waste system must be transformed, along with how we handle and manage, how we make and use products, and also what we accomplish with the materials afterward. (Murray et al., 2017; Ellen MacArthur Foundation, 2012; Geng et al., 2009).

2.1 Sustainable business

To help companies operate economically in a circular economy, the concept of the circular business model has been developed (EMF, 2013; Bakker et al., 2014; Bocken et al., 2016). These business models are focused on creating added value by adopting strategies that aim to make resources more efficient, such as

remanufacturing or repairing products, thus trying to bring economic value through these products. (Bakker et al., 2014; Bocken et al., 2016). Compared to a linear business model in which a product is generally no longer used after one or a few uses and its embedded value is lost, this new circular business model encourages the development of product systems that contain strategies or are still designed from the beginning to be able to maintain its embedded value at the highest level of utility. (Velte et al., 2016).

According to Bocken et al. (2014), three major components of sustainable business models are: the value proposition (a statement outlining the advantages that a company's goods and services will provide to its customers), value creation (happens when a business or organization uses its work and resources to create something of value that is sold to a customer base) and value capture (the ability of a company to generate profit). As a result, when properly designed, a sustainable business model should create, deliver, and capture economic value while also contributing to environmental and social sustainability (Schaltegger et al., 2016; Boons, Lüdeke-Freund, 2013; Lüdeke-Freund et al., 2018).

2.2 Circular startups

Circular startups are a relatively new phenomenon in the business world. Even though the approach and logic of the circular business model in start-ups have received little attention in management research, this model has been considered to be a crucial step toward facilitating the transition to a circular economy. It is critical to comprehend the distinctions and overlaps therefore in area within different markets, both conceptually and empirically (Rok and Kulik, 2020). Startups contribute significantly to community sustainability through their significant effects (Horn and Brem, 2013). Sustainability-oriented innovations, sustainable innovations, eco-innovations, or green

innovations are some of the terms used to describe them (Geradts and Bocken, 2019; Klewitz and Hansen, 2014; Hogevoold et al., 2014).

To break with current resource-use trends, it appears that a shift away from "business as usual" is required. Extraction of fossil fuels, ores, minerals, and biomass increased 12-fold during the 20th century, reaching almost 85 billion tons in 2015, almost doubling by 2050 (Circle Economy, 2018; Krausmann et al., 2009). This exponential material use is a major threat to the achieving sustainable development of society.

A network of start-ups that innovate in the field of circular economy in Central and Eastern European countries was mapped in a report published by Ashoka Romania and EIT Climate-KIC. They also examined the circumstances of these start-ups in Romania, identifying 189 such innovators. When they are analyzed, it has been discovered that they are generally very interconnected, especially in these areas: climate-technology, air pollution, clean energy, and agriculture (GSE, 2022).

According to the data from this year's mapping, interest in circular economy and Initiatives to eliminate waste (zero-waste) aimed at mass production practices, consumer education, and purchasing habits has increased significantly and more than doubled. A phenomenon that must be studied and comprehended to determine how and what can facilitate this growth. The more circular economy initiatives we have, the more people learn about its principles and the easier the transition can be made.

The pandemic, war, and subsequent resource problems are all important factors that can explain why this increase occurred. This need for people to act and try to make a positive impact on the environment has also been encouraged by all the funding lines that have supported them, in recent years there have been more and more forms of help for entrepreneurs who want to develop solutions to the environmental problems we face.

The transition to a circular economy is a long-term process that can be implemented gradually in large corporations. Because the processes are well defined, they cannot be easily changed, but innovation, start-ups, and innovative projects are required to support them. According to the information previously presented, a large number of such circular businesses have emerged in recent years. These businesses were created from the start with the circular economy principles in mind, with the goal of minimizing their environmental impact.

3 RESEARCH METHOD

To analyze circular start-ups in Romania, data was gathered from various sources and presented, primarily through a tool developed in Romania, namely the Circular Economy Stakeholder Platform in Romania (www.rocesp.ro), but also through the European Platform of Stakeholders in the Circular Economy (ECESP). ROCESP is a platform configured as a network of networks with the goal of establishing a point of national integration on the proposals, perspectives, key issues, points of view, and expectations regarding the circular economy that our country wishes to and can represent in Europe with a single voice, while also promoting the Romanian way of adapting the economy, including through specific actions dedicated to the economic, social, and environmental pillars.

The study of specialized literature, as well as databases containing Romanian projects in the circular economy at the national and international levels, was part of the analysis. Start-up company websites and LinkedIn profiles were also used, as well as a series of in-depth interviews with circular start-up founding members to gain a better understanding of their business models. Roughly 200 circular businesses were discovered, with four of them being examined in this study from the perspective of the circular economy.

Multiple stakeholder groups must collaborate to increase the rate of material cycling and implement smarter circularity strategies. While large and well-established firms' contributions are undeniably important, start-ups or emerging businesses, such as Atelier Atipic, with their potential to develop innovative solutions, could also play an important role. However, few evidence about circular startups has been published thus far.

To enhance the rate of material cycling as well as incorporate smarter circularity strategies, various stakeholders groups must work together. While the contributions of large and well-established firms are undeniably significant, start-ups or emerging businesses, such as Atelier Atipic, with their ability to create innovative solutions, may also play a significant role.

The evaluation took place between 01.03.2022 and 01.09.2022. Primary data and secondary data were collected. The primary method of data collection consisted of interviews and other secondary data to complement the interview information from the previously mentioned sources. Semi-structured interviews were conducted with the owners of the start-ups.

4 RESULTS

We chose two industries to present and analyze as case studies in this paper. We chose two of the most polluting industries at the time, the textile and food industries. Because there is so much waste, we will concentrate on textiles and food in the following section of the paper.

The production of clothing, textile fibers and footwear in Romania contributes 2% to the national GDP. Simultaneously, textile exports accounted for 6% of Romanian goods exports in 2018 (MMAP, 2021).

Given that regulations such as Ordinance 92/2021 and Government Emergency Ordinance no. 5/2015 have yet to be implemented on a meaningful scale for the textile ecosystem, and

recycling investments are modest in comparison to other European countries, most textile waste ends up in landfills or is recovered by incineration in cement factories. Only a few factories at the national level convert cotton waste into cloth and stuffing for various industries (SNEC, 2022).

As a result of the lack of regulation, textile waste is a serious problem not only in Romania. We need to intervene at the design stage, and we need mandatory requirements to ensure that we are extending the life of products and using materials that can also be recycled more easily. But to reach recycling and achieve this we need transparency along the entire value chain and to know the exact source of the materials and all the data of interest for the circular economy. Unfortunately, recent studies show that the percentage of Greenwashing in the textile industry is also very high.

Of course, you can act in a variety of ways, one of which we will discuss in this paper: the impact that startups can have in this sector. The number of Romanians incorporating circular economy principles into the textile industry grows year after year. Of course, comparing their impact to that of large textile factories is insufficient. They do, however, provide solutions that can be replicated or implemented in larger firms through innovation and scalable business design.

Another important factor to consider, and one that startups can help with by raising awareness, is consumer behavior, which is quite problematic and requires education. A paradigm shift is required to shift from fast fashion to slow fashion. It is also critical to understand customers and what factors motivate them to purchase circular products on an individual level (Szilagyi et al., 2022).

Though Romanian consumers support circular economy production models, it is unlikely that the development of CE business models will cause consumers to adopt new behaviors required for the success of these business models (Lakatos et al., 2016).

Taking an x-ray of the textile startups in Romania, we noticed a number of trends related to the approach they take. To get a better picture, we'll describe some of them and give a brief description.

First and foremost, we identified a number of entrepreneurs who make clothing and other products from environmentally friendly materials. Here are some examples:

ALTRNTV - A shop selling sustainable clothing, footwear, accessories, cosmetics, and home décor made in Romania from sustainable materials.

Eco Cool Socks a sustainable method of producing socks from recyclable cotton.

Another category is Upcycling. LOOMescu, for example, is a weaving studio that repurposes used textiles to create new, unique items.

Studio Solve is working on various projects, but they do provide templates for people to use in order to transform old clothes into new products.

Atipic squad srl not only repairs clothes, but also transforms them into other products.

Another type of business that has emerged in recent years is online platforms that serve primarily as a market place.

Renti is a marketplace where women can rent clothing for short periods of time. Rent it., which operates on a circular economy model, allows you to monetize your wardrobe by renting out your own items.

Following each recycling or donation action, CuibUsor Users are offered discounts and special offers for the purchase of new products or services from partner businesses.

REMIX - It's a way to refresh and make space in your closet by getting rid of clothes and accessories you don't wear because you don't like them anymore or they don't represent you, but they're still in good condition, new with or without tags.

In the following, we will present you in more detail how several circular startups put elements of the circular economy into practice.

4.1 ATIPIC SQUAD SRL

Atelier Atipic is a social insertion enterprise based in Cluj County's Chinteni commune that offers repair, transformation, clothing modification, and other services. The concept of zero waste is a key, defining element that Atelier Atipic will introduce into the Chinteni community through the assumed social intervention. Atelier Atipic will reduce pollution generated by the fashion industry (one of the most polluting at the moment) through this concept by:

Restoration: The workshop restores clothing and gives it a new lease on life.

Reduction: Through their activities, they constantly reduce the amount of raw materials used, thereby lowering carbon emissions.

Textile materials that can be saved and reincorporated into new products will be reused.

Recycling: textile materials that cannot be given a second life will be recycled in the containers placed in the community by the Greek-Catholic Diocesan Caritas Association

Refurbishment: sewing techniques will be used to refurbish materials and clothing that have suffered as a result of poor exploitation

Recovery: The reconditioning intervention will also emphasize recovery through reuse.

Rethinking; materials that can no longer be worn will be given a new purpose, and cloths that are so important in the fields of construction, car services, and cleaning companies will be created.

In order to have the greatest possible impact in the community, they constantly educate the community by presenting techniques and methods for integrating the circular economy. The workshop takes all measures to minimize waste, through product innovation (collaboration with designers) and process innovation (clothing bank). And, as they also argue, even if a product appears to have reached the end of its useful life, the component materials can be reused as many times as

possible. These can be recycled and repurposed as raw materials, giving them new value.

I also learned that they do not generate waste, that in a year they take and give away around 400 kg of clothes, that they repair countless in Chinteni and its surroundings, that they are creating a guide through which they will teach people how to make their clothes last as long as possible, that they use energy efficient equipment, that they use pattern optimization software, and that they do many other things that qualify them as zero waste.

Even though Atelier Atipic is new to the market and does not yet have a large production, they are significant in that they show what a business in the textile sector would look like if the principles of the circular economy were implemented. It is worth noting that there are more of them on the market, both newer and older.

We can talk about several enterprises that work with sustainable materials and are local producers, which is why it's important to bring them into the spotlight, study them, and understand how they revolutionize the market, take them as good practices, but also understand and the barriers they face, so that we can create systems where they can be scaled, and businesses with more market experience can take ideas from them to implement in such a way that they can be scaled.

For example, Atelier Atipic, despite being newer to the market, has a collaboration contract with a large textile company that supplies them with clothes that have minor flaws and cannot be sold, and they repair them in order to sell and donate them later. This is just one collaborative model that benefits the industry and can be replicated. As I previously stated, we examined many such initiatives when developing the evaluation grid.

Studio Solve is another good example. Refashion is fundamentally based on a product-service-systems development business model (i.e. product servitization system), a new circular

design strategy, and a new approach to manufacturing automation. It incorporates product design, distribution chain, production, take back, and recycling/upcycling assistance. The approach assists companies that want to close the material "loop," allowing the most efficient reuse of their products and components, by developing a new product design and manufacturing process based on the automatic planning of both production and recovery processes.

Designing ecosystems. They anticipate that this approach will increase product 'servitization,' or the preference for services over products in the supply chain, and thus enable the scalable growth of circular economies in the apparel industry. Each product's design specifies the resources, infrastructure, processes, and activities that will be used.

Their approach to the textile industry's transition to a circular economy is a new design paradigm based on participatory design. Context is everything in the world of circular design. This means that all stakeholders must be taken into account during the design process.

They manage to create a greater attachment to the product by involving the user in the design and/or manufacturing process, thereby discouraging overconsumption.

There are numerous initiatives in the textile industry that incorporate circular economy principles into their processes. We wanted to focus on a few in this paper to show how they innovate the market and add value to the economy.

For the food industry we found that there are many producers who have already started to implement circular economy elements. Several such initiatives have emerged in recent years, with the goal of reducing the carbon footprint on the environment by acting at various points along the production chain. We chose to analyze and interview one of our country's food banks to present a zero-waste model based on circular principles.

We have identified a series of directions taken by circular startups in our food industry. One of them is the development of platforms and smart technologies that reduce environmental impact. EasyPeasy is a platform that enables the horeca industry, farmers, and small producers to sell products left over from an activity at a discounted price. Their mission is to reduce food waste. Agro GPS committed to creating intelligent solutions for farmers that are both cost effective and environmentally friendly. Agrokultura is an online platform that helps farmers better interact with the agricultural processes in order to reduce costs and increase the crop's productivity. Mall Taranesc is the platform connecting families living in the big cities with small producers from the countryside. Another area of interest for entrepreneurs is to come up with zero waste solutions such as those from Caserole Comestibile produces 100% edible containers, biodegradable and transportation-safe for takeaway food or the Nava food restaurant, which wants through all its campaigns and the way it offers services to be as close as possible to this concept. Another category is based on the concept of composting. Here are those from CompoGO - The platform that connects food industry businesses with farms to produce organic fertilizer from food waste. As a result, the food surplus from restaurants, supermarkets, and other businesses returns to nature, closing the economic loop or Pimp my Garden, which provides ecological urban agriculture solutions.

We will go into details and present some food-related business models to gain a broader perspective on how they innovate and facilitate the transition to a circular economy.

4.2 Food Bank of Maramureş

Through its activity of rescuing resources from waste and redistributing them to disadvantaged social categories at risk of poverty and social exclusion, the Maramures Food Bank Association is a model of social

economy and circular economy. Food and non-food products are specifically taken, within their validity period and fit for human consumption, that the producer/trader/storekeeper no longer requires and has the option of destroying or donating.

According to Eurostat and MADR sources, 6000 tons of good consumer food are wasted in Romania every day, implying a loss in the linear economy with a negative impact on the environment, in addition to economic losses, because all the resources in the production chain are lost and distribution that were used: the quality of the soil, which does not regenerate enough until the next harvest; the water; air quality, which is polluted by the manufacturing and transport processes. The food bank's mission is to repurpose these products.

As a result, they save from waste and reuse food and non-food products that come from seasonal marketing campaigns, bonuses, offers, promotions, refused at the logistics platform due to non-compliance with aesthetic or caliber standards, and so on, products that are considered economic losses and will end up as waste, even if they meet all compliance properties for human consumption.

The principles of reuse and restoration can be found in the reuse of disabled equipment or furniture that they have encountered in the experience of other associations-food banks in Romania, such as furniture donated by companies that change their office equipment on a regular basis, bicycles, computers, and wheelchairs that centres abroad renew every 5 years. All of these are repaired, restored, and donated to non-governmental organizations (NGOs) with social programs that require these products for the final beneficiaries.

They also began a series of campaigns encouraging the community to make compost, which is then used in agriculture, thereby assisting people in reducing some of the costs and negative environmental impact. Despite the fact that they are just getting started, they save approximately 4.5 tonnes of food each month.

This figure is even higher at the level of Romania's food bank federation.

The food industry, like the textile industry, has many initiatives that have emerged in recent years and are innovating the field.

CompoGO, for example, is a platform that connects economic players with food waste with farms to create organic fertilizer from food waste. As a result, the surplus of businesses (restaurants, supermarkets, and processors) can return to nature in a beneficial, rather than harmful, form.

4.3 NAVA Food

Also in this category, we interviewed and measured Nava Food, a vegan restaurant in Cluj-Napoca that opened in 2021. NAVA declares that they will promote responsible and sustainable consumption in as many ways as possible. As a result, for delivery, they invest in environmentally friendly packaging and avoid using plastic as much as possible.

In parallel, it is developing a compost-based food waste recycling program. As a result, the consumption of food grown prematurely with the aid of artificial fertilizers is avoided. Even though their food is exotic in flavor, they make certain that their vegetables are grown locally.

Their goal is to become Romania's first waste-free kitchen.

A series of common aspects that appeared in all of them were identified in the interviews conducted for this study, as well as in the analysis of the information identified on their websites or social networks. To begin with, a common factor that emerged frequently is their high level of awareness regarding environmental issues. A second consideration is the environmental impact of linear businesses and alternative methods for mitigating this impact. The entrepreneurs were also conversant with the circular economy and its operating principles. Each of them wanted to make a difference in their community by creating a circular business model.

5 CONCLUSIONS

5.1 Conclusions

In transition to a circular economy, startups are playing an important part. They have the ability to design from the start a business model that has a low environmental impact and is easier to scale than existing businesses.

Multiple stakeholder groups must collaborate to improve material cycling rates and the adoption of smarter circularity strategies. While the contributions of large, well-established firms are extremely significant, start-ups like Atelier Atipic, with their potential for creating innovative solutions, may also play an important role. Therefore, through this study we wanted to contribute to a better understanding of how start-ups can bring real value and a significant contribution to the transition to a circular economy. It will examine the core strategies and business model innovations used by circular start-ups in particular.

Several factors must be considered, given that numerous studies have demonstrated the clear benefits of implementing circularity in organizations. It is critical to identify the barriers, facilitators, and ways to facilitate the transition (Bîrgovan et al., 2022).

5.2 Limits and Future Perspective

The current study has several limitations. One of these is that it is a descriptive study, which means we can't say anything about causality or relationships between variables that aid in the transition to a more circular economy.

Another limitation is that more start-ups were not included in the detailed analysis, so we cannot make population-level generalizations.

This study serves as an introduction to the study of circular start-up in Romania. It is critical to comprehend their significance and how they can aid in the transition to a more circular economy. As a result, we recommend that future studies conduct quantitative analyses on these

companies in order to determine exactly what factors facilitate or obstruct the adoption of circular economy practices.

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