

CIRCULAR ECONOMY: REALITY AND CHALLENGES

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Abstract

The aim of this study is to address circular economy and the challenges regarding its adoption in daily life. Circular economy can be defined as waste elimination industrial system that is restorative and regenerative in terms of its design and intention. The concept replaces the end-of-life perspective with restoration, by designing a new system that makes efforts for the usage of renewable energy, tries to completely delete the use of toxic chemicals, and has the ultimate objective of abolishing waste with the support of superior design of products, systems and even business models. This could be the answer to all waste management challenges currently existing worldwide, but what efforts need to be made in order to embrace this economy in our daily lives as consumers? Consumerism is now so immersed in our habits that it plays a negative role against this concept and therefore, adds stronger blockages in people's minds and impedes on their ability to reset their behavior and life styles towards a circular economy. This paper explores the habits that need to be embraced to influence the behavior change towards a circular economy.

Keywords: circular economy, economic concepts, circularity

INTRODUCTION

The aim of this study is to expound on the meaning of circular economy and the challenges that must be faced in order to adopt it in our daily life. Due to the complexity and relative novelty of this concept to society, a general background including historical facts and related theories will be reviewed with the objective of building a complete understanding of the topic.

Until recently, the world had faced different challenges related to the exploitation of natural resources. Different studies indicate that if the human race continues to live under the same rules and habits that persist today, life on Earth will become hazardous and the next generations will start struggling with day to day activities that for now are impossible to imagine as being complicated to handle. It is clear that changes must be made, but perhaps this process will not be a simple matter of two or three years of adjustment.

Different groups around the world are already working towards achieving a circular economy. In this paper, the effort of private organizations, governments and other social groups will be reviewed with the objective of sharing information, providing relevant data and promoting the change towards sustainable waste management behaviors. Society is still heavily influenced by negative habits like consumerism, which can be an obstacle in the change towards a circular economy, but what alternatives exist to overcoming these challenges? Is the circular economy's community really growing stronger? Can circular economy spread across all countries?

These will be the major questions to be answered in the following sections. The paper will review relevant definitions regarding the topic, some historical perspectives, present data and the awareness of people towards Circular Economy.

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1. LITERATURE REVIEW

1.1. DEFINITION OF CIRCULAR ECONOMY

Circular economy has recently captured the attention of scholars, scientists, and other communities due to its relevance as one of the principal solutions to fight climate change. The topic has been covered in international forums, initiatives, awards and special projects where different entities and individuals are greatly involved.

To understand its relevance, it is important to understand the main concept and its related topics. The linear economy is how industries work nowadays. Goods are created and then passed to individuals who use and dispose them, generating waste and putting an end to their lifecycle. In this economy, huge quantities of raw materials and finite resources are taken in their natural form and transformed into what can be the next fabric or electronic device. This economy has been functioning since the appearance of the first human settlements and continues growing through time having notable changes in periods such as the industrial revolution. In contrast, a circular economy model stands for industries making and recovering goods, while consumers use and return them avoiding waste generation. Circular economy (CE) model seeks to not only reduce world waste but also decrease the amount of resources humanity is taking from nature. A third type of industrial economy is acknowledged by Stahel (2019), the performance economy. Same as CE, it also seeks waste diminishment but putting into practice a share business model focus (Stahel, 2019).

On Monday, July 29, 2019, Earth Overshoot Day was announced (Earth Overshoot Day, 2019). Since its first announcement in the year 2006, this day indicates the date when humanity's demand for ecological resources and services surpasses the amount of resources Earth can regenerate in one year (World Wide Fund For Nature, 2019). Since its creation, the date has moved earlier from October to July and is expected to continue arriving earlier if the economy changes nothing in its operation. This indicator along with others such as Biocapacity, Ecological overshoot or the Ecological Footprint, reminds us that a complete sustainable revolution is needed to stop our debt resource with the planet.

1.2. ANTECEDENTS

Although the concept of circular economy has augmented popularity in recent years, researchers suggest that the practice is older, even since ancient Greek times. During an interview held with the Ellen MacArthur Foundation (2019) explains that circularity is present in nature and it has always existed. Furthermore, he states that through time, society learned to overcome the scarcity of goods and created new materials that did not exist in nature before such as plastics. Afterward, with the consumption of these materials, life began to be easier but nature began struggling with the processing of these materials.

Different theoretical background about the origins of circular economy is described as “circular economy: ancient populations pioneered the idea of recycling waste” (Kuijpers, 2019, 1), that circular practices exist even since Paleolithic and Neolithic times. This is evidenced by the fact that humans reused their tools and fabricated new ones from old materials. In time civilizations learned to recycle and handle bronze (Kuijpers, 2019). The Greek civilization could have also transmitted some circular principles. Mees (2019) mentions that Aristotle defined the concept of “a good life” as the act of being responsible for the actions while ensuring that the future generations enjoy the good decisions taken by the antecessors. Another Greek principle comes from “oikos” that refers to family and is also the root word for ecology (ING, 2019). For Mees, this means that the planet is our home.

Early relevant documents sought the usage of the planet's resources such as Boulding (1966) who described the difference between having unlimited and limited resources and how it can be translated to the understanding of a closed and open economy, that now can be translated to

circular and linear economy. The paper illustrates the planet as a closed system in which resources are limited and invites the readers to start being conscious and take action towards the consequences of wasteful spending of resources as if they were unlimited (Boulding, 1966). Six years later, Meadows et al. (1972) suggested that if growth trends in sectors such as world population and resource depletion continued unchanged, the limits of the planet will be reached at some point. The publication also concluded that a strategy should be set up in order to cover every problem especially the relationship of people with their environment.

The concept of circular economy was presented in the United Nations report (1993) after the UN Conference on Environment and Development. The aim of this concept is to “increase resource-utilization efficiency and environmental efficiency, and to reduce the dependence of economic development on natural resources” (Hu et al., 2018, 1).

The Ellen MacArthur Foundation, which is dedicating efforts towards informing and promoting circular economy, states that “looking beyond the current take-make-waste extractive industrial model, a circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources, and designing waste out of the system” (The Ellen MacArthur Foundation, 2019, 1).

Any process of transition requires the simultaneous work of multiple factors to guarantee success. The same considerations need to be acknowledged when the world finally shifts to a circular economy, the question should be if societies are ready to make this move (Backes, 2017).

In time, other schools of thought began to appear and support circular economy adding more information to the matter. Biomimicry, Industrial Ecology and Cradle to Cradle are some examples that remind of the limited resources planet Earth has but suggest solutions regarding a sustainable way of living (Cardoso, 2018).

Recently, research has continued to make contributions and divulge new information for everyone to use, but still, according to The Circularity Gap report from 2018 “our world economy is only 9.1% circular, leaving a massive ‘Circularity Gap’” (de Wit et al., 2018, 6). The report summarizes facts and offers a framework in order to be able to see how the bridging process regarding the gap goes on yearly. Governments, corporations and society are now working to close the gap. Their contributions will herein be reviewed.

1.3. ACTUAL SITUATION

While science is sharing information about the swift into a circular economy, society takes action through private corporations, non-governmental organizations, and individuals. Efforts made by private corporations are significant. They have years of field experience, well market positioned products, industry leadership and elemental society influence. Because of this, they are pacers for small and medium companies in the race for circular economy.

Schneider Electric specializes in energy management and automation. The multinational operates in more than 100 countries. Circular operations represent 12% of its revenues in activities like recycled content and recyclable materials usage, product lifespan prolongation and adoption of take-back schemes in their supply chain (Croke, 2017). They set as goal saving 100,000 metric tons of primary resources. Another example comes from the beverage industry where the world’s largest brewer, AB InBev, is committed to pack 100% of its product in returnable or majority-recycled material by 2025. Nearly half of the products from this company come in returnable glass bottles but they are reaching towards totality (Thornton, 2019).

Inspiration can also come from small corners. During the past decades, startups are having their piece of market. According to Stangler (2019) president of Startup Genome, during the last 2 years “the global startup economy generated \$2.8 trillion in economic value [...]”

Nowadays, there are almost 50 regions around the world that creates at least “\$4 billion in ecosystem value”. In the 1990s, this number of regions was only four.

Consumer products and services, health, financial services, and logistics and transportation are some of the industries in the startup environment, yet circular economy is already the business model these players follow, and it is leading them to success. Circular startups are blooming worldwide; however, Europe seems to be the nest for most of them until now. In 2018, the United Kingdom was the leading host nation for circular economy startups, followed by Sweden and Germany, according to the data collector AtomLeap. This result came after the company traced more than 3,000 developing business models worldwide based on circular economy (The AtomLeap Team, 2018). Although countries like India and the United States of America are having important circular startup ambassadors, one of the main reasons Europe is leading the way according to the Ellen MacArthur Foundation (2019, 1), is the geological poorness of the country: “we don’t have a lot of resources. We don’t have a lot of room either, to bury the waste.” This could be the main concerned reason for European entities which at first perceived the movement just as a topic for the environmental agenda.

Even when academia and corporations are working out this topic, it is a tough road if legislation cannot ease the necessities of this new economy. Some countries are taking care now. In 2008, the People’s Republic of China launched a circular economy Promotion Law intending to encourage all kinds of activities that enforce the protection and improvement of the environment, consumption, waste utilization, and resource-efficient utilization. Although this is not the first example involving nations and sustainability awareness, given that in 1992 the United Nations Framework Convention on Climate Change was celebrated, this is the first time a country launches a specific Promotion Law approaching the topic.

The latest action took place in the European Union where the Final Circular Economy Package was launched in March 4th, 2019. After four years of the adoption of a Circular Economy Action Plan in 2015, the Commission presented a monitoring framework containing 10 key indicators, which are regularly updated, to supervise the lifecycle of products. Member states can still suggest additional indicators to improve the process and have already circular economy strategies, like the world’s first roadmap applied by Finland, which is a compilation of key actions required for transitioning to a circular economy, meaning a complementary teamwork involving 28 countries.

The implementation of the Circular Economy Action Plan contains information regarding changes in design and production processes, consumers’ empowerment, waste to resource transformation, innovation and investments among other topics (European Commission, 2018). This Action Plan is aligned with the United Nations Agenda for Sustainable Development set to be accomplished by the year 2030. Due to the relevance this topic is gaining, other countries are working on initiatives such as a resource innovation campus in the United States, circular initiatives for Tokyo 2020 Olympic and Paralympic Games, biomass energy generators in Hungary, and waste regulation in the Philippines.

To continue circular economy promotion, initiatives must be analyzed, discussed and reinforced. World forums are the perfect place for ideas to meet, combine and develop. In 2014, The Green Alley Award started rewarding startups from around the world that made notable contributions to circular economy (BCG, 2018).

One year later, The Circularity Awards were created by the Forum of Young Global Leaders, the World Economic Forum and Accenture Strategy to award individuals, governmental organizations, startups, and corporations such as Unilever and Stuffstr (World Economic Forum, 2020). Since then, an increasing number of initiatives go under the world spotlight and share their contributions to the movement while serving as a reference for others. Awards like these not only attract the attention of investors (Gupta et al., 2019) that can help projects

transcend, but also approximate products and services to the market, creating awareness and inviting others to join the change.

1.4. INFLUENCE OF THE MEDIA

The world has witnessed many revolutions. Media has participated in them. Human kind have always had the impulsiveness to communicate everything, it can be seen in cave paintings, printed materials and today, in media.

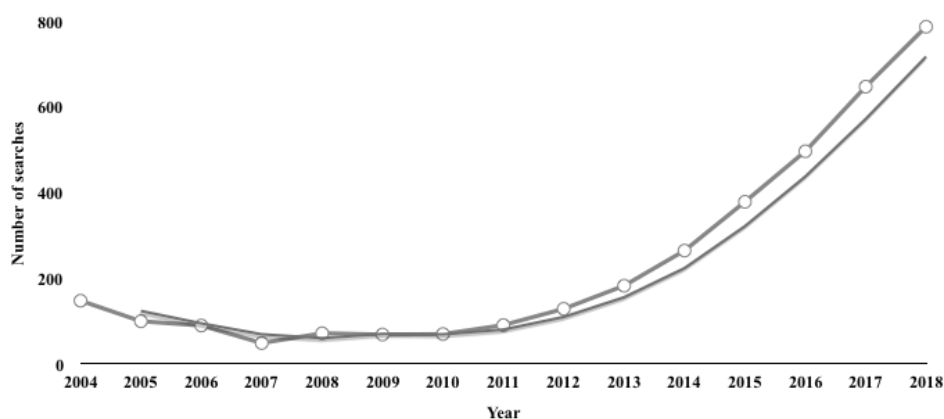
Decades ago, radio, television and newspapers were the basis for communication but since the appearance of internet, web browsers and social media are now the true influencers taking part in historical events such as the Arab Spring or the Ukrainian Revolution and this can be an effect of Internet reaching more people worldwide.

As it was discussed in the beginning of this paper, circular economy is attracting attention. Related topics and keywords to circular economy such as environment, sustainability or recycling are more often being searched on internet and shared in social media drawing the attention of people towards this matter and winning followers for this movement. It is most probable that thanks to the media, people will be more informed about circular economy and therefore adopt it into their lives. “What particularly distinguishes the history of the recent half-century or so is the crucial role played by media and communication in not only helping to define ‘the environment’ as a concept and domain, but more particularly in bringing environmental issues and problems to public and political attention” (Hansen, 2019, 5).

Since 2009 the search trend for circular economy has increased from year to year according to Google Trends. Until September 2019, the top countries, which googled on circular economy, were Luxemburg, Saint Helena, South Africa, Belgium and Kenya. Even though Google Trends may not seem the best option for analysis, a study performed by Tóth (2019) concluded that “Google trends is not a 100% precise analytic tool calibrated for scientific analysis, but due to its comprehensive nature, enormous access to data, and ease to use, it is an optimal tool to make quick analyses about an arbitrarily chosen to set of research phrases.” In addition, when using this tool, characteristics such as internet access must be taken into account in order to perform an accurate study.

The following figure (Figure 1) shows the search trend for circular economy worldwide. The line with circles on it represents the number of searches per year, while the other line shows the tendency throughout the examined years. According to Figure 1, the rise began in 2010 and from that year on it is rapidly increasing which also support the fact that the topic is on the table.

Figure 1 Search trend for circular economy worldwide



Source: Own edited based on data from Google Trend (2019)

YouTube trends (2019) show another interesting perspective of what is happening in the Internet with Circular Economy. In April 2019, the Quarterly YouTube Trends Snapshot posted about Sustainability Culture. Whereas videos are not specifically about circular economy, they do show content strongly related to the topic. Videos about second hand shops that avoid the need of buying new clothes and accessories or zero waste living tutorials can be found in the website having millions of views and comments from around the world, beginning a true revolution full of ideas being shared. The top three trending topics in YouTube videos related to this economy are sustainable fashion, clean beauty and sustainable living

2. CIRCULAR ECONOMY ACCORDING TO THE PUBLIC

In the “triple bottom line” principle, coined by John Elkington in 1994, the performance of a business is analyzed based on profit, planet, and people (Elkington, 1994). In the Circular Economy model, people are vital to lead change. For many years, different sciences have worked towards the understanding of human behavior and suggest solutions to defeat world problematics.

Eurostat (2019) uses 10 indicators divided into 4 categories to monitor the progress in the European Union towards a Circular Economy. The categories are production and consumption, waste management, secondary raw materials, and competitiveness and innovation. All categories reflect the relationship existing between producers and consumers. Even though companies may invest in innovation and technologies, it is consumer behavior who plays a key role in the immersion of circular economy. In fact, according to the work of Kirchherr et al. (2018), it is the cultural barriers that are the most pressing. In a study performed to 208 survey respondents and 47 expert interviews, results showed that from the 4 different barriers to circular economy in the European Union, precisely cultural barriers including ‘lacking consumer interest and awareness’ and ‘hesitant company culture’ are the reason why circular economy could not be achieving full potential. The study also concluded that the concept is not in the information mainstream yet and that only certain groups concerned about sustainability topics are aware of this model.

Publications regarding consumer behavior towards circular economy principles can be reviewed in the work of Snoop (2009) and Veblen (1899). While Snoop demonstrates an existing link between the personality of a person and the objects they own, Veblen explains how certain unnecessary luxury objects, can give power and status to people. In both works, it is demonstrated how society is concerned about possessing objects, in particular, those that can show how special this person is. These are trends that are still alive in society, people are concerned about getting the latest technology that perhaps may not ease their lives but it will only impress and express how exclusive are they. Other barriers related to consumer behavior were analyzed by Bet et al. (2018). Results showed that circularity is not perceived as valuable per se and circularity invokes skepticism about feasibility. Conservative customer mindset, unfamiliarity to circular products and lack of circular examples are some reasons why customers keep buying linear economy products, they concluded.

In June 2019, a brief investigation with the help of an online questionnaire was conducted by the authors of present study regarding the knowledge and interest of people towards circular economy. The sample size contained 50 people aged between 18 and 50 years old from 14 countries. From the point of view of the research, it was not necessary to set sample requirements and sample limit since the main objective was to get a discovery overview of the topic from ordinary people to be able to set a further primary research and its directions. The questionnaire contained 11 questions and was sent via Google Forms to the respondents. The findings are limited to the answers of these respondents; however, it shows that it needs to be studied further.

Though the sample is not representative and the questions involved in the survey are limited to a certain topic (awareness and lifestyle regarding circular economy), the main aim was to get a first impression from an international audience in order to be able to establish a further investigation towards the topic.

The findings of the research support the previously introduced theoretical background data – the topic itself is getting more and more attention even though people do not know the term ‘circular economy’, they are aware of its consequences and they adopt circular economy related activities into their daily lives.

Results of the online survey show the followings:

A, about the awareness of circular economy and its consequences:

- 94% are aware of the consequences of global warming;
- 56% are sustainable trend followers;
- 32% know what circular economy is, while 46% have an idea and 22% know nothing;

B, about lifestyle related to circular economy:

- 52% consider to have a consumerist behavior and know what consumerism is;
- 96% have bought at least once in their lives second hand articles;
- clothes and accessories, furniture and electronics, are the top popular second hand articles bought by participants;
- outwear, underwear and personal care products are second hand articles considered as never to be acquired.

The questionnaire in general showed that even though information is everywhere now, people still need time to change their habits and learn more about this economy. It also suggests that trends related to circular economy like second hand articles acquisition are getting more common in people’s life even when they are not aware of what circular economy is or involves.

Linking this questionnaire and the information previously mentioned, it can be inferred that media, private sector and governments, are somehow influencing life style habits with the actions taken.

3. CONCLUSIONS

The main aim of the study was to give an overview of an important topic – circular economy, to introduce the term and related theories, moreover to get information about the perception and knowledge towards circular economy in the circle of people. In order to reach this milestone, the authors gave a review of related international literature and conducted an introductory and explorative questionnaire survey.

Linear economy is no longer functional and consumption habits need to be changed. As it was previously stated, information shows that the way humanity is behaving towards the creation and usage of goods can no longer persist for the conservation of the environment and if this pace is maintained, the natural resources will soon be scarce, provoking multiple irreversible problems. Although several groups are already working in favor of circular economy’s adoption, more people need to join the revolution and continue innovating more solutions to speed up the economy swift process.

It can be suggested that the time which is needed to change a whole world economy will be similar to the time what was taken by former communist countries adopting capitalism, or former colonies acquiring responsibilities as new independent countries. But time is unpredictable and with social movements circular economy’s adoption can get sooner than it is expected. Through history, when disruptive movements arise, they are not taken seriously and it can take some time for the world to believe in them and put them in practice. Crazy, abnormal

and non-natural, are just certain adjectives these new ideas can receive, but once they start growing, leaders and followers appear, setting the pace for anyone else interested in joining.

Efforts are now on the table, information is flowing around, but yet to live in a complete circular economy, the involvement of all sectors is needed in order to continue developing ideas, executing strategies and surveilling activities that lead to a true change.

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