

The Circular Economy: Analysis Based on The Theory of Resources and Capabilities

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Abstract

The purpose of this document is to analyze the Circular Economy (CE) model from the point of view of the resources and capacities of the organization. How is the application of the Circular Economy model related to Strategic Management? At first glance, it seems that the CE is operating within an operational level with a social impact, but it also has implications that allow us to think that it can be used as an internal resource of the company that, if applied in the right way, can become a competitive advantage, in other words, the application of the CE is related to Strategic Management through the point of view based on resources and capabilities. Therefore, the present investigation has a descriptive-correlational nature, which was analyzed through Peng's VRIO framework.

Keywords: Circular Economy, Resources and Capacities, VRIO Analysis, Strategy.

A Economia Circular: Análise Baseada na Teoria do Recursos e Capacidades

Resumo

Este documento tem como objetivo analisar o modelo de Economia Circular (EC) do ponto de vista dos recursos e capacidades da organização. Como a aplicação do modelo de economia circular está relacionada como parte da gestão estratégica? À primeira vista, parece que a EC trabalha dentro de um nível operacional com impacto social, mas também tem implicações que nos permitem pensar que pode ser usada como um recurso interno da empresa que, se aplicado da maneira correta, pode se tornar uma vantagem competitiva, ou seja, a aplicação do EC está relacionada à gestão estratégica sob o ponto de vista baseado em recursos e capacidades. Portanto, esta pesquisa é descritivo-correlacional, que foi analisada por meio do framework VRIO.

Palavras-chave: Economía Circular, Recursos e Capacidades, Análise VRIO, Estratégia

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1. INTRODUCTION

In recent decades, the care of the planet has begun to appear on international political agendas as a matter of urgent concern, since we have begun to notice the consequences of the decisions taken by past generations to obtain economic benefits without worrying about the damage to the environment they caused (BRUNDTLAND, 1987). As such, it has been decided that it is time to worry and take measures to survive in a planet of limited resources with a population that does not stop growing.

What can be done? Beyond the individual responsibility of each person, those who can make a noticeable change and chain reaction are the companies that, regardless of size or classification, are important actors in the global scope since they have an active role in the degradation or preservation of its environment close to social, economic and environmental level. Then, it can be considered that it is of vital importance that companies begin to have the main goal of achieving sustainability, but how can they achieve it?

One way to achieve this is through the reengineering of existing products or the creation of new products that are generated from the principles of the Circular Economy. According to the Ellen MacArthur Foundation, an organization devoted to the study and dissemination of the circular economy, the beginning of the concept as such has not been registered, but rather is the result of an evolution of several schools of thought such as Regenerative Design, the Economics of Performance, Crandel to Crandel, Industrial Ecology, Biomimicry, Blue Economy, and Natural Capitalism (ELLEN MACARTHUR FOUNDATION, 2019).

Regenerative Design is a school of thought created by John T. Lyle, whose approach is rooted in the theory of systems oriented to design processes. When speaking of regeneration, the theory refers to the fact that existing processes are modified in order to improve, remove or adhere new sources of energy and / or materials. This school has a base derived from the ecology of systems that is in charge of providing a biokinetic in the ecosystems with the objective of achieving a system of ecological economy that is viable and closed for any industry. In addition to the above, it seeks to ensure that the resulting system does not generate waste, that they are fully effective, to achieve this it is necessary to redesign the culture of human habitats (HEAVEN GROWN, S.F.)

The Economics of Performance was born in the 70's when the economist and architect Walter Stahel, in contribution with Genevieve Reday, created The Potential for Substituting Manpower for Energy, a report for the European Commission where they describe the probability of achieving an economy in the existence of processes in a loop (ECOINTELIGENCIA, 2017). In addition to the possible impact that these processes would have at the social level with the generation of jobs, in economic competitiveness, in the new distribution in the use of resources and waste. In general aspects, the economy of performance has four main objectives: to extend the useful life of existing products, to generate new products that from their design are thought to be long-lasting, to think ahead about campaigns or activities for the prevention of waste, and reuse of these (ELLEN MACARTHUR FOUNDATION, 2019)

The Cradle to Cradle, also known as cradle to cradle or C2C, is the result of work done by Michael Braungart and Bill McDonough, a chemist and an architect respectively. This research

consists of visualizing that from the beginning and during a process it is known if the materials used are technical or biological (ELLEN MACARTHUR FOUNDATION, 2019). McDonough mentions in his work that durability is not applicable to all the materials used, some simply cannot be reused or cannot be recovered easily, for this reason the proposal to design the products is presented so that their components can be reused in completely or completely degrade in the environment (MCDONOUGH, BRAUNGART, BOLLINGER, 2007) . C2C has been one of the models that gave rise to the circular economy as such, highlighted the importance of creating a process in which intelligent design is used to achieve lengthen or improve the life cycle of finished products.

Industrial Ecology or science of sustainability is part of the engineering that aims to support the promotion and dissemination of sustainable development through the efficient use of resources, unleashing improvements in the quality of life. In other words, create sustainable societies. On the other hand, it seeks to reduce the impact that industrial processes have on the environment (ELLEN MACARTHUR FOUNDATION, 2019). Industrial Ecology is composed of several disciplines and not only applies to the products sector but also to the creation of services, seeking to achieve social and industrial well-being (MEJÍA DUGAND , 2010). In itself, this school of thought tries to generate processes in which the raw material is processed, converted into a finished product and when its life cycle ends, it is recycled and, in turn, used by other companies or industries as a supply for production, creating a new cycle.

Biomimicry defined for the first time in 2012 by Janine Benyus, as a way to innovate human processes based on the designs of nature. It is based on three principles for its proper functioning (ELLEN MACARTHUR FOUNDATION, 2019):

- 1) Use nature as a base model for the creation of forms, processes and strategies applicable to the resolution of everyday problems.
- 2) Use nature as a unit of measurement to have a standard to be able to quantify innovations with respect to their ecological sustainability.
- 3) Nature as a guide, always looking for ways to imitate for the betterment of life.

The next trend is the Blue Economy, which was promoted by Gunter Pauli, an entrepreneur of Belgian origin who reported an alleged resemblance to Biomimicry, seeking answers to the knowledge that nature has accumulated throughout its history, in order to transfer that efficiency to the way of producing (ALVIAL MUÑOZ, 2015). This school aims to use the existing resources in something called "cascade system", that is, the waste or waste of the finished product would be used as raw material or inputs to generate a new flow of movements. The blue economy appeared in a code written by Pauli in which it seeks to generate a hundred innovations that would generate one hundred million jobs in a span of ten years (ELLEN MACARTHUR FOUNDATION, 2019).

Finally, Natural Capitalism was proposed by Paul Hawken, Amory Lovins and Hunter Lovins, an interdisciplinary team made up of an ecologist, a physicist and a sociologist, in his book *Natural Capitalism: Creating the Next Industrial Revolution* (BALBOA; DOMÍNGUEZ SOMONTE, 2014). In this book, a criticism against traditional industrial capitalism is shown, it also explains how business and environmental interests are linked, or between production and resources generated by nature - natural capital. This school states that there are four necessary changes to move from industrial capital to natural capitalism (HAWKEN, LOVINS, LOVINS, 2000):

- 1) Achieve optimizing the productivity of natural resources through changes in designs. As a consequence, the saving of resources was generated, the profits increased, the time was improved, and the initial capital was reduced (optional).
- 2) Eliminate the concept of waste, through the reduction of waste and the creation of a production model based on biological systems, converting it into an outlet at the entrance.
- 3) The aim is for business models to stop focusing on achieving sales and begin to focus on the search for solutions, on sustaining a new perception of the satisfaction of quality, functionality and utility of goods and services.
- 4) Increase in the investment of the natural capital model, in order to expand the new sustainable ecosystems in the world at the same time as the population grows and, consequently, increase the production of biologically responsible products / services.

Having as precedent the schools of thought mentioned above, in the previous century there has been a continuous struggle in search of a balance in business that includes human resources, care for the environment and, obviously, profits. Companies, regardless of size or classification, are important players in the global arena because they have an active role in the. Sometimes, companies that use the word Sustainability in their Corporate Social Responsibility reports do so as a synonym of support for the environment, which is incorrect. Due to this and the ambiguity of some of the related concepts we can reach the conclusion that the true meaning of Sustainability or the way to achieve it is not known (KAVINSKI, DE SOUZA-LIMA, MACIEL-LIMA, FLORIANI, 2010).

2. LITERATURE REVIEW

2.1 CONCEPTS

1) Circular Economy (EC):

Since its creation, the Circular Economy has been defined in different ways, in order to make it more understandable and easy to transmit for its application. Here are three ways to define this concept:

a) Claudia García Caicedo, in her publication Circular economy and its role in sustainable design and innovation, mentions that the Circular Economy aims to achieve product designs that reduce or completely eliminate waste, and also seeks to ensure that products are simple to dismantle-disassemble for reuse in new products. The CB is also responsible for defining business models that are exclusively dedicated to companies that apply the Circular Economy in their processes to achieve sustainable innovation and consequently feel economically motivated to recover their product after fulfilling its main function, use it again in manufacturing and repeating the cycle (CACEIDO GARCÍA, 2017).

b) Catalina Balboa and Manuel Domínguez, in their work Circular economy as a framework for ecodesign: the ECO-3 model, define CS as a "philosophy of systems organization inspired by living beings, which pursued the change of an economy linear (produce, use and throw) increasingly difficult to implement due to the depletion of resources towards a circular and regenerative model, as occurs in nature and which also represents a great opportunity in the business world " (BALBOA, DOMÍNGUEZ SOMONTE, 2014). The interesting thing in the definition of Balboa and Dominguez is that they mention it as a way to try to solve the problem of scarcity of resources.

c) The Ellen MacArthur Foundation mentions that the Circular Economy usually has other names related to the schools of thought on which it is based, and that were already mentioned above, for example: economy of the cradle to the cradle or economy of closed loop (ELLEN MACARTHUR FOUNDATION (2), 2019). It is important to mention that this foundation declares that the defenders of the theory do not consider the Circular Economy as part of an ecological movement, but as a form of improvement of the design.

2) Strategy

To define the strategy, the present work was based on the works of Michael Eugene Porter. This author defines the strategy as a differentiator that is created by making choices about several options that in the end would generate a unique value combination. Based on the conclusion by Porter, what really defines a strategy are the activities to which it specializes, that is, decision making is conditioned by the company's interest in differentiating itself from the competition. If the above is not respected, competitive advantage would not work as a differentiator but as an idea of marketing (PORTER, 1996).

Porter talks about how a strategy can scale a company in the market, and become a strategic position. This position comes from three sources that sometimes work together:

- a) Positioning based on the variety of products or services that exist in the area. The companies that use this positioning are usually those that have a better possibility of producing some good or service due to certain special characteristics that only they handle in the process.
- b) Positioning based on needs, is one that is responsible for trying to meet the needs, or most of these, of a certain group of people. In a market there are many types of customers who request special products, which require certain characteristics in the good they want to buy, with different tastes or preferences, so they usually need guidance, support or very specific services.
- c) Positioning by customer segmentation according to the way to access them or positioning based on access. Normally, this type of positioning is determined by the position or geographic location in which the client of interest is located. It can also be determined by the dimension or some specific situation that would hinder or hinder easy access to the client.

According to Porter, usually more threats come from sources outside the organization. When a strategy becomes part of a competitive advantage, it is likely to be threatened by changes in areas such as technology or the actions of competitors. It is mentioned that the event that can cause a certain strategy to fail is internal to the firm, and is mainly due to the underestimation of rival companies in the industry, poor planning, lack of information, or great ambition to grow without finalizing details.

3) Sustainability

The term Sustainability does not have a precise definition by itself, it is a rather ambiguous term that derives from the word sustainable, an adjective that implies "that can be maintained for a long time without exhausting resources or causing serious damage to the environment" (RAE, 2017, page sp). We can also find that Sustainability comes from Latin etymologies such as sustenance, sustenance, sustentare, sustentavi, sustentatum, which mean: sustain, maintain in good condition, care, conserve, support, favor (ECOLOGÍA UNAM, 2015). In practice, we define

Sustainability as a process that aims to ensure the satisfaction of the needs of the current and future generations.

4) **Competitive advantage**

Competitive advantage can be defined as the essential aspect that demonstrates the performance of markets that are competitive, over the years the focus on competitive advantage has been lost to focus on the diversification and growth of organizations (PORTER, 2015). Porter declares that the source or origin of the competitive advantage is the value that the firm generates in its products or services to satisfy the clientele, in other words, it is considered as a plus that manages to surpass the competition, even when the rivals try reach the company that has an advantage of this kind. In Porter's book "Competitive Strategy" he describes three general strategies for achieving competitive advantage: cost leadership, differentiation and concentration.

2.2 THEORETICAL REVISION

The main objective of any firm is to generate high rates of return, in other words, obtain profits. Because of this, in the research work Sustainable Competitive Advantage: Combining Institutional and Resource-Based Views, Christine Oliver decided to create a hybrid model that would include the Approaches Based on Resources and Institutions, in this way the Model of the Advantage was born. Competitive Sustainable This author mentions that the reason why the resource-based approach is not only used is due to its limitations (OLIVER, 1998):

- a) Explain the heterogeneity of companies through the properties of resources and the markets of resources.
- b) Does not worry about including the social context, which affects the decision making about the use of resources.
- c) It does not talk about how the selection of resources is made.
By including the Institutional Approach, we seek to complete the spaces left, in the social sphere, by the Resource-based Approach, so that the Institutional will contribute (OLIVER, 1998):
 - a) A study on how social influence affects decision making within a company.
 - b) It will show us the close relationship that exists between the selection of resources and sustainable competitive advantage in relation to decision making.
 - c) The importance of having an "institutional context" in the three levels of the company:
 - i. Individual level, are the normal and individual values.
 - ii. Company level, are represented by the organizational culture and politics.
 - iii. Inter-company level, as an example: public relations and its pressure on the market, regulations and standards faced by firms.

Oliver also inspected the general notions of the new hybrid approach of the Sustainable Competitive Advantage, which turned out to be the following:

- a) The model divides decision making into three levels, as does the institutional one: Individual or managerial choice, company level, and inter-company.
- b) Includes the way in which managers select resources and capacities, that is, the decision of which resources and capacities to implement.
- c) Determines that in order to create and apply strategies, resources and institutional regulations must be taken into account.

d) It defines what is a capacity, resources and its idea of sustainability of an advantage that must be competitive.

e) Its analytical model consists of three determinants that assure us a sustainable competitive advantage, if it is integrated in the right way: those based on resources, such as managerial decisions; the selection of resources, the heterogeneity of the company; the institutional determinants: rational / individual regulation, institutional / business factors, and isomorphic pressure / between companies.

In relation to the selection of resources for its application, this new approach mentions that there are three cases in which it is more likely that a company is willing to acquire them or use the ones they have in reserve (OLIVER, 1998):

a) When resources are acquired that are not major for the company, in this way we managers do not feel that they are risking their main activity.

b) Companies tend to be traditional, they are affected by their institutional part, so the acquisition of resources must belong to the same item that the company manages.

c) When a resource of the company is no longer considered productive, it is time to acquire new, since the organization does not feel so threatened by the change. The opportunity cost will have less impact.

d) The accumulated resources should be periodically monitored to know what we have and what we can use.

e) The training of the assets of the company helps them to know how to use potential resources.

f) From the moment of hiring, people with attitudes that have a notion of the use of resources for an optimal management should be chosen.

From the point of view of the Institutions approach, there are certain assumptions that would allow achieving a sustainable competitive advantage, in relation to the use of valuable resources (OLIVER, 1998):

a) The acquisition of a valuable resource will be accepted by the company when it does not violate the regulations or the corporate culture.

b) The acquisition will be accepted if senior management gives it political support.

c) For reasons of power struggle, certain valuable resources will be acquired if with it the power of a decisive voter increases or strengthens its place in the company.

The creation of a model that unites the two approaches was necessary, since all approaches have deficiencies that tend to focus too much on production, resources or institutions and their regulations at different levels. This theory also shows concern for the factors that affect the individual as such and the impact that this would have on the decision-making process when selecting resources and applying them in the correct manner. The Focus of the Sustainable Competitive Advantage can be considered as an advance in the evolution of the strategies, since not only is oriented to obtain an objective, but also it is in charge of making known how to achieve it.

3. RESEARCH METHODS

Although the theoretical perspective that will be used in the present work is the theory of resources and capacities slightly influenced by the approach of the institutions, an analysis will be carried out through the VRIO Framework (Value, rarity, inimitability, and organization) to determine if The Circular Economy model could be considered as a viable resource as a competitive advantage that allows the company to achieve its objectives and position itself in the market, which would generate a competitive strategy.

4. ANALYSIS OF RESULTS

As already mentioned before, the tool that will be used to analyze the situation of the Circular Economy as a competitive resource within an organization, is through an internal analysis called Marco VRIO. First the analysis will be shown in the form of a table and after the explanation will be made by means of the answer to the four questions that this frame generates.

To obtain the results, the research work matrix was used as a base: ICT as a source of competitive advantage in SMEs (MONCADA NIÑO, OVIEDO FRANCO, 2013). The pertinent changes were made to be able to apply it in this specific case, shown below:

Table 1: Matrix VRIO - Competitive Implications

Valuable?	Rare?	Expensive to imitate?	Exploited by the organization?	Strength or weakness?	Competitive involvement
NOT			NO	Weakness	Competitive disadvantage
YES	NOT			Strength	Competitive parity
YES	YES	NOT		Strength	Temporary competitive advantage
YES	YES	YES	YES	Strength	Sustainable competitive advantage

Source: MONCADA NIÑO, OVIEDO FRANCO, (2013)

A) VRIO Analysis (Table)

Table 2: VRIO Analysis: The Circular Economy as a business resource

Concept	Answer
Valuable: is it a valuable resource to achieve an advantage?	Yes
Rarity: is it being used by a small group of firms?	Yes
Inimitability: is it expensive to imitate?	Yes
Organization: Is the organization prepared in its policies and procedures to use this resource?	NO
Strength or weakness: is it considered a strength or a weakness	Strength
Competitive implication: results.	Temporary Advantage Competitive Advantage

Source: Own elaboration

B) VRIO Analysis (By concept)

Next, the explanation of the previous table, concept by concept, in addition to the specific interpretation to this particular case:

Valuable: answer the following question: is it a valuable resource to gain an advantage? According to Álvaro Fernando Moncada Niño and Martha Lucía Oviedo Franco in their work, valuable resources are considered those that can be used as a response to external threats, and in turn, help take advantage of opportunities. "The definition of the value of the resource or capacity is related to its possibility to exploit an opportunity or mitigate a threat in the market. If one of those two things is done, it can be considered as a strength of the company; otherwise, it is a weakness. When these are properly exploited, they generally lead to an increase in income or a decrease in costs or both (MONCADA NIÑO, OVIEDO FRANCO, 2013, pág. 129)

Due to the above, the Circular economy can be considered a valuable asset, by exploiting the opportunity to reduce costs and reduce the waste generated by the company through a reengineering of processes and design.

Rarity: is it being used by a small group of firms? The VRIO framework considers that resources must be rare, limited or unique, that is, very few companies are using it in their activities, otherwise the resource would not serve as a competitive advantage. If the rarity remains, and few companies manage to acquire it this would mean that the resource would remain scarce, which would give it the characteristic of sustainable competitive advantage (MONCADA NIÑO, OVIEDO FRANCO, 2013). The Circular Economy is a scarce resource that has not been applied in a large number of companies due to its complexity, but it is very likely that this rarity is not held too long, because of the changes in the policies related to sustainability and its derivatives, so it is considered as a temporary competitive advantage.

Inimitability: is it expensive to imitate? "... resources are inimitable when the possibility for competitors to analyze and duplicate them makes their acquisition or acquisition costly or takes too long to replicate" (MONCADA NIÑO, OVIEDO FRANCO, 2013, pág. 129). This characteristic of the VRIO Framework is usually related to the previous two, since the cost of use or application directly affects the rarity and its value. The CE is considered an inimitable resource, because when applied it would be considered quite expensive, since the generation of totally new designs thinking about the reduction of waste is expensive at the beginning, not any company can achieve it.

Organization: Is the organization prepared in its policies and procedures to use this resource? "Relating to the fact that the company has certain organizational aspects, such as the organizational structure, processes and systems, as well as the business culture itself, to exploit the full competitive potential of its resources and capabilities. Therefore, the resources and capacities have to be exploited efficiently by the company" (MONCADA NIÑO, OVIEDO FRANCO, 2013, pág. 130).

When referring to this characteristic, it is deduced that the companies are not prepared, in their great majority, to install and use the Circular Economy, due to the great complexity changes and improvements necessary for an optimal operation.

5. CONCLUSIONS AND RECOMMENDATIONS

At the beginning, it was mentioned that this document aims to determine if the Circular Economy is a resource with the aim of becoming a competitive advantage that will impact on the focus of resources and capabilities. In this specific case, it turns out that, if it has the majority of the features of the VRIO Framework that allow it to be a competitive advantage, but of a temporary nature, because in the Rarity it is considered that in the coming years the business political demands

will change, forcing companies to look for ways to include this type of model, regardless of the cost.

As a recommendation, it can be highlighted that organizations that wish to implement this model in their activities will need to have a good economic position. The initial costs of application are usually very high as a result of the changes that must be made from the root of the product: the design of this.

In conclusion, it was proved that the Circular Economy can be considered as a competitive advantage, but of a temporary nature according to the characteristics of the VRIO Framework.

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