

CIRCULARITY IN ACTION. SUCCESSFUL INITIATIVES OF ADOPTING THE CIRCULAR ECONOMY BY THE SPORTS SHOE PRODUCERS

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Abstract:

The circular economy involves radical changes in the organization of the production of goods and services and their consumption, representing the sustainable alternative to the typical model of economic growth, based on a few fundamental processes such as recycling, reuse, repairing or sharing. In this case, waste is no longer waste; rather, it is a resource with potential income. Essentially, the concept of circular economy means a change in terms of responsibility for the finished product, namely by adopting the principles of circularity, manufacturing companies no longer transfer responsibility for the product to the consumer at the time of sale, but maintain their responsibility for it after sale, by creating closed circuits that extend its life. In addition, the circular economy seeks practical uses for by-products and waste, reducing pressure on virgin raw materials.

The sports footwear industry is implementing circular economy principles in different directions to improve the quality and lifespan of sports shoes, find new materials to replace some of the currently used, less sustainable ones, and develop processes to transform used footwear into new products. Some efforts and positive results are worth highlighting for three iconic international companies: Nike, Adidas, and Puma.

Key words: circular economy, innovation, recycling, reuse, waste

JEL classification: Q01, Q53, L67

1. INTRODUCTION

The current state of economic development is strongly influenced by a series of challenges related to limited natural resources, climate change, and the negative environmental impact of the traditional, classical economy. Therefore, the circular economy (CE) is seen as an innovative and future-oriented solution capable of reshaping how businesses are perceived by capitalizing on all resources and reusing materials from products at the end of their life cycles.

The circular economy offers an appropriate solution to overcome the barriers and negative effects generated by the traditional economic model, characterized by the inevitable production of waste and the overuse of natural resources. By promoting a framework in which resources are used appropriately and efficiently, and in which materials are recycled and reused. The CE helps form a sustainable cycle that significantly reduces environmental impact and serves as a driving force for all organizations seeking to transition to this type of economy.

The transition to this new type of economy is not without challenges. The transition to the CE involves significant costs, including innovating across all production processes, completely overhauling supply chains, and, last but not least, changing each person's mindset about the impact of the circular economy in everyday life. Compared to the traditional model, in which the success of a business was strictly linked to rapid commercialization and replacement with a new product, in the circular economy, consumers are encouraged to repair their own products and reuse them. On the other hand, education and information campaigns are essential factors in changing consumers' mindsets, promoting social responsibility, and fostering more conscious consumption (Heshmati, 2015).

In this transition process, companies become the main actors, responsible for re-evaluating production and consumption processes to innovate in the selection and recycling of materials, with the ultimate goal of adopting strategies that balance economic performance with environmental

protection. Through specific initiatives, such as collecting used products, using recycled materials, or forming strategic partnerships, large companies can contribute to creating a sustainable economic model that reduces the negative impact on the environment. In addition, companies that adopt the principles of the circular economy can benefit from a range of competitive advantages as more consumers recognize the importance of this transition and prefer companies that actively protect the environment. Therefore, the impact of companies on the transition to the circular economy can be viewed from two perspectives: firstly, the economic, in which a complete change in economic style occurs, and secondly, consumer perceptions of this new economy.

2. MODELS FOR SUSTAINABLE BUSINESS

Global macro-trends that have intensified in recent years have attracted the attention of scientists, politicians, and civil society. Public concern about environmental and social issues has increased pressure on supranational institutions to address the challenges facing the global economy and humanity.

Although at first glance, globalization seems to have the potential to harmonize national economies and create a common economic system, in practice, this trend, which has recently become an undeniable reality, has both positive aspects, especially in economic terms, and negative aspects in terms of the social component. The social impact of globalization has been noted and studied since the beginning of the globalization process, in an article published in 1999 by the International Labor Organization (ILO) investigating the social dimension of global market liberalization, globalization is seen as a catalyst for social disparities; *'Globalization has had an insignificant impact on eliminating social inequalities or promoting social progress. The gaps between "winners" and "losers" following globalization have had a general tendency to widen as the income gap increases and, respectively, public resources intended to support the vulnerable population decrease'* (ILO, 1999). In this context, sustainable business models emerged as a response to the need to harmonise organisations' economic expectations and goals with environmental constraints and resource constraints.

In current practice, any organization focuses on providing goods or services designed to satisfy each consumer's requirements, sold at competitive prices, thus generating profitability. Today, natural resources are increasingly exposed, ecosystems are affected by human intervention, and climate change is inevitable. The economic pillar of the sustainable business model is the model's core and the reason for opening and running a business. All other initiatives, activities, strategies, and goals depend on the organization's economic performance. It is recognized that various climate changes, from global warming to reduced drinking water quality due to pollution, are closely correlated with the practices of each company's activities. Viewed from this perspective, a company's sustainability contributes to solving environmental problems and to reducing conflicts in the social and economic environment by achieving efficient resource management.

Sustainable businesses are characterized by economic viability, active involvement in social impact for various stakeholders (customers, employees, collaborators), and carrying out their activities throughout the production cycle in a way that does not affect the environment. Thus, both the environmental and social dimensions are very important and defining for a sustainable business (Rizos, Tuokko, and Behrens, 2017).

The social dimension refers to creating a framework in which every stakeholder, from the entire community to each employee, supports the business itself. Thus, large companies that emphasize social sustainability focus on building long-term community connections. The economic component focuses mainly on maximizing profit, including through activities such as supply chain sustainability and sustainability risk management.

Given the recent increase in academic interest in sustainable business models, various authors have conducted analyses on this topic. Many of them have defined sustainable business models as a transformation of traditional businesses, focusing on principles and approaches that integrate sustainability into their value propositions. According to Bocken et al. (2013), *'Sustainable business*

models seek to go beyond providing economic value and include consideration of other forms of value for a wider range of stakeholders'. One of the main differences between the two types of businesses is that the sustainability-oriented business offers a holistic perspective on how each company operates, being at the same time interested in its employees' interests and in social and environmental responsibility.

Other well-known researchers specializing in sustainable business models, Boons and Lüdeke-Freund (2013), have made a distinction between the two types of businesses, referring to four important aspects:

1. Value proposition - sustainable models offer measurable environmental and/or social value in line with economic value.
2. Supply chain - involves suppliers taking responsibility towards their own stakeholders, as well as towards the stakeholders of the core company.
3. Interaction with customers motivates them to take responsibility for consumption, as well as for the company's stakeholders.
4. The financial model reflects an appropriate distribution of economic costs and benefits among the actors involved in the business model and takes into account the environmental and social impact of the company.

Considering the visions mentioned above, the ideal sustainable business model is based on the active participation of all stakeholders, especially consumers, in creating sustainable value. Nowadays, large companies are placed in a position where they must participate in sustainable evolution to address the challenges posed by contemporary business models. In the transition from traditional businesses to sustainability-based businesses, the central element that could make the difference is the circular economy. This type of economy can help minimize the net environmental impact by addressing problems associated with the acquisition of various resources, thereby reducing waste throughout its life cycle.

A business model can be seen as having a level of circularity that ranges from linear to circular economy, encompassing several types of circularity: upstream, downstream, and fully circular. For a business to develop its level of circularity, it must include, in its activities throughout the production process, elements such as recycling, reconditioning goods, and the reuse of used materials (Urbinati, Chiaroni, and Chiesa, 2017).

Table 1 presents a comparative synthesis of the linear and sustainable business models, highlighting the features that distinguish them.

The comparison between the two economic models shows the advantages of transitioning to a circular economy, grounded in regeneration and long-term responsibility, compared to an authoritarian economy based on resource exploitation and profit. We can admit that the classic model is specifically oriented towards the company itself, without showing any interest in the social or ecological problem.

Table 1. Comparison between traditional and sustainable business models

Traditional business model		Sustainable business model	
Feature	Explanation	Feature	Explanation
Beware of risks	Companies view sustainability as posing various risks, particularly those related to profitability.	Beware of opportunities	Companies perceive sustainability more as a potential source of advantages through the opportunities it may create.
Opaqueness	Within this type of business, companies do not provide relevant data regarding sustainability, based on the idea that by avoiding reporting they can hide	Transparency	Sustainable companies adopt technologies that promote sustainability across all areas of their operations.

	various shortcomings regarding the company's performance.		
Prioritising profit	The vast majority of companies today have as their primary objective profit maximization, regardless of the strategies or how this is achieved.	Prioritising goal	Companies with this vision aim to create long-term value for all stakeholders, not just shareholders.
Orientation on the company	In the classic business model, the relationships established are purely contractual, based on transactions.	Orientation on ecosystems	These companies that embrace ecosystem orientation aim to overcome the constraints imposed by traditional companies and highlight the connections between the enterprise and its stakeholders.
Consultation	This process aims to raise awareness, exchange information, and secure stakeholder support.	Collaboration	The approach is based on co-innovation and partnerships with all stakeholders to ultimately achieve the interests of all parties and deliver sustainable results.
Conservation	Such a model is only oriented towards maintaining and improving the current state, without bringing about significant changes.	Regeneration	A business that adopts the regenerative model is oriented towards actions such as restoring or reusing materials.
Linearity	The basic policy of these types of companies is defined by economic linearity; these companies perceive raw materials and resources in a limited way in order to use the resources	Circularity	Companies adopt a policy to avoid pollution and waste problems

Source: own elaboration with information from

<https://www2.deloitte.com/us/en/insights/topics/strategy/sustainable-transformation-in-business.html>

The circular economy model takes advantage of the opportunities this transition offers, promoting transparency and prioritizing the purpose of the entire community and ecosystems. The circular model is based on processes such as recycling, regeneration, and waste avoidance, thereby redefining the company's success in terms of these principles. In conclusion, it is clear that the practices of the traditional economy inevitably lead to the depletion of natural resources and the externalization of environmental costs. In contrast, the modern circular economy model offers a real and innovative solution to the environmental challenges that may arise.

3. CIRCULAR ECONOMY IN BUSINESS

The circular economy is a concept in full development and is seen as the solution to balancing the pace of economic development with the pressure to use natural resources. Introducing this type of economy within any company is difficult because the fundamental principle guiding it is the production of zero waste. The circular economy is based on two big ideas: the efficient management of all materials and the identification of the most suitable economic conditions that enable such a sustainable flow.

The central idea of the circular economy is the elimination of waste from the early stages of product development, while respecting the natural and social environment and reorienting companies towards sustainable concepts. If we are to find a clear definition of this concept, the best known was formulated by the Ellen MacArthur Foundation, an organization that has primarily contributed to

defining and promoting the circular economy, which states that: *'The circular economy is a regenerative economic system by intention and design, which aims to eliminate waste and pollution, keep products and materials in use for as long as possible, and regenerate natural resources'* (Ellen MacArthur Foundation, 2020).

The circular economy is a model of production and consumption that implements several ideas, such as reusing, repairing, reconditioning, and recycling existing materials and resources to combat the most difficult environmental problems, such as climate change, biodiversity loss, waste, and pollution. This economic model reshapes the entire supply chain and each production sector.

The principles underlying this economy are: protecting and improving natural capital (all natural resources), streamlining resource consumption, and promoting this type of economy in the most efficient way possible. Each of these principles faces various challenges related to resource use or their impact across industries.

This new concept brings with it a series of advantages of an economic, ecological, and social nature, each contributing to the creation of a system that is sustainable and much more efficient. Thus, this approach highlights processes such as the efficient integration of all resources in the production process in a sustainable way, leading to reduced environmental impact (Prieto-Sandoval, Jaca, and Ormazabal, 2018).

The most significant benefit of the circular economy is its ecological impact. The adaptation of such an economic model focuses particularly on reducing the quantities of waste and polluting emissions generated by manufacturing processes. The basic concept that contributes in a defining way to waste reduction is recycling, a method that limits the excessive extraction of natural resources.

At the second level, there are other benefits of an economic, social, and strategic nature, but the most important is certainly environmental protection. From an economic point of view, the transition to the circular economy could lead to a reduction in production costs by minimizing the resources used, and those that already exist will re-enter the production chain.

Social and strategic benefits refer to how society can feel the impact of introducing this type of economy. First of all, the emergence of new jobs is an important aspect, as this type of economy creates new areas of activity. The strategic benefit is essential as large companies can benefit from shorter supply chains. The transition to a circular economy also reduces dependence on finite resources, with companies experiencing a complete change in perspective.

Some circular business models that meet most of the circular principles and features are identified in the work of British economists Lacy P., Long J., and Spindler W. "The Circular Economy Handbook" (2020) as follows: circular supply chain; sharing platforms/collaborative economy; service as a substitute for the product; extension of the product life cycle, and resource recovery. These business models have taken shape based on existing literature on sustainable development.

The circular business model centers on the product's life cycle, aiming to extend it by adopting a sustainable design that enables repair, component upgrades, and resale on secondary markets. Also, in a circular business model, the value embedded in the materials and energy used in agriculture and industry is captured through collection, aggregation, and processing at the end of product life/following product use/consumption, and recovered through recycling, reuse, reprocessing, etc.

Although it has numerous advantages and a flexible structure, the circular economic model is still at a stage where it requires a suitable environment to be implemented and operate effectively. This environment does not currently exist. Due to the multitude of limitations and uneven levels of development among the world's states, a complete transition from one economic system to another is largely unachievable. The circular economy faces a barrier at the semantic and conceptual level. In specialized works, but not only, we often find the association of the circular economy with the notion of sustainable development, which can be seen as erroneous since the circular economy does not include important elements of sustainability such as social equality or biodiversity security. Therefore, sustainable development refers strictly to the social, economic, and environmental dimensions, and the circular economy is particularly oriented towards improving the efficiency of the resource cycle. Another obstacle worth mentioning that arises with the implementation of the circular economy is the technological and institutional barriers. The transition to the circular economy can be

slowed by a rigid economic system closely linked to the traditional linear economy. These difficulties are directly responsible for the faster adoption of new economic models. Still, companies and economic actors that manage to overcome these challenges will be able to benefit from various competitive advantages, such as economies of scale, which refer to the decrease in unit cost while increasing production volume, as well as the learning effect.

A 2018 study by the European Commission to identify the barriers and trade-offs that consumers face when deciding whether or not to engage in the circular economy found that "The price-quality ratio is the most important factor and simultaneously barrier in determining the consumer to engage in the circular economy, followed by convenience. Many consumers have agreed to pay more for durable, repairable products, but lower prices can easily persuade them to switch to alternatives. Similarly, when replacement is more convenient than repair, consumers are motivated to buy new products. Especially in the case of consumers who have a particular preference for new trends and technologies." This results in the circular economy still placing a very high demand on consumers, since the vast majority are neither ready nor willing to change their consumption culture and lifestyle fundamentally.

4. RESEARCH METHODOLOGY

The concept of CE has an obvious practical character, focusing on finding concrete solutions to the resource and environmental problems our society faces today. A part of its fundamental knowledge comes from generalising best practices and initiatives implemented by different organizations, especially in the industry. So, the strategies and actions developed by different producers can be the subject of scientific research. In parallel, fundamental scientific research enriches the field by advancing concepts, methods, and information for future development. One of the newest methodologies developed by fundamental scientific research for the Circular economy is the Guidelines for measuring circular economy, a very important tool for a quantitative approach to the actions taken by companies in this area (UNECE, 2023).

The goal of this paper is to develop a comparative study of the initiatives to adopt the circular economy by three giants in the sport footwear industry: Nike, Adidas, and Puma. Besides their economic performance, the three companies recognized the environmental impact of the sports shoe industry and decided to design and implement initiatives to conserve resources and recycle used shoes while maintaining the high quality of their products. The research includes a study of the common actions carried out by all three companies for including CE principles in their production, the most important initiatives that differentiate the organisations from one another, and a conclusion.

4.1. COMMON INITIATIVES IN ADOPTING CE

The sportswear industry is currently in the midst of a fundamental reorganization and redefinition, as market norms and requirements are also imposed to some extent by the notions of sustainability and ecological responsibility, something that cannot be ignored by the market leaders in the field - Adidas, Nike, and Puma - which have included the transition to circular economy standards in their company priorities.

Even though these three major companies are in fierce competition in the global sports footwear market, we still observe similar strategic initiatives to promote CE adoption. The most important one is the partnership with *Textile Exchange*, an international non-profit organization that decisively supports companies in the textile industry in their transition to a circular economy. The primary purpose of this organization is to develop global standards, produce specific reports, and support companies in implementing more sustainable materials throughout the production chain.

The association of companies with this organization has brought several benefits, such as accelerating the global transition to recycled polyester by bringing together brands and suppliers to strengthen the supply chain for various textiles made from recycled polyester (Textile Exchange, 2020). There have also been investments in the technological field regarding the recycling process.

The second common strategy of Adidas, Nike, and Puma companies is collaboration with Textile Exchange to reduce waste and excessive resource consumption through processes such as reuse and recycling.

The collaboration with *Ellen MacArthur Foundation* represents a strategic initiative of Adidas, Nike, and Puma organisations. This is a global organization founded in 2010 that aims to facilitate the transition to the circular economy through various awareness-raising and educational initiatives on this economic model in contemporary society. The primary goal is to develop best-practice guides and promote reference models to facilitate actions by large companies to reduce waste, reuse resources, and, ultimately, achieve a renewable business model.

From the collaboration with the Ellen MacArthur Foundation, the companies succeeded in improving their internal product and production strategies, being aware of the need to reduce waste and to use renewable materials. Also, the three companies used the analysis and best-practice guides developed by the Ellen MacArthur Foundation, reducing their environmental impact and increasing the transparency of decisions in the sustainability field (Ellen MacArthur Foundation, 2013).

4.2. SPECIFIC ACTIONS FOR IMPLEMENTING CE IN CURRENT ACTIVITY

As we mentioned above, the three giants in the sports footwear industry are in a strong competition on the international market. The fact that they share a common approach to the importance of the circular economy and its future doesn't limit the creativity and product innovation of each of them. The most important specific initiatives of the **Adidas** company for adopting CE in production are summarized in Table No. 2.

Table 2. Innovation implemented by Adidas for circular economy

Innovation for CE	Description
Production line Adidas x Parley	The sports shoes are made from recycled ocean plastic. Adidas collaborates with Parley for the Oceans, an organisation that aims to transform plastic from the seas into sports equipment.
The project Adidas Futurecraft.loop – Made to Be Remade	The products made within this project differ from classic products in that this range is made entirely from a single recyclable material, without other adhesives or difficult-to-remove parts entering the production process. The process begins with the actual return, then the shoes go through a grinding process to transform them into raw material for creating another new pair; as a result, there is no significant loss of material or quality.

Source: own elaboration with information from <https://parley.tv/initiatives/adidasxparley> and <https://news.adidas.com/running/futurecraft.loop-phase-2--how-we-re-finding-away/s/43c42bf2-73ca-4ccb-930b-5ac5b6637a76>

Besides these two major initiatives, Adidas is an active partner in the EU programme T-REX – Textile Recycling Excellence. The programme was initiated by the EU, after which various partners from the textile industry came together to find solutions for recycling post-consumer textiles. The project aims to develop a sufficiently efficient system for collecting, sorting, and reintroducing textile materials into the production chain.

Nike aims to be a sustainability leader by reducing emissions and waste to zero, using innovations such as recycled materials and energy-efficient supply chain practices. Nike Grind programme represents the most powerful innovation implemented by Nike in the CE field. As part of this program, Nike collects used shoes and other materials that have remained unused in factories to transform them into new products. For example, materials for shoe soles are used to make sports field surfaces. The N17 Arena, a community sports center that provides a safe space for young people to access and enjoy sports, is made from 18.000 recycled sneakers (<https://www.highsnobiety.com/p/what-is-nike-grind/>).

Another interesting and innovative programme run by Nike is called Nike Refurbished; it aims to reduce the number of unsold sneakers or returned pairs. The products with small quality defects or returned by clients are assessed by the company's specialists and divided into three groups (<https://www.nike.com/ro/sustainability/nike-refurbished>):

`Like new` – this type of shoe is in almost perfect condition, without any signs of wear.

`Gently worn` – the shoes are in good used condition, but show minor signs of wear.

`Cosmetically Flawed` – this category refers to new shoes that show some defects resulting from the manufacturing process – discolorations, seams.

The programme practically eliminates the loose from the production process and gives new life to the sneakers returned by the clients.

The third company in our study – **Puma** – focused its efforts in the CE field on the materials used for its final products. The initiative *RE:SUEDE* refers to a classic model of the company made of natural leather, now reinterpreted; the new model is made of materials that are not harmful to the environment and are oriented towards circularity. This project was born in 2021 and aimed to analyze the real impact of circularity in the fashion industry. *RE:FIBRE* is a similar initiative to the one mentioned above. The company wants to transform post-consumer or post-industrial textile waste into high-quality textile fibers that can be used to make future clothing items. Through this process, the company seeks to develop new technologies for advanced recycling to create a system that values existing materials and allows them to re-enter the manufacturing process, reducing the use of virgin resources and the negative impact (<https://about.puma.com/en/circularity/resuede>).

5. CONCLUSIONS

The comparative study of Nike, Puma, and Adidas in the context of the circular economy highlights their commitment to adopting sustainable production and consumption models. Even though they pursue similar principles, such as protecting the environment, reducing pressure on resources, and promoting responsibility within the supply chain, each of them stands out through the unique initiatives and products they launch.

We can notice a pattern in these companies' vision for the Circular economy, complemented by specific innovations that give each company added value and differentiate it from competitors. Figure 1 proposes a conceptual model of a circular business in the sports footwear industry.

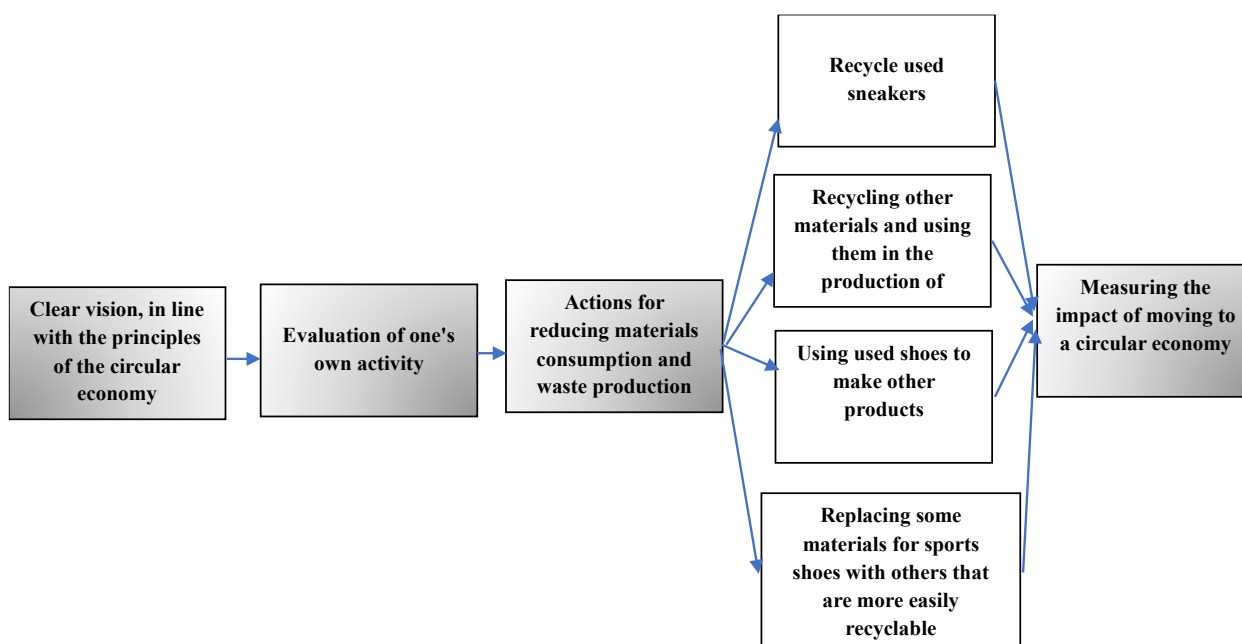


Figure 1. Conceptual model of circular business for sport footwear company

Source: own elaboration

The conceptual model depicted in fig. 1 is based on a deep understanding of the foundations of the Circular economy, both theoretical and practical. The grey-marked stages are the responsibility of the company's general management, while the unmarked ones are technological activities. The scheme suggests that, for a good performance in implementing the Circular economy, collaboration and mutual support is needed; the management-specific activities can be designed in a general manner for the use of companies from different fields, but the technological steps should be very specific, adapted to the narrow area of activity of each company.

The study of three companies in the sport shoe manufacturing industry shows that competition and cooperation are possible if the general goals are environmental protection, care for future generations, and respect for consumers.

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