

CIRCULAR ECONOMY AND CORPORATE SUSTAINABILITY: SHAPING NEW BUSINESS MODELS FOR A RESILIENT FUTURE

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ABSTRACT

The challenges of sustainability and the circular economy require innovative concepts, tools, methods and business models that adopt a holistic approach and incorporate the Triple Bottom Line (TBL) perspective. Adopting circularity is a strategic choice that significantly reshapes business models and the framework for achieving and measuring performance. The present paper explores the connection between the circular economy, corporate sustainability, and the emergence of next-generation business models through a methodology that combines literature review with two bibliometric analyses. The research findings underscore the significance of corporate sustainability as a central theme and identify the implementation of the circular economy as a key factor in enhancing organizational performance and achieving alignment with sustainability goals. Innovation has been identified as a critical driver, enabling the transition toward sustainable practices and addressing the pressures associated with the circular economy. It should be emphasized that business models, in particular sustainable, circular and innovative ones, are critical for driving corporate sustainability and creating sustainable shared value. Furthermore, the study emphasizes the fundamental role of management and strategy in facilitating the successful implementation of circular initiatives. The research also highlights that emerging Industry 4.0 technologies, such as big data and artificial intelligence, are exerting a transformative influence on the advancement of circular economy practices.

KEYWORDS: circular economy, corporate sustainability, emerging business model, innovation, performance

1. Introduction

Nowadays, society as a whole, economies, organisations and citizens face multiple challenges regarding global warming, environmental degradation, the unsustainable use of natural resources, the decline of biodiversity, societal disparities and other such issues. These challenges

underscore the pressing nature of sustainability as a global concern.

However, the dimensions of sustainability – economic, environmental, and social – are frequently disconnected and addressed separately. This is further compounded by a pervasive prioritization of short-term thinking over long-term

considerations. The prevailing concern is that sustainability initiatives are currently proving ineffective in addressing the challenges posed by increasingly unsustainable production and consumption practices, which have significant ecological and socio-political ramifications.

The circular economy (CE) is a fundamental component of global sustainability, encompassing both consumption and production. It plays a critical role in achieving several key objectives, including those pertaining to climate change, biodiversity, and post-pandemic recovery. In December 2015, the European Commission adopted the inaugural Circular Economy Action Plan (CEAP), with the goal of preventing climate change from becoming uncontrollable and ecosystems from collapsing. The objectives of the plan were to implement actions and initiatives throughout the entire product lifecycle, with a view to promoting sustainable consumption, waste prevention, and the recycling and reuse of resources and products. The European Commission (2015) summarizes the plan's objectives in the succinct slogan, "*closing the loop*". In March 2019, the report on the implementation of CEAP 2015 was adopted. Subsequently, CEAP 2020 was established, a program which identified the promotion of CE as a priority for achieving a more sustainable global environment. The EU's strategic vision for 2050 addresses numerous issues, as outlined in the CEAP, which is encapsulated by the slogan "*for a cleaner and more competitive Europe*". This underscores the central role of CEAP in achieving the ambitious goals of the European Green Deal, namely the creation of a fair, climate-neutral, resource-efficient, and economically competitive world (European Commission, 2024).

Related to the assumed scientific methodological framework, the present article employs a method combining both bibliometric research and literature review for the purpose of exploring the connections between the circular economy, corporate

sustainability, and the emergence of new business models (BM). The objectives that have been established in order to accomplish the paper's aim are as follows:

A. To analyze the network of CE concept within the context of corporate sustainability map;

B. To analyze the connections between CE, corporate sustainability, and the development of new BM;

C. To identify the most frequently used keywords in relation with the research topics;

D. To provide a temporal representation of the keywords in order to identify shifts in focus and track the development and emergence of significant trends over time.

2. Literature Review

In academic, scientific and business contexts, the concepts of circularity and circular economy (CE) are gaining popularity, especially as a means to encourage business sustainability. However, the efficacy of sustainability policies is currently impeded by the increasingly unsustainable nature of production-consumption systems from both environmental and socio-political viewpoints. In this regard, the CE aims to enhance the efficiency of industrial ecosystems by facilitating the transformation of goods that have reached the terminal stage of their lifecycle into resources for subsequent reutilization (Hobson 2016).

Walter Stahel (2016), one of the significant proponents of the CE, argues that moving that shifting to this paradigm can result in resource and energy savings, whilst simultaneously generating employment opportunities at the local level. Circular economy involves changing our relationships with physical and material goods, closing the loop in industrial ecosystems, and minimizing waste. *Reuse-Recycle-Repair-Remanufacture* (4Rs) are the four key components of the CE. This paradigm shift, involving a change in both

mindset and action, signifies a transition away from linear systems and economies. The transition to a CE paradigm is a multifaceted and sophisticated process, necessitating the adoption of novel models tailored to the specific requirements of business entities. These models should prioritize human-centeredness and, as Stahel emphasizes, shift from “ownership” to “stewardship”, thereby acknowledging the dual role of consumers as both users and creators.

Kirchherr and collaborators have proposed a novel economic system framework for CE, which substitutes the concept of “end-of-life” (disposal) with the Reduction, Reuse, Recycling, and Recovery of materials resulting from production, distribution, and consumption processes.

The overarching aim of CE is to achieve sustainable development, fostering an environment of quality, economic prosperity, and social equity for the benefit of present and future generations (Kirchherr et al., 2017, p. 227-229).

The CE cycle (Figure no. 1) emphasizes the cyclical flow of resources in order to maintain their efficiency by extending the lifecycle of materials, reducing environmental impact, and promoting closed-loop systems. The concentric circles (Micro; Mezzo; Macro) represent different levels of analysis - ranging from individual actors to industries and global systems, with the objective of minimizing waste and maximizing sustainability.

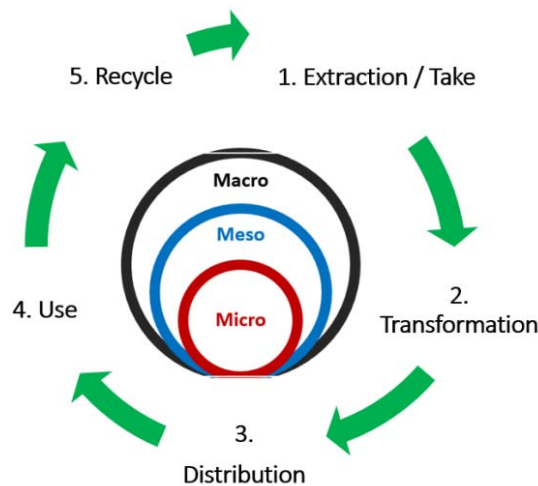


Figure no. 1: *Circular Economy cycle*
(Source: Authors' illustration based on Prieto-Sandoval et al., 2018)

CE is a regenerative system that aims to minimize resource inputs, waste, emissions, and energy consumption. This can be achieved through a long-term approach that incorporates design, maintenance, repair, reuse, remanufacturing, refurbishment, and recycling (Geissdoerfer et al., 2017). New approaches to industrial production and consumption are considered to be of crucial importance for the CE (Korhonen et al., 2018, p. 151). The objective is to move from linear and waste-intensive structures to circular,

regenerative, and intelligent physical flow structures, thereby contributing to a more sustainable global society, benefiting both the present and future generations. The transition to CE is based on five principles and can be achieved by implementing a strategic framework comprising three types of strategies: narrowing, slowing, and closing resource loops.

Closely linked to the CE are innovations, namely eco-innovations. In this regard, eco-effectiveness, grounded in a

long-term approach that considers the well-being of society and nature, holds greater significance. In this framework, eco-innovations should be effective and address all three perspectives: environmental/ecological, social, and economic (Hofstra &

Huisingsh, 2014). Building on the two authors' ideas, Figure no. 2 presents four types of eco-innovations – exploitative, restorative, cyclical, and regenerative – that are consistent with two sociological views: anthropocentric and eco-centric.

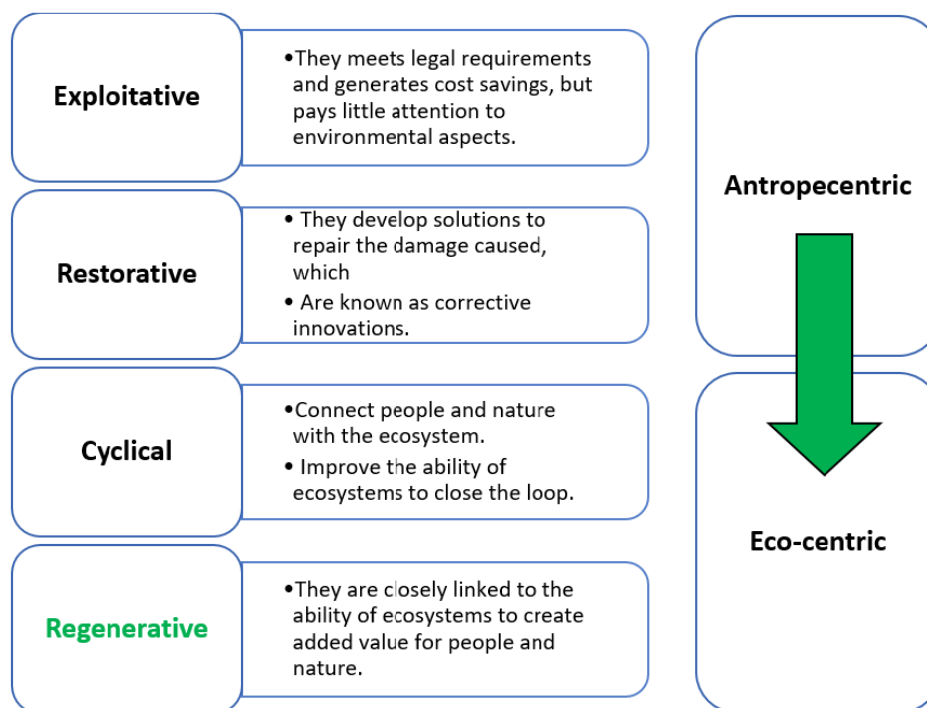


Figure no. 2: *Circular Economy – from exploitative to regenerative approach of innovation*
 (Source: Authors' processing after Hofstra & Huisingsh, 2014)

In the opinion of Bocken and collaborators, the transition to a circular economic model demands new business methods that address issues related to the circularity paradigm. These new BMs are being considered as increasingly viable alternatives to the conventional linear models of production and consumption (Bocken et al., 2016). Given the substantial challenges currently being faced, it is imperative to take into consideration the consequences of current actions for both the present and future generations. In this regard, organisations should aim to become more sustainable by implementing circular business models (CBMs) – that extend product lifecycles and reduce waste (Das et al., p. 274).

3. Findings from Bibliometric Research – Results and Discussions

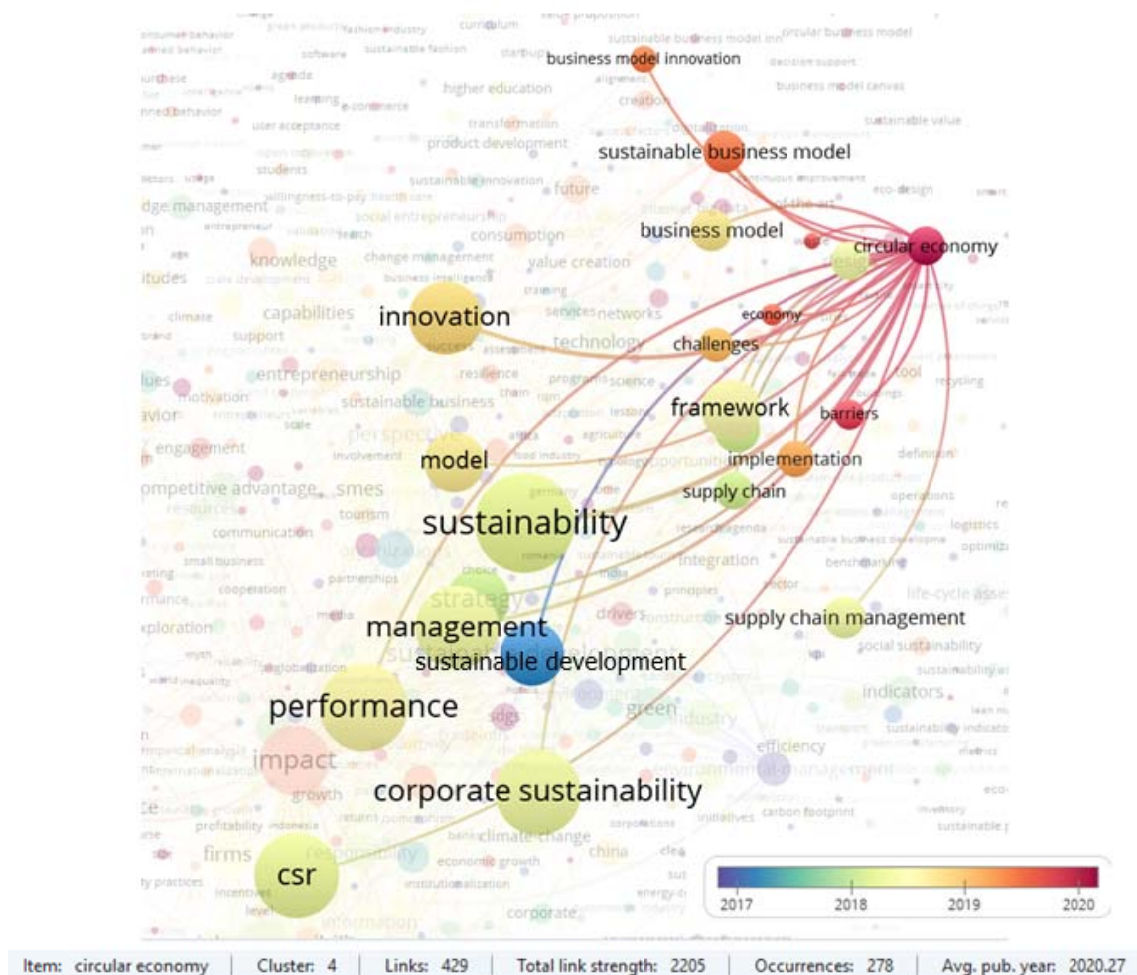
The concept of the Circular Economy (CE) is increasingly gaining prominence across academia and scientific research, as well as in practical applications. This growing attention reflects a widely acknowledged potential of CE to drive sustainable long-term solutions, fostering environmental, economic, and social impacts in wide-ranging industries and at various levels.

3.1. Circular Economy in the Context of Corporate Sustainability

A bibliometric research related to concepts encompassing the area of “organizational sustainability” and

“sustainable organization” (including different types of entities – firm, company, corporate, institution, SME, and so on) was conducted in Web of Science (WOS). The sample data of 9,378 documents in English language was processed and analyzed using VOSviewer software. The processing yielded 910 keywords that met the threshold of more than 10 occurrences. These were subsequently used for designing concept maps and networks. In the present paper, the network for CE is analyzed in terms of its novelty and direct connections to other concepts on the map. Therefore, the analysis

indicates that the circular economy is a significant theme, with a high frequency of appearance (Occurrence: 278) and a considerable number of links with other concepts (Links: 429; Total Link Strengths: 2,205). An analysis of the Overlay Visualization Map further substantiates the notion that the concept under discussion is a novel one (Average Pub. Year – APY: 2020.27), as illustrated in Figure no. 3. Moreover, it is the most prevalent among the emerging concepts in the keyword map, with APY after 2020.



business model (BM), sustainable business model (SBM), and business model innovation (BMI). The CE represents an opportunity to innovate business models and guide businesses towards sustainable, green and innovative solutions.

- *Framework and implementation* category, closely linked with challenges and barriers. It is imperative to surmount the obstacles (technological, economic, cultural) that hinder the implementation of the CE. While a clearly delineated framework for the implementation of the CE is indispensable, businesses still face barriers such as high setup costs or inadequate technologies.

- *Supply chain and supply chain management* category. The CE has an essential impact on the supply chain, driving the integration of efficient reuse, recycling and responsible resource management practices.

- *Performance and corporate sustainability* category. It covers sustainability, sustainable development, corporate sustainability, CSR, performance and management. Embracing the CE will improve business performance, align the company with its sustainability goals and strengthen its social responsibility.

- *Innovation* category. It is important to emphasize that innovation can act as a driver of change in embracing sustainability principles generally, and the circular economy in specifically. In order to assure corporate sustainability, innovation plays an instrumental role in facilitating and accelerating the transition towards sustainable practices under the pressure of the circular economy.

- *Management and strategy* category. Both management and strategy play essential roles in ensuring the effective implementation of circular initiatives and enhancing corporate performance aligned with sustainability objectives. In the pursuit of developing and implementing circular strategies that mitigate environmental

impacts and advance long-term economic goals, organisations need to adopt effective management practices that align their objectives with corporate sustainability principles. Furthermore, through the implementation of CSR and sustainability reporting frameworks that incorporate environmental, social, and governance factors (ESG), enables management to ensure transparency regarding organizational initiatives, activities, and performances in both financial and non-financial domains.

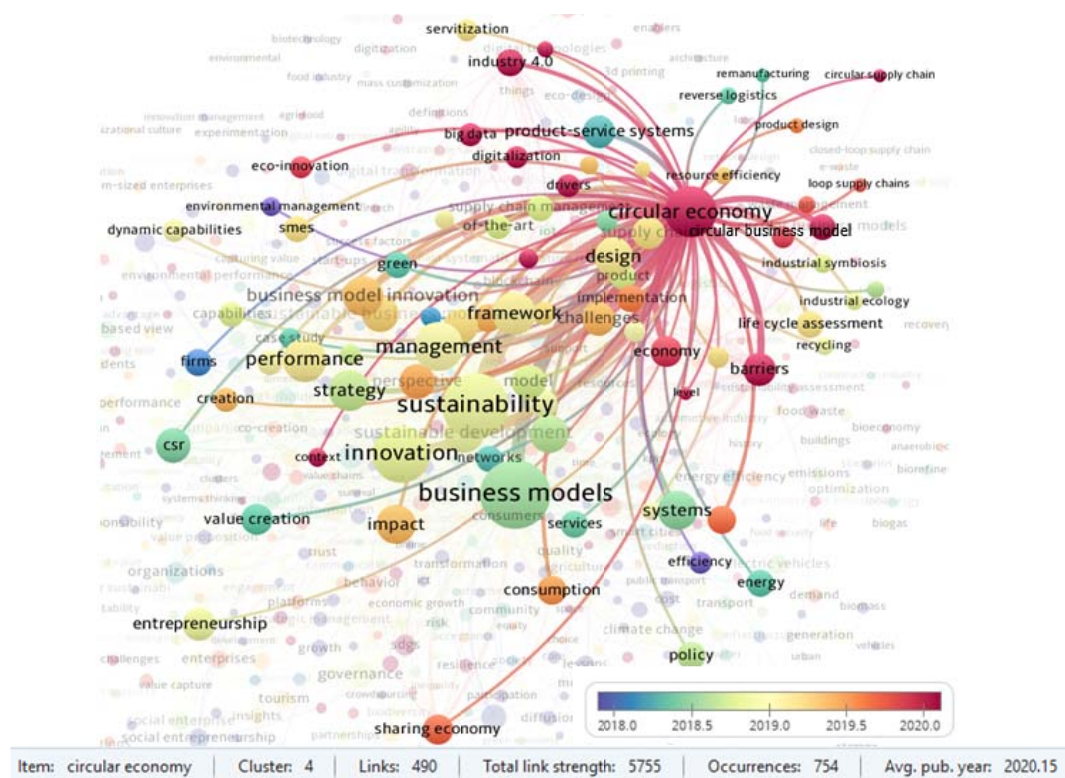
3.2. Circular Economy in the Context of Corporate Sustainability and Novel BMs

As previously emphasized, the BM is a significant concept in the context of corporate sustainability. Figure no. 3 shows that the circular economy is closely associated with modern business models, particularly those related to sustainability and innovation. Therefore, it is important to consider the roles that sustainable, circular, and innovative business models play in achieving corporate sustainability and implementing the CE.

These models provide a strategic framework for companies to create sustainable value in a sustainable and efficient manner. Therefore, given the fundamental role of BMs in the context of corporate sustainability, a bibliometric search of the WoS database was conducted to explore SBMs in the context of organizational sustainability. The 987 English-language documents resulting from the aforementioned search formed the research sample, which was subsequently processed with Biblioshiny and VOSviewer. The analysis is based on 599 keywords that have been identified as exceeding the threshold of five occurrences. The methodology employed to analyze these keywords, along with the research outcomes and associated analysis, is presented in detail in a comprehensive

paper published by Springer (Gorski & Dumitraşcu, 2023). In this paper, the focus is on the CE network within the framework of SBMs. As illustrated in Figure no. 4, the bibliometric analysis reveals that among emerging themes since 2020, the circular economy is the prominent subject (Occ.: 754; APY: 2020.15).

prominent (Occ: 305; Occ: 408) but are positioned further away from the circular economy and closer to sustainability.



A growing body of literature is emerging on the subject of the circular economy, with a focus on new business models – including SBMs, CBMs, and innovative CBMs. These concepts are being discussed in an increasing number of academic, scientific, and research publications, as well as in professional practice. In light of the challenges currently

implementation of new BMs as viable alternatives to the traditional linear BM (Bocken et al, 2016). As Baldassarre and collaborators emphasised, the CE framework is built upon three core pillars: technical innovation, BMI, and collaboration (Baldassarre et al., 2019, p. 448). Companies experimenting with CBMs can be categorized broadly into two types:

(1) Companies that primarily employ linear BMs as their primary source of revenue, yet simultaneously engage in efforts to enhance circularity with a view to mitigating environmental impact;

(2) Companies which have been born circular, and which from the outset have adopted circular business models as the fundamental element of their business strategy (Das et al, 2022, p. 274).

It is evident that the strategies, practices and management systems – including performance management – employed by organisations will vary depending on the category in which they fall. These systems will include specific elements that will aim to either: a) dissipate circularity or b) be strategically integrated, holistic and systemic.

Another aspect identified through bibliometric research and worthy of highlighting within the circular economy concept network is the role of new technologies. As is illustrated in Figure no. 4, circular economy is in close proximity to modern concepts (in dark red color and with APY after 2020), which pertain to emerging technologies such as digitalization, Industry 4.0, big data, and artificial intelligence.

4. Conclusions

The potential of CE to facilitate “closing the loop” and minimize waste is significant. This approach holds the promise of reducing resource and energy consumption, while concomitantly generating new employment opportunities. Nevertheless, the transition is not without

challenges, as it entails substantial organizational transformations, rendering it a complex undertaking. The challenges posed by sustainability and CE call for the development of novel concepts, tools, methods and business models that adopt a holistic approach and integrate the TBL (triple bottom line) perspective. Considering the challenges and opportunities arising from the CE, the adoption of circularity by organizations is a strategic endeavor. This adoption exerts a substantial influence on the BMs and, by extension, the paradigm through which performance is achieved, measured, monitored, evaluated, and improved. The analysis of the data obtained from bibliometric research, in synergy with relevant academic literature, enables several conclusions to be drawn, as it is exposed in the next four paragraphs.

Innovation has been identified as a critical driver in facilitating the transition towards corporate sustainability within the framework of CE. Innovation provides support for the creation and implementation of novel and efficient BMs, thereby contributing to the advancement of the circular economy and enhancing corporate sustainability. Furthermore, innovation facilitates the development of solutions that enhance resource efficiency, thereby reducing waste and costs. It also contributes to organizational performance and aligns organizations with the dimensions of sustainability. Moreover, innovation facilitates solutions for supply chain management (e.g., reverse logistics optimization and recycling).

Management and strategy have been identified as important enablers in the transformation process, with management employing performance measurement and evaluation tools to enhance resource and operational efficiency. These tools are used to achieve the objectives of sustainability and circularity. Additionally, performance indicators are monitored to optimize

processes, enhance performance, and evaluate progress in terms of sustainability. Strategy also plays a key role in implementing circularity, in addition to management. A strategy grounded in the tenets of the circular economy can be key a driver in optimizing resource use, minimizing costs and waste, and ultimately achieving performance across all dimensions of sustainability. Such an approach ensures that the connection between sustainable objectives and the underlying principles is clearly defined and provides a robust framework for fostering innovation, advancing circular economic practices, and exploring new economic models. The strategic direction offers a framework for implementing CE, enabling the optimization of performance and the alignment of economic objectives with sustainability.

In light of the prevailing environmental crisis, it has become imperative for individuals – in their capacities as employees, consumers, and citizens – to adopt eco-conscious behaviors and for enterprises to internalize environmental costs and demonstrate environmental stewardship. Consequently, there is an increasing necessity to assume greater responsibility for the natural environment, for which major changes in individual and organizational thinking are required. Achieving long-term success is contingent upon aligning sustainable value with stakeholder expectations and global regulations, as well as addressing challenges related to sustainability and the CE. To create shared sustainable value, organizations must embed sustainability objectives into their CSR initiatives, as this

approach generates diverse impacts across economic, social, and environmental dimensions (Ranf et al., 2024). Integrating these objectives into corporate sustainability strategies and rethinking performance management systems ensures effective implementation and contributes to positive outcomes on a global societal scale. In consideration of the increasing prevalence of Industry 4.0 technologies and the challenges associated with the circular economy, it is imperative for organizations to strategically integrate their efforts in promoting circularity and digital transformation to gain a competitive edge. Considering the ongoing digital transformation and the proliferation of emerging and disruptive technologies, future research will be particularly focused on analyzing how Industry 4.0 technologies can facilitate the transition towards a CE, while addressing the practical challenges businesses encounter in implementing these practices. Such research is essential for comprehending how digital transformation can support corporate sustainability objectives and contribute to the broader global sustainability agenda.

At first glance, the fact that we are sustainable (as a business model but also as a management practice) may be a condition for ensuring the resilience of society in the future. Resilience can also be seen as a measure of the effectiveness of sustainability. This prefigures a two-way relationship. As indicated in the title and expressed only implicitly by the ideas presented in the article, the correlation between sustainability and resilience is worth investigating further.

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