



**BUSINESS MODELS, CIRCULAR AND GREEN ECONOMY  
TOWARDS SUSTAINABILITY.  
A SYSTEMATIC LITERATURE REVIEW.**

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**Abstract**

*The paper presents a systematic literature review (SLR) on the connection between business models and the adoption of the circular economy and the green economy towards sustainability. A classification is offered through which it is possible to understand the environmental, economic and social advantages that these components would be able to bring to the enterprise. We used the Scopus, Web of Science, PubMed and Google Scholar databases as the main source to collect papers. Initially, 387 papers were collected. Subsequently, we proceeded to review the contributions and, once the selection criteria were outlined, we analyzed and classified 84 publications as priorities. The SLR is performed through a bibliometric analysis using VOSviewer software. Finally, we elaborated the state of the art of this research topic for the future agenda.*

## 1. Introduction

The industrial revolution carried out between the 18th and 19th centuries creating the “linear economy” (Alonso-Almeida et al., 2020; Kryshtanovych et al., 2020; Qiao and Quiao, 2013; Sharma et al., 2020).

It is based on the extraction of raw materials, production and mass consumption, and the disposal of waste once it is reached the end of the product life (Bonviu, 2014; Esposito et al., 2018; Jawahir and Bradley, 2016; Sariatli, 2017; Stahel, 2016). Over the years, the linear economy has had vast environmental and social consequences (Esposito et al., 2015). Therefore, the development of the so-called “circular economy” (CE) arises from the need to create an eco-sustainable economic system. Thus, the materials are used in subsequent production cycles, minimizing waste, and avoiding the creation of products with low-value materials or poor quality (Bocken et al., 2016; Koszewska, 2018; Rizos et al., 2017). However, the interest by enterprises for the green economy (GE) raised in recent years connected to the previous issues (Barbier and Markandya, 2013; Krugman, 2010; Loiseau et al., 2016).

The motivation of this research derives from the scarce use of the sustainability-oriented business model (BM) within the enterprises (Breuer et al., 2018; Carayannis et al., 2014; Lüdeke-Freund et al., 2018). Statistical data on research conducted in Europe on consumer habits show how the resources available to the community often end up wasted: for example, in just one calendar year, only 40% of the garbage and waste produced in Europe are being recycled (Esposito et al., 2015). With the adoption of these BMs by the European enterprises, they would save in terms of production costs and use of resources, a sum of 1,800 billion euros per year by 2030 (Esposito et al., 2015). Additionally, the GDP (Gross Domestic Product) growth up to 7 percentage points and higher levels of employment is revealed (Di Maio and Rem, 2015; Lacy et al., 2016; Marciano, 2017).

This paper aims to show the benefits that the CE and GE can bring together in the environmental and social perspective and also in the economical perspective. Thus, the purpose of this paper is to review the literature that connects sustainability-oriented BMs with the CE and GE, also focusing on 4.0 technologies that may encourage this process of business productivity change (Bocken et al., 2016; Lewandowski, 2016; Passaro et al., 2020; Pieroni et al., 2019; Saita and Franceschelli, 2016). Following our research questions, the analysis is aimed at highlighting the advantages of BMs oriented towards sustainability and the adoption, within them, of the “circular economy” (CE) and “green economy” (GE). The reason for interest in this issue derives from the scarce use of the sustainability-oriented business model (BM) within the enterprises (Bagnoli et al., 2021; Lombardi et al., 2020a; Lombardi et al., 2020b).

We applied a systematic literature review (SLR) (Kraus et al., 2020; Lombardi and Secundo, 2020c; Massaro et al., 2016; Petticrew and Roberts, 2006; Tranfield et al., 2003), using Scopus, Web of Science, PubMed and Google Scholar databases. We collected 131 journal papers from Scopus, 121 journal papers from Web of Science, 124 journal papers from PubMed and 30 documents from Google Scholar (the first 3 pages of results available from the search) for twenty years (2000-2020). A final list of 84 papers published in a variety of high-quality (peer-reviewed) scientific journals has been analyzed through the content and bibliometric analysis. Findings show the focus of the CE's potential and sustainability-oriented BMs as the main areas of interest. Activities and applications are also traced. The results are a useful basis for the academic and professional implications on the evolution of sustainability-oriented BMs in the direction of CE and GE. Besides, this paper is intended to identify lessons learned and research gaps, and thereby provide a program for future research.

This paper is structured as follows: i) Section 2 presents the theoretical approach; ii) Section 3 outlines the research methods; iii) Section 4 reports the results; iv) Section 5 provides implications and conclusions; v) Section 6 proposes limitations and Future Research Agenda.

## **2. Theoretical background**

Many definitions of the business model (BM) exist (Baden-Fuller and Morgan, 2010; Demil et al., 2015; Morris et al., 2005; Shafer et al., 2005; Zott et al., 2011). One stream of research is focused on enterprises producing profits and creating values for customers (Johnson et al., 2008; Magretta, 2002). BM is a scheme answering to customer needs, determining customer value within the corporate strategies and providing value with appropriate cost (Drucker, 1994). BM combines business ideas, technologies and business performance (Chesbrough, 2010; Lombardi et al., 2020a; Lombardi et al., 2020b), and determines how enterprises can translate their potential into a new value (Ostelwarder and Pigneur, 2010; Zott and Amit, 2010). The most recurrent themes in the BM's analysis (Pucci, 2016) are i) the value creation; ii) the relationship network; iii) the role of partners and stakeholders; iv) the strategic, organizational and technological activities; v) the structure of costs and revenues.

Analysing BM, three key aspects (Andreini and Bettinelli, 2017) emerged: i) the BM is useful for boundary-spanning research (Zott and Amit, 2007); ii) the BM is used to describe how enterprises make their business dynamic (Zott et al. 2011); iii) the BM represents a tool aimed at the creation, capture and delivery of value (Amit and Zott 2001; Baden-Fuller and Morgan, 2010; Bagnoli et al., 2021; Chesbrough, 2007; 2010; Johnson et al.

2008; Teece 2010). Identifying the BM's relevance, the most important definitions seem highlighted by Coombes and Nicholson (2013) (Table I).

*Table I - Selection of business model definitions in the literature*

<b>Authors</b>	<b>Definition</b>
<b>Afuah (2004)</b>	"A business model is a framework for making money. It is the set of activities which a firm performs, how it performs them, and when it performs them to offer its customers benefits, they want and to earn a profit".
<b>Amit and Zott (2001)</b>	A business model depicts "the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities".
<b>Chesbrough (2007)</b>	"At its heart, a business model performs two important functions: value creation and value capture. First, it defines a series of activities, from procuring raw materials to satisfying the final consumer, which will yield a new product or service in such a way that there is a net value created throughout the various activities". "Second, a business model captures value from a portion of those activities for the firm developing and operating it".
<b>Johnson et al. (2008)</b>	A business model "consists of four interlocking elements that, taken together, create and deliver value". These four interlocking elements consist of "customer value proposition", "profit formula", "key resources" and "key processes".
<b>Osterwalder and Pigneur (2010)</b>	"A business model describes the rationale of how an organization creates, delivers and captures value".
<b>Shafer et al. (2005)</b>	A business model is "a representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value network" and it is this core logic for creating and capturing the value that is the basis of a business model.
<b>Teece (2010)</b>	"A good business model yields value propositions that are compelling to customers, achieves advantageous cost and risk structures, and enables significant value capture by the business that generates and delivers products and services".
<b>Zott and Amit (2007)</b>	"A business model elucidates how an organisation is linked to external stakeholders, and how it engages in economic exchanges with them to create value for all exchange partners".

*Source: Coombes and Nicholson (2013), pp. 656-664.*

BMs are inspired by the linear economy as the "take, do and dispose" model developed between the 18th and 19th centuries with mass production (Meadows et al., 1972). A new paradigm focused on the CE was introduced later (Geissdoerfer et al., 2017; Geng et al., 2009; Webster, 2017; McDonough and Braungart, 2002; Witjes and Lozano, 2016; Xue et al., 2010), within an economic orientation that considered the environmental challenges of the so-called "green economy" (Loiseau et al., 2016). CE uses resources in a profitable way pushing the whole economic system towards a circular approach, conceiving waste as a resource, rather than linear, based on the use of products rather than on consumption (Allwood, 2014), Thus, CE is characterized by the enhancement of consumer discard, the extension of the life cycle of products, sharing of resources, use of recycled raw materials, use of

energy from renewable sources (Hu et al., 2011; Kama, 2015; Mathews and Tan, 2011; McDonough and Braungart, 2002; Murray et al., 2017; Salonitis and Stavropoulos, 2013; The Ellen MacArthur Foundation, 2012). BM have logic within the production processes towards the reuse and regeneration of products. (Webster, 2017).

The CE's paradigm originates from the GE, also perceived as a path towards sustainability (Loiseau et al., 2016) oriented to safeguard the environment and the society in the long term. GE has been widely used to address the financial crisis and climate change (UNEP, 2011). GE was first presented by Pearce et al. (1989) in response to the underestimation of environmental and social costs in the current price system (Le Blanc, 2011). GE pursues the achievement of well-being and social equity, significantly reducing environmental risks and ecological scarcities (UNEP, 2011). The purpose of the CE is aligned to the GE's ones, sustaining the BM's creation oriented towards the sustainability path (Chertow and Ehrenfeld, 2012; Lombardi et al., 2019; Maglio et al., 2020; Mattila et al., 2012; Roberto et al., 2020; Yu et al., 2014; Yuan et al., 2006; Zhu et al., 2011). Thus, our research questions are the following:

- RQ1 How is the literature on the business models, circular and green economy?
- RQ2 What is the literature's focus within the business models, circular and green economy?
- RQ3 What are the implications coming up for organizations and decision-makers?

### **3. Research methods**

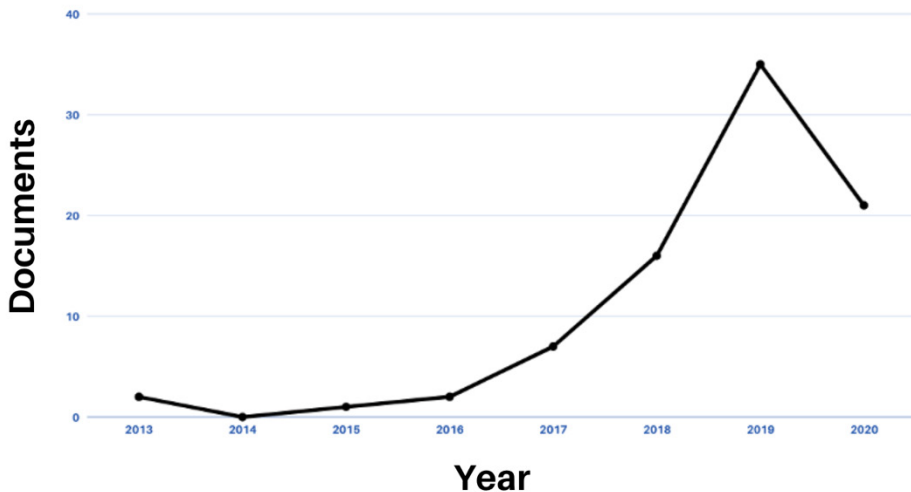
Our structured literature review (SLR) was intended to create a connection between BMs, CE and GE through a bibliometric analysis using VOSviewer software (Lombardi and Secundo, 2020c; Kessler, 1963; Waltman et al., 2010; Van Eck and Waltman, 2009; 2010; 2017). Defining the research protocol (Kraus et al., 2020; Massaro et al., 2016; Petticrew and Roberts, 2006; Tranfield et al., 2003), we answer the previous research questions. Thus, we defined the literature to obtain our results using Scopus, Web of Science, PubMed and Google Scholar databases under the time 2000-2020. Our query was aimed at creating the connection between BM, CE and GE using the Business, Management and Accounting area. We collected 131 journal papers from Scopus, 121 journal papers from Web of Science, 124 journal papers from PubMed and 30 documents from Google Scholar (the first 3 pages of results available) according to the fixed criteria. After extracting the files from previous databases, the research has been developed through a database implemented on an excel file spreadsheet. We deleted the duplicate papers and collected only research papers using the "Article Title, Abstract, Keywords" considering documents in English.

Finally, we collected 84 papers published in a variety of high-quality (peer-reviewed) scientific journals analyzed through the content and bibliometric analysis. Our SLR provides the first background that connects the BM, CE and GE, providing the state of the art supporting a great understanding of forthcoming issues.

#### 4. Results

The distribution of 84 research papers over time and across countries is represented below. Figure I propose the number of research papers published between 2013 and 2020 emphasizing an increasing trend in the last years. Thus, the search stream appears to be relatively recent and no studies are found before 2013 in the horizontal time fixed by this research.

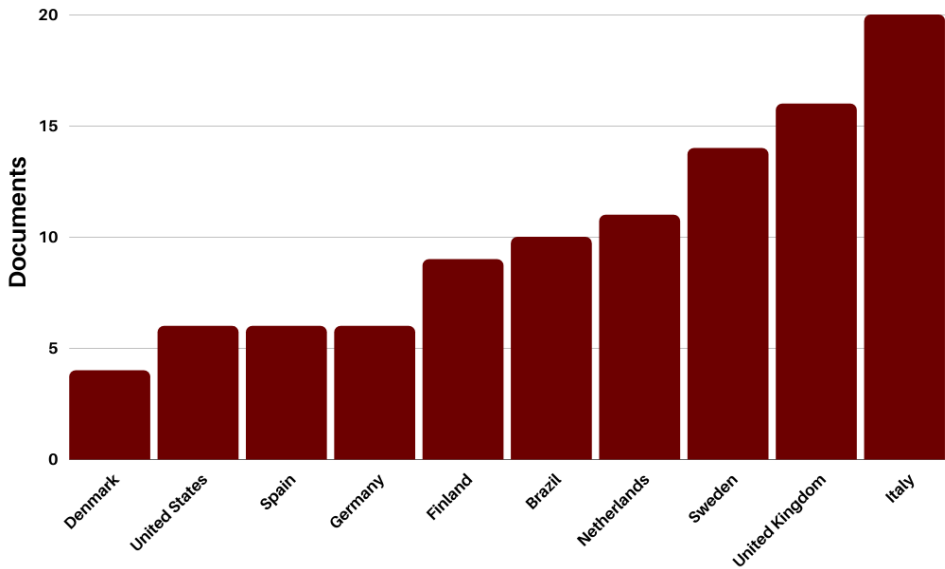
Figure I – Publishing trend in the collected research paper



Source: Own Elaboration

Assuming the countries' perspective, Italy tops the list with 20 research papers, followed by other countries with fewer research papers and less interest in the topic analyzed, such as United Kingdom (16), Sweden (14), Netherlands (11), Brazil (10), Finland (9), Germany (6), Spain (6), United States (6) and Denmark (4).

Figure II – Research papers distribution (per countries)



Source: Own Elaboration

Table II confirms the papers publications and citations' primacy of Italy with 20 papers and 618 citations, followed by the United States with 16 papers and 1184 citations and Sweden with 14 papers and 645 citations. Other countries are represented in the list. The number of citations per country does not align with the increasing/ decreasing number of published research papers.

Table II - Top ten countries in term of citation

Country	N° of Papers	N° of citations
Italy	20	618
United Kingdom	16	1184
Sweden	14	645
Netherlands	11	569
Brazil	10	502
Finland	9	354
Germany	6	189
Spain	6	71
United States	6	371
Denmark	4	158

Source: Own Elaboration

The analysis of the sources highlights the fragmentation of the publications into different journals: several accounting, auditing and accountability journals publish from 1 to 3 contributions (table III), only “Journal of Cleaner Production” and “Business Strategy and the Environment” published respectively 36 and 9 research papers. Although the number of journals in which the documents are published is relatively high, the journals’ list is mainly focused on the area of accounting research and in some cases on technology management.

Table III – Journals/citations

Source title	N° of paper	N° of Citations
Journal of Cleaner Production	36	1352
Business Strategy and the Environment	9	426
Management Decision	15	53
California Management Review	3	117
Thunderbird International Business Review	3	97
Quality - Access to Success	3	6
Production Planning and Control	2	42
Technological Forecasting and Social Change	2	202
Journal of Manufacturing Technology Management	2	136
Journal of Evolutionary Economics	2	2
Journal of Business Ethics	1	535
Supply Chain Management	1	9
Benchmarking	1	15
International Journal of Production Research	1	52
Business Horizons	1	71
Journal of Business Research	1	27
Contaduria y Administracion	1	6
E a M: Economie a Management	1	2
Industria	1	2
International Journal of Business and Globalisation	1	16
Journal of Business Economics and Management	1	9
Manufacturing and Service Operations Management	1	21
International Entrepreneurship and Management Journal	1	15
R and D Management	1	22
Small Business Economics	1	31
Social Responsibility Journal	1	4
WSEAS Transactions on Business and Economics	1	0

Source: Own Elaboration

The greatest number of citations per journals are i) Journal of Cleaner Production (1352 citations; 36 papers); ii) Business Strategy and the Environment (426 citations; 9 research papers); iii) Management Decision (53 citations; 5 research papers). We adopted the citation index (CI), the citations



per year (CPY), the citations and collaborations among authors. Table III proposes the top five cited papers and Table IV shows the number of citations per authors/documents. The most interesting research papers and influential authors are Murray et al. (2017), Linder and Williander (2017), Urbinati et al. (2017), Geissdoerfer et al. (2018) and Scheepens et al. (2016).

Table IV – Top five cited papers

Authors	Title	Citations	CPY	Source	Country
<b>Murray, A., Skene, K., Haynes, K. (2017)</b>	The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context	535	133,75	Journal of Business Ethics, 140(3), pp. 369-380	United Kingdom
<b>Linder, M., Williander, M. (2017)</b>	Circular Business Model Innovation: Inherent Uncertainties	208	52	Business Strategy and the Environment 26(2), pp. 182-196	Sweden
<b>Urbinati, A., Chiaroni, D., Chiesa, V. (2017)</b>	Towards a new taxonomy of circular economy business models.	168	42	Journal of Cleaner Production, 168, pp. 487-498	Italy
<b>Geissdoerfer, M., Morioka, S.N., de Carvalho, M.M., Evans, S. (2018)</b>	Business models and supply chains for the circular economy.	160	53,33	Journal of Cleaner Production, 190, pp. 712-72	United Kingdom
<b>Scheepens, A.E., Vogtländer, J.G., Brezet, J.C. (2016)</b>	Two life cycle assessment (LCA) based methods to analyse and design complex (regional) circular economy systems. Case: Making water tourism more sustainable.	132	26,4	Journal of Cleaner Production, 114, pp. 257-268	Netherlands

Source: Own Elaboration

Murray et al. (2017) draw the conceptualisations and origins of the CE, tracing its meanings, and exploring its antecedents in economics and ecology. The authors discuss how the CE has been operationalized in business and policy. In addition to the advantages of the CE, the authors discuss how this tool can contribute to more sustainable BMs. Finally, they define the CE as “an economic model wherein planning, resourcing, procu-

rement, production and reprocessing are designed and managed, as both process and output, to maximize ecosystem functioning and human well-being” (Murray et al. 2017). Linder and Williander (2017) also underline the great utility of circular BMs based on regeneration and reuse, as they can produce significant savings on costs and in terms of environmental impact. The authors demonstrate that circular BMs imply significant challenges for proactively reducing uncertainty for the entrepreneur. Urbinati et al. (2017) propose the novelty of BMs oriented towards the CE as the way to reuse and maintain resources in a production and use cycle that allows generating value for a longer time. The authors identify four ways of adopting the CE: Linear, Upstream Circular, Downstream Circular and Full Circular. Urbinati et al. (2017) explore how enterprises exploit CE principles within their BM.

Geissdoerfer et al. (2018) discuss the sustainability performance of circular BMs (CBM), defining the circular supply chains to implement the concept at an organizational level and proposing a framework for integrating circular BMs towards enterprise’s sustainable development. The results highlight how the case studies have aspects of circularity incorporated in their BMs and supply chains. However, the latter still face challenges to change the paradigm of corporate BMs from linear to circular. Scheepens et al. (2016) argue that life cycle assessment (LCA) is the best system for analyzing environmental aspects, and can evaluate circular systems, product-service systems and recycling system. The authors apply the LCA-based Eco-costs Value Ratio (EVR) Model to identify potentially negative environmental effects of commercial initiatives at the system level. This model shows useful for the design and implementation of a sustainable recreation system in the context examined.

We performed the occurrence analysis identifying the most relevant keywords (Table V). Sustainability, BM innovation, sustainable development and value creation are prominent words in investigating and answering our research questions.

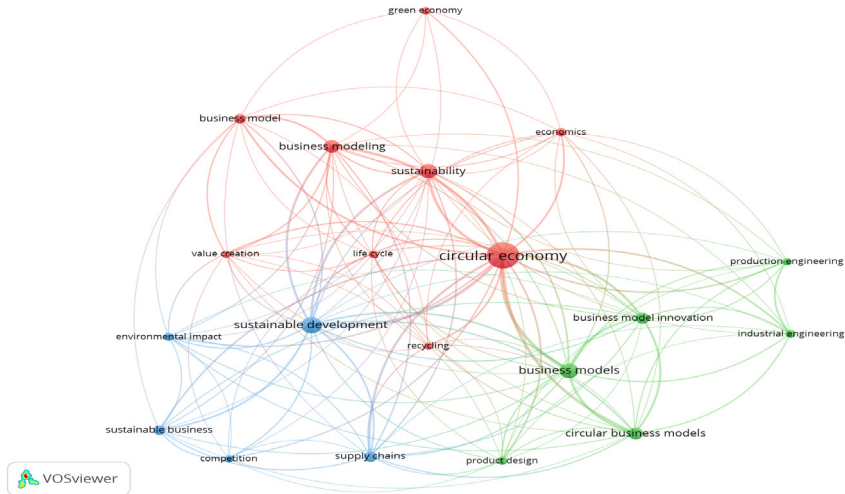
*Table V – Authors’ keywords occurrence*

<b>Keywords</b>	<b>Occurrence</b>
Circular Economy	64
Sustainability	17
Circular Business Models	13
Sustainable Development	11
Business Model Innovation	10
Business Model	8
Green Economy	7
Value Creation	4

*Source: Vosviewer Elaboration*

All keywords clusters are investigated through the co-occurrence's (Figure III).

Figure III – All Keywords' occurrence



Source: Vosviewer Elaboration

Table VI shows the group of keywords occurrence identifying three main clusters. We identify cluster 1 (red colour) with 9 items, cluster 2 (green colour) with 6 items and cluster 3 (blue colour) with 5 items. However, we deleted duplication keywords owing to the usage of singular and plural form or being embedded in another keyword. Cluster 1 seems to assume a prominent role in the adoption of the CE in sustainability-oriented BMs. Cluster 2 seems to assume an important role in detecting relevant models of this new virtuous management through the identification of new technologies that can bring tangible and intangible benefits for the enterprise's life cycle. Cluster 3 identifies the current state regarding the adoption of these new management models within enterprises.

Table VI - Groups of keywords occurrence

CLUSTER	KEYWORD	OCCURRENCES
Cluster 1 (9 items - red)	Circular Economy	65
	Sustainability	20
	Business Modelling	14
	Business Model	8
	Green Economy	7
	Economics	6
	Recycling	6
	Life Cycle	5
	Value Creation	5
Cluster 2 (6 items - green)	Business Models	19
	Circular Business Models	13
	Business Model Innovation	12
	Product Design	6
	Industrial Engineering	6
	Production Engineering	5
Cluster 3 (5 items - blue)	Sustainable development	28
	Supply chains	11
	Sustainable business	8
	Environmental impact	8
	Competition	5

Source: Vosviewer Elaboration

The first area reveals a great interest from scholars towards these topics. The authors sought to outline the advantages that the CE and GE can bring to BMs (Lieder et al., 2020; Dijkstra et al., 2020; Esposito et al., 2018; Galati et al., 2018; Geissdoerfer et al., 2017). The main advantages include reduction of production and purchase prices of products, introduction of new rules, physical and climatic changes, modification of customer preferences and limits of resources for production (Gilbert et al., 2017; Lacy and Rutqvist, 2016; Osterwalder and Pigneur, 2010; Nasiri et al., 2018; Mylan et al., 2016). Problems regarding sustainability, innovation and competitiveness are central fields for enterprises not only for scholars but also for managers, entrepreneurs and business leaders (Cohen and Winn, 2007; Dean and McMullen, 2007; Parida and Wincent, 2019; Schaltegger 2002). Among the papers included in the first cluster, the researchers discussed introducing new BMs (Mont, 2002; Reim et al., 2015) and capability development (Parida et al., 2015; Ulaga and Reinartz, 2011), connecting these compo-

nents to the possibilities of creating value for customers (Lenka et al., 2017; Sjödin et al., 2016).

Also, to provide a further summary of the potential of CE and GE, in the second area, the authors outline the methodologies for delivering circular products and BMs capable of adapting to sustainability (Bocken et al., 2016; Franco, 2019; Manninen et al., 2018). The authors try to understand the general business dynamics and the frameworks oriented to the CE and GE adopted on case studies, also conducting structural and behavioural tests (Kirchherr et al., 2017; Murray et al., 2017; Saidani et al., 2017). Linder and Williander (2017), Rizos et al. (2016), and Vermunt et al. (2019) are some of those who discussed the obstacles and tools for the implementation of circular BMs, tracing the central role of sustainability and resource efficiency (Hofmann, 2019; Manninen et al., 2018; Whalen, 2019) and also trying to classify the degrees of intensity and application of the components mentioned above (Bocken et al., 2014; Rosa et al., 2019; Urbinati et al., 2017).

In the third area, current practices related to sustainable BMs are traced (Centobelli et al., 2020). Three practices are identified: i) to create value, ii) to acquire value and iii) interdimensional practices. i) In the practices aimed at creating value, those most used are the activities for recycling, regeneration and re-assembly (Marconi et al., 2019), trying to avoid the end of product's life cycle (Mendoza et al., 2017; Moreno et al., 2016). The corporate goal, as well as significant economic savings, is to prevent contamination of the environment and the biosphere (Moreno et al., 2016). ii) The practices aimed at acquiring value, on the other hand, are those that try to give value to materials that no longer have any, such as waste (Goyal et al., 2018; Pezzotta et al., 2017). In this case, the enterprises, in addition to offering customers products at significantly more advantageous prices, avoid expensive waste management costs (Krystofik and Gaustad, 2018; Lewandowski, 2016; Ranta et al., 2018). iii) In conclusion, the interdimensional practices are those aimed at mixing the activities described above, trying to use innovative emerging digital technologies (de Sousa Jabbour et al. 2018; Despeisse et al., 2017; Rajala et al., 2018; Trequattrini et al., 2016).

## 5. Implications and conclusions

This paper examines the literature on the topic of sustainability-oriented BMs, concerning the CE and GE. First, in this section, we will try to discuss the main results providing implications for theory and practices deriving from the three research questions.

*Implication 1. How is the literature on the business models, circular and green economy?*

The CE and GE are new emerging economic paradigms (Geissdoerfer et al., 2017; Geissdoerfer et al., 2018; Runfola et al., 2020; Sehnem et al., 2020), capable of replacing growth models focused on a linear vision. They focus on reducing waste and a radical rethinking in the conception of products and their use over time safeguarding the environment and the society in the long term. They represent an important challenge for the production system and society, as they require the adoption of sustainable production and consumption activities and processes, as well as being able to manage the planet's resources consciously and efficiently (Allwood, 2014; Di Maio and Rem, 2015; Scheepens et al., 2016). Through the adoption of strategies and BMs oriented to the CE, enterprises redesign internal processes, supply chain relationships, promoting innovative products related to new materials or eco-design, as well as how consumers can enjoy it. The scenario is linked to the use and development of digital technologies connected to industry 4.0, from robotics to 3D printing, from the Internet of Things (IoT - Internet of Things) to big data, which can further push enterprises towards the adoption of models related to the CE (Bag et al., 2020; Massaro et al., 2021; Salvador et al., 2021). Furthermore, since these are innovative paradigms in which investors and stakeholders are particularly interested, also social networks are fundamental in terms of voluntary and involuntary disclosure of the company, to enhance and raise awareness of the adoption of these BMs at an entrepreneurial level (Lardo et al., 2020). Observing the evolutionary trend of scientific papers addressing the topic of sustainability-oriented BMs through CE and GE, we note the increasing growth of papers in the last three years: it has gone from 15 papers in 2018 to 32 papers in 2019 and 19 papers in 2020, with only 4 papers in the first 5 years (2013-2017). The growing number of scholars' contributions over the years demonstrates the originality and innovation of the field of investigation. The main geographical areas in which the greatest number of authors are present are Italy, Sweden and Netherlands. Italy is among the most active countries and is seeking to make the impact of corporate productivity environmentally sustainable. Finally, the papers included in our analysis allow us to derive some indications and recommendations on how an enterprise can organize sustainable BMs oriented towards CE and GE or modify its own to make them such.

*Implication 2. What is the literature's focus within the business models, circular and green economy?*

We highlight as scholars pose attention towards practical possibilities of making BMs sustainable, through the development of frameworks to be used or already used within enterprises (Centobelli et al., 2020; Marconi et al., 2019; Mendoza et al., 2017; Moreno et al., 2016). The most used venue for

publication is the Journal of Cleaner Production (36 papers published with the highest number of citations). Scholars have focused on the analysis of many case studies and BMs already oriented to the CE. The results define: i) an active role of enterprises in rethinking production processes and supply chain relationships, seeking to enhance and improve the relationship between technical, commercial and marketing skills; ii) a leading role of 4.0 technologies for monitoring and sparing use of resources and products; iii) the importance of loans capable of evaluating the innovative and profitability potential of CE strategies; iv) the importance of regulatory measures that simplify and make the use of materials reused and recycled more and more indispensable with a view to “closing the circle”.

*Implication 3. What are the implications coming up for organizations and decision-makers?*

Some main implications and advantages for organizations and decision-makers seem to include: reduction of production and purchase prices of products, the introduction of new rules, physical and climatic changes, modification of customer preferences and limits of resources for production (Gilbert et al., 2017; Lacy and Rutqvist, 2016; Osterwalder and Pigneur, 2010; Nasiri et al., 2018; Mylan et al., 2016). Also, at the legislative and political level, especially the European Union, the promotion to convert the corporate production towards the CE and GE has been activated (Bonviu, 2014; Smol et al., 2017; Türkeli et al., 2018). The main strategic guidelines adopted by the Member States were: to think of a product design to foresee their destination from the beginning once they have become waste, to reduce the number of materials suitable for providing a specific service, to give rise to production processes capable of extending the useful life of products, design products that are easy to maintain in good condition, repair, modernize or recycle, define indicators and objectives to evaluate the efficient use of resources. Precisely to encourage this transition from a linear economy to EC and GE, for firms able to put these guidelines into practice, the European Commission has decided to allocate funds in the coming years so that companies can be stimulated to make this transition (Marino and Pariso, 2020; Taranic et al., 2016). Following our analysis of the clusters, i) there is a leading role in the adoption of recycling, the life cycle and the GE, as adequate strategies to support circular BMs oriented towards sustainability (Loiseau et al., 2016; Stubbs and Cocklin, 2008; Tulebayeva et al., 2020; ). The relevant activities used to achieve these objectives are recorded in the supply chains, in operations aimed at optimizing the environmental impact and promoting healthy competition between companies to improve production. Another relevant field concerns ii) issues relating to the right technologies adopted by organizations and institutions

to implement an adequate circular BM. Proposing a longitudinal study analysis, our review emphasizes the relevance to find a way that leads to the creation or modification of corporate BMs towards sustainability, to avoid unnecessary waste of resources and money, to safeguard the environment and society in the long term.

Our key findings outline three main significant streams originated by the i) CE (cluster 1), ii) sustainable development (cluster 2), and iii) circular BMs (cluster 3), confirming our initial keywords. Valuable implications and information are processed which seek to transform the corporate environment globally.

## **6. Limitations and Future Research**

Through this research agenda, we invite scholars to investigate:

- sustainable BMs oriented to the CE and GE emphasizing real benefits in terms of environment and society;
- technologies useful in the CE and GE to develop guidelines on sustainability;
- promising challenges by enterprises.

Therefore, this paper has limitations especially in the dataset, i.e. only those in English, and the topics of the GE and technologies capable of implementing the sustainability of corporate BMs. Our research proposes a static representation of the advantages provided by CE and GE oriented BMs. However, the issues addressed are concepts in continuous evolution. The survey could be extended to the political and economic strategies of the various countries, aimed at studying the initiatives promoted by them to favour the application of the following BMs at the company level. These fields of study are therefore still immature and will be subject to further research. Our future research agenda is directed to answer the previous question as well as to investigate the evolution of sustainability and the role that it will play in the development of enterprises.



## References

- Allwood, J. M. (2014). Squaring the circular economy: the role of recycling within a hierarchy of material management strategies. In *Handbook of recycling* (pp. 445-477). Elsevier.
- Alonso-Almeida, M. D. M., Rodríguez-Antón, J. M., Bagur-Femenías, L., & Perramon, J. (2020). Sustainable development and circular economy: The role of institutional promotion on circular consumption and market competitiveness from a multistakeholder engagement approach. *Business Strategy and the Environment*, 29(6), 2803-2814.
- Amit, R., & Zott, C. (2001). Value creation in e-business. *Strategic management journal*, 22(6-7), 493-520.
- Andreini, D., & Bettinelli, C. (2017). Business Model Definition and Boundaries. In *Business Model Innovation* (pp. 25-53). Springer, Cham.
- Baden-Fuller, C., & Morgan, M. S. (2010). Business models as models. *Long-range planning*, 43(2-3), 156-171.
- Bag, S., & Pretorius, J. H. C. (2020). Relationships between industry 4.0, sustainable manufacturing and circular economy: proposal of a research framework. *International Journal of Organizational Analysis*.
- Bagnoli, C., Dal Mas, F., Lombardi, R., & Nucciarelli, A. (2020). Translating knowledge through business model tensions. A case study. *International Journal of Management and Decision Making*, vol. 20, n. 2.
- Barbier, E. B., & Markandya, A. (2013). *A new blueprint for a green economy*. Routledge.
- Bocken, N. M., De Pauw, I., Bakker, C., & Van Der Grinten, B. (2016). Product design and business model strategies for a circular economy. *Journal of Industrial and Production Engineering*, 33(5), 308-320.
- Bocken, N., Short, S.W., Rana, P., & Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. *J. Clean. Prod.* 65, 42-56.
- Bonviu, F. (2014). The European economy: from a linear to a circular economy. *Romanian J. Eur. Aff.*, 14, 78.
- Breuer, H., Fichter, K., Lüdeke-Freund, F., & Tiemann, I. (2018). Sustainability-oriented business model development: Principles, criteria and tools. *International Journal of Entrepreneurial Venturing*, 10(2), 256-286.
- Carayannis, E. G., Grigoroudis, E., Sindakis, S., & Walter, C. (2014). Business model innovation as antecedent of sustainable enterprise excellence and resilience. *Journal of the Knowledge Economy*, 5(3), 440-463.
- Centobelli, P., Cerchione, R., Chiaroni, D., Del Vecchio, P., & Urbinati, A. (2020). Designing business models in circular economy: A systematic literature review and research agenda. *Business Strategy and the Environment*, 29(4), 1734-1749.
- Chertow, M., & Ehrenfeld, J. (2012). Organizing self-organizing systems: Toward a theory of industrial symbiosis. *Journal of industrial ecology*, 16(1), 13-27.
- Chesbrough, H. (2007). Business model innovation: it's not just about technology anymore. *Strategy & Leadership*, 35, 12-17.
- Chesbrough, H. (2010). Business model innovation: Opportunities and barriers. *Long Range Planning*, 43(2-3), 354-363.
- Cohen, B., & Winn, M. I. (2007). Market imperfections, opportunity and sustainable entrepreneurship. *Journal of Business Venturing*, 22, 29-49.
- Coombes, P. H., & Nicholson, J. D. (2013). Business models and their relationship with marketing: A systematic literature review. *Industrial Marketing Management*, 42(5), 656-664.
- Dean, T. J., & McMullen, J. S. (2007). Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action. *Journal of Business Venturing*, 22, 50-76.
- Demil, B., Lecocq, X., Ricart, J. E., & Zott, C. (2015). Introduction to the SEJ special issue

on business models: Business models within the domain of strategic entrepreneurship. *Strategic Entrepreneurship Journal*, 9(1), 1-11.

de Sousa Jabbour, A. B. L., Jabbour, C. J. C., Godinho Filho, M., & Roubaud, D. (2018). Industry 4.0 and the circular economy: A proposed research agenda and original roadmap for sustainable operations. *Annals of Operations Research*, 270(1–2), 273–286.

Despeisse, M., Baumers, M., Brown, P., Charnley, F., Ford, S. J., Garmulewicz, A., ... & Rowley, J. (2017). Unlocking value for a circular economy through 3D printing: A research agenda. *Technological Forecasting and Social Change*, 115, 75-84.

Dijkstra, H., van Beukering, P., & Brouwer, R. (2020). Business models and sustainable plastic management: A systematic review of the literature. *Journal of Cleaner Production*, 120967.

Di Maio, F., & Rem, P. C. (2015). A robust indicator for promoting circular economy through recycling. *Journal of Environmental Protection*, 6(10), 1095.

Drucker, P. F. (1994). *The theory of the business*.

Esposito, M., Tse, T., & Soufani, K. (2015). *L'avanzata dell'economia circolare*. Harvard Business Review.

Esposito, M., Tse, T., & Soufani, K. (2018). Introducing a circular economy: New thinking with new managerial and policy implications. *California Management Review*, 60(3), 5–19.

Franco, M. A. (2019). A system dynamics approach to product design and business model strategies for the circular economy. *Journal of Cleaner Production*, 241, 118327.

Galati, A., Schifani, G., Crescimanno, M., Vrontis, D., & Migliore, G. (2018). Innovation strategies geared toward the circular economy: A case study of the organic olive-oil industry. *Rivista di Studi sulla Sostenibilità*, 137–158.

Geissdoerfer, M., Morioka, S. N., de Carvalho, M. M., & Evans, S. (2018). Business models and supply chains for the circular economy. *Journal of Cleaner Production*, 190, 712-721.

Geissdoerfer, M., Savaget, P., Bocken, N. M., & Hultink, E. J. (2017). The Circular Economy—A new sustainability paradigm?. *Journal of cleaner production*, 143, 757-768.

Geng, Y., Zhu, Q., Doberstein, B., & Fujita, T. (2009). Implementing China's circular economy concept at the regional level: A review of progress in Dalian, China. *Waste Management*, 29(2), 996-1002.

Gilbert, P., Wilson, P., Walsh, C., & Hodgson, P. (2017). The role of material efficiency to reduce CO2 emissions during ship manufacture: A life cycle approach. *Marine Policy*, 75, 227–237.

Goyal, S., Esposito, M., & Kapoor, A. (2018). Circular economy business models in developing economies: Lessons from India on reduce, recycle, and reuse paradigms. *Thunderbird International Business Review*, 60(5), 729–740.

Hofmann, F. (2019). Circular business models: Business approach as driver or obstructer of sustainability transitions?. *Journal of Cleaner Production*, 224, 361-374.

Hu, J., Xiao, Z., Zhou, R., Deng, W., Wang, M., & Ma, S. (2011). Ecological utilization of leather tannery waste with circular economy model. *Journal of Cleaner Production*, 19(2-3), 221-228.

Jawahir, I. S., & Bradley, R. (2016). Technological elements of circular economy and the principles of 6R-based closed-loop material flow in sustainable manufacturing. *Procedia Cirp*, 40(1), 103-108.

Johnson, M. W., Christensen, C. M., & Kagermann, H. (2008). Reinventing your business model. *Harvard Business Review*, 86(12), 50–59.

Kama, K. (2015). Circling the economy: resource-making and marketization in EU electronic waste policy. *Area*, 47(1), 16-23.

Kessler, M. M., 1963. Bibliographic coupling between scientific papers. *American documentation*, 14 (1), 10-25.

Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: an analysis of 114 definitions. *Resour. Conserv. Recycl.* 127 (Suppl. C), 221-232.

Klewitz, J., & Hansen, E. G. (2014). Sustainability-oriented innovation of SMEs: a systematic review. *Journal of cleaner production*, 65, 57-75.

Koszewska, M. (2018). Circular economy—Challenges for the textile and clothing industry. *Autex Research Journal*, 18(4), 337-347.

Kraus, S., Breier, M., & Dasí-Rodríguez, S. (2020). The art of crafting a systematic literature review in entrepreneurship research. *International Entrepreneurship and Management Journal*, pp. 1-20.

Kryshtanovych, M., Filippova, V., Huba, M., Kartashova, O., & Molnar, O. (2020). Evaluation of the implementation of the circular economy in EU countries in the context of sustainable development. *Business: Theory and Practice*, 21(2), 704-712.

Krystofik, M., & Gaustad, G. (2018). Tying product reuse into tying arrangements to achieve competitive advantage and environmental improvement. *Resources, Conservation and Recycling*, 135, 235–245.

Krugman, P. (2010). Building a green economy. *New York Times*, 5.

Lacy, P., & Rutqvist, J. (2016). *Waste to wealth: The circular economy advantage*. UK: Palgrave Macmillan.

Lacy, P., Rutqvist, J., & Lamonica, B. (2016). *Circular economy: Dallo spreco al valore*. EGEA spa.

Lardo, A., Marandola, D., & Manzari, A. (2020). The value relevance of involuntary disclosure: first evidence from listed companies operating in the food industry. *International Journal of Digital Culture and Electronic Tourism*, 3(2), 189-207.

Le Blanc, D., 2011. Special issue on green economy and sustainable development. *Nat. Resour. Forum* 35, 151–154. doi:10.1111/j.1477-8947.2011.01398.x

Lenka, S., Parida, V., & Wincent, J. (2017). Digitalization capabilities as enablers of value co-creation in Servitizing firms. *Psychology & Marketing*, 34(1), 92–100.

Lewandowski, M. (2016). Designing the business models for circular economy—Towards the conceptual framework. *Sustainability*, 8(1), 1–28, 43.

Lieder, M., Asif, F. M., & Rashid, A. (2020). A choice behaviour experiments with circular business models using machine learning and simulation modelling. *Journal of Cleaner Production*, 120894.

Linder, M., & Williander, M. (2017). Circular business model innovation: inherent uncertainties. *Business strategy and the environment*, 26(2), 182-196.

Loiseau, E., Saikku, L., Antikainen, R., Droste, N., Hansjürgens, B., Pitkänen, K., ... & Thomsen, M. (2016). Green economy and related concepts: An overview. *Journal of cleaner production*, 139, 361-371.

Lombardi R., Chiucchi M.S., & Mancini D. (2020a), *Smart Technologies, Digitalizzazione e Capitale intellettuale. Sinergie e opportunità*, FrancoAngeli, Milano.

Lombardi, R., Paoloni, P., Belyaeva, Z., & Shams, S. R. (2020b). Guest Editorial: Smart technologies for sustainable business model: Adaptation challenges and prospects in economic and cultural drift. *Management Decision*, 58(8), 1517-1524.

Lombardi R., & Secundo G. (2020c), *The Digital Transformation of Corporate Reporting – A Systematic Literature Review and avenues for future research*, *Meditari Accountancy Research*, online 21 September.

Lombardi, R., Trequatrini, R., Cuzzo, B., & Cano-Rubio, M. (2019). Corporate corruption prevention, sustainable governance and legislation: First exploratory evidence from the Italian scenario. *Journal of Cleaner Production*, 217, 666-675.

Lüdeke-Freund, F., Carroux, S., Joyce, A., Massa, L., & Breuer, H. (2018). The sustainable business model pattern taxonomy—45 patterns to support sustainability-oriented business model innovation. *Sustainable Production and Consumption*, 15, 145-162.

Maglio, R., Rey, A., Agliata, F., & Lombardi, R. (2020). Exploring sustainable governance: Compliance with the Italian related party transactions regulation for the legal protection of minority shareholders. *Corporate Social Responsibility and Environmental Management*, 27(1), 272-282.

Magretta, J. (2002). Why business models matter. *Harvard Business Review*, 80(5), 86–92.

Manninen, K., Koskela, S., Antikainen, R., Bocken, N., Dahlbo, H., & Aminoff, A. (2018). Do circular economy business models capture intended environmental value propositions?. *Journal of Cleaner Production*, 171, 413-422.

- Marciano, C. (2017). Economia circolare. Critica di un paradigma emergente nella policy ambientale dell'UE. PRISMA Economia-Società-Lavoro.
- Marconi, M., Germani, M., Mandolini, M., & Favi, C. (2019). Applying data mining technique to disassembly sequence planning: A method to assess effective disassembly time of industrial products. *International Journal of Production Research*, 57(2), 599–623.
- Marino, A., & Pariso, P. (2020). Comparing European countries' performances in the transition towards the Circular Economy. *Science of the Total Environment*, 729, 138-142.
- Massaro, M., Dumay, J., & Guthrie, J. (2016). On the shoulders of giants: undertaking a structured literature review in accounting. *Account. Audit. Accountability. J.* 29 (5), pp. 767–801.
- Massaro, M., Secinaro, S., Dal Mas, F., Brescia, V., & Calandra, D. (2021). Industry 4.0 and circular economy: An exploratory analysis of academic and practitioners' perspectives. *Business Strategy and the Environment*, 30(2), 1213-1231.
- Mathews, J. A., & Tan, H. (2011). Progress toward a circular economy in China: The drivers (and inhibitors) of eco-industrial initiative. *Journal of industrial ecology*, 15(3), 435-457.
- Mattila, T., Lehtoranta, S., Sokka, L., Melanen, M., & Nissinen, A. (2012). Methodological aspects of applying life cycle assessment to industrial symbioses. *Journal of Industrial Ecology*, 16(1), 51-60.
- Mcdonough, W. & Braungart, M. 2002. *Cradle to Cradle - Remaking the Way We Make Things*, New York, USA, North Point Press.
- Meadows, D. H., Meadows, D. L., Randers, J., & Behrens, W. W. (1972). *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind*. New York: Universe Books.
- Mendoza, J. M. F., Gallego-Schmid, A., & Azapagic, A. (2019). Building a business case for implementation of a circular economy in higher education institutions. *Journal of Cleaner Production*, 220, 553-567.
- Mont, O. K. (2002). Clarifying the concept of product-service system. *Journal of Cleaner Production*, 10(3), 237–245.
- Moreno, M., De Los Rios, C., Rowe, Z., & Charnley, F. (2016). A conceptual framework for circular design. *Sustainability*, 8(9), 1–15, 937.
- Morris, M., Schindehutte, M., & Allen, J. (2005). The entrepreneur's business model: Toward a unified perspective. *Journal of Business Research*, 58(6), 726–735.
- Mylan, J., Holmes, H., & Paddock, J. (2016). Re-introducing consumption to the 'circular economy': A sociotechnical analysis of domestic food provisioning. *Sustainability*, 8(8), 1–14, 794.
- Murray, A., Skene, K., & Haynes, K. (2017). The circular economy: an interdisciplinary exploration of the concept and application in a global context. *Journal of business ethics*, 140(3), 369-380.
- Nasiri, M., Rantala, T., Saunila, M., Ukko, J., & Rantanen, H. (2018). Transition towards sustainable solutions: Product, service, technology, and business model. *Sustainability*, 10(2), 1–18, 358.
- Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: A handbook for visionaries, game changers, and challengers*. USA: John Wiley & Sons.
- Parajuly, K., & Wenzel, H. (2017). Potential for circular economy in household WEEE management. *Journal of Cleaner Production*, 151, 272-285.
- Parida, V., Sjödin, D. R., Lenka, S., & Wincent, J. (2015). Developing global service innovation capabilities: How global manufacturers address the challenges of market heterogeneity. *Research-Technology Management*, 58(5), 35–44.
- Parida, V., & Wincent, J. (2019). Why and how to compete through sustainability: a review and outline of trends influencing firm and network-level transformation. *International Entrepreneurship and Management Journal*, 15(1), 1-19.
- Passaro, R., Scandurra, G., & Thomas, A. (2020). Le determinanti dell'ecoinnovazione nelle pmi innovative: prospettive teoriche ed evidenze empiriche. *Piccola Impresa / Small Business*, 0(1). doi:<https://doi.org/10.14596/pisb.339>

Petticrew, M., Roberts, H. (2006), *Systematic reviews in the social sciences: a practical guide*. Blackwell Pub.

Pezzotta, G., Cavalieri, S., & Romero, D. (2017). Engineering value co-creation in product-service systems: Processes, methods, and tools. In *Handbook of research on strategic alliances and value co-creation in the service industry* (pp. 22–36). USA: IGI Global.

Pieroni, M. P., McAloone, T. C., & Pigosso, D. C. (2019). Business model innovation for circular economy and sustainability: A review of approaches. *Journal of cleaner production*, 215, 198-216.

Pucci, T. (2016). *Il modello di business: caratteri strutturali e dinamiche evolutive*. Wolters Kluwer Italia.

Qiao, F., & Qiao, N. (2013). Circular Economy: An Ethical and Sustainable Economic Development Model. *Prakseologia*, (154), 253-272.

Rajala, R., Hakanen, E., Mattila, J., Seppälä, T., & Westerlund, M. (2018). How do intelligent goods shape closed-loop systems? *California Management Review*, 60(3), 20–44.

Ranta, V., Aarikka-Stenroos, L., & Mäkinen, S. J. (2018). Creating value in the circular economy: A structured multiple-case analysis of business models. *Journal of cleaner production*, 201, 988-1000.

Reim, W., Parida, V., & Örtqvist, D. (2015). Product–service systems (PSS) business models and tactics—a systematic literature review. *Journal of Cleaner Production*, 97, 61–75.

Rizos, V., Behrens, A., van der Gaast, W., Hofman, E., Ioannou, A., Kafyeke, T., Flamos, A., Rinaldi, R., Papadelis, S., Hirschnitz-Garbers, M., Topi, C. (2016). Implementation of circular economy business models by small and medium-sized enterprises (SMEs): barriers and enablers. *Sustainability* 8 (11), 1212.

Rizos, V., Tuokko, K., & Behrens, A. (2017). *The Circular Economy: A review of definitions, processes and impacts* (No. 12440). Centre for European Policy Studies.

Roberto, F., Maglio, R., & Rey, A. (2020) *Accountability and Sustainability Reporting in the Public Sector. Evidence from Italian Municipalities*. In Crowther, D.; Seifi, S. (edited by) “*CSR and Sustainability in the Public Sector*”, Springer.

Rosa, P., Sassanelli, C., & Terzi, S. (2019). Towards Circular Business Models: a systematic literature review on classification frameworks and archetypes. *J. Clean. Prod.* 236, 117696.

Runfola, A., Gigliotti, M., & Picciotti, A. (2020). Modelli di business emergenti nella moda sostenibile: l’innovazione nel caso di un’organizzazione nonprofit. *Piccola Impresa / Small Business*, 0(3). doi:<https://doi.org/10.14596/pisb.358>

Saidani, M., Yannou, B., Leroy, Y., & Cluzel, F. (2017). How to assess product performance in the circular economy? Proposed requirements for the design of a circularity measurement framework. *Recycling* 2 (1), 6.

Saita, M., & Franceschelli, M. (2016). Recycling strategy as a consequence of socio economic growth. The case of an Italian Sme. *Piccola Impresa / Small Business*, 0(3). doi:<https://doi.org/10.14596/pisb.215>

Salonitis, K., Stavropoulos, P. (2013). On the integration of the CAx systems towards sustainable production. *Procedia CIRP*, 9, 115-120.

Salvador, R., Barros, M. V., Freire, F., Halog, A., Piekarski, C. M., & Antonio, C. (2021). Circular Economy Strategies on Business Modelling: Identifying the Greatest Influences. *Journal of Cleaner Production*, 126918.

Sariatli, F. (2017). Linear Economy versus Circular Economy: A comparative and analyzer study for Optimization of Economy for Sustainability. *Visegrad Journal on Bioeconomy and Sustainable Development*, 6(1), 31-34.

Schaltegger, S. (2002). A framework for ecopreneurship. Leading bioneers and environmental managers to ecopreneurship. *Greener. Management International*, 38, 45–58.

Scheepens, A. E., Vogtländer, J. G., & Brezet, J. C. (2016). Two life cycle assessment (LCA) based methods to analyse and design complex (regional) circular economy systems. Case: Making water tourism more sustainable. *Journal of Cleaner Production*, 114, 257-268.

Sehnem, S., Ndubisi, N. O., Preschlak, D., Bernardy, R. J., & Santos Junior, S. (2020).

Circular economy in the wine chain production: maturity, challenges, and lessons from an emerging economy perspective. *Production Planning & Control*, 31(11-12), 1014-1034.

Shafer, S. M., Smith, H. J., & Linder, J. C. (2005). The power of business models. *Business Horizons*, 48(3), 199-207.

Sharma, N. K., Govindan, K., Lai, K. K., Chen, W. K., & Kumar, V. (2020). The transition from linear economy to circular economy for sustainability among SMEs: A study on prospects, impediments, and prerequisites. *Business Strategy and the Environment*.

Sjödin, D. R., Parida, V., & Wincent, J. (2016). Value co-creation process of integrated product-services: Effect of role ambiguities and relational coping strategies. *Industrial Marketing Management*, 56, 108-119.

Smol, M., Kulczycka, J., & Avdiushchenko, A. (2017). Circular economy indicators in relation to eco-innovation in European regions. *Clean Technologies and Environmental Policy*, 19(3), 669-678.

Stahel, W. R. (2016). The circular economy. *Nature*, 531(7595), 435-438.

Stubbs, W., & Cocklin, C. (2008). Conceptualizing a "sustainability business model". *Organization & Environment*, 21(2), 103-127.

Taranic, I., Behrens, A., & Topi, C. (2016). Understanding the circular economy in Europe, from resource efficiency to sharing platforms: The CEPS framework. *CEPS Special Reports*, (143).

Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning*, 43, 172-194.

The Ellen MacArthur Foundation, 2012. *Towards circular economy: Economic and business rationale for an accelerated transition*.

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British journal of management*, Vol. 14, No. 3, pp. 207-222.

Trequatrin, R., Shams, R., Lardo, A. & Lombardi, R. (2016), "Risk of an epidemic impact when adopting the internet of things: the role of sector-based resistance", *Business Process Management Journal*, Vol. 22 No. 2, pp. 403-419.

Tulebayeva, N., Yergobek, D., Pestunova, G., Mottaeva, A., & Sapakova, Z. (2020). Green economy: waste management and recycling methods. In *E3S Web of Conferences* (Vol. 159, p. 01012). EDP Sciences.

Ulag, W., & Reinartz, W. J. (2011). Hybrid offerings: How manufacturing firms combine goods and services successfully. *Journal of Marketing*, 75(6), 5-23.

UNEP, 2011. *Towards a Green Economy: Pathways to Sustainable Development and 898 Poverty Eradication*.

Urbinati, A., Chiaroni, D., & Chiesa, V. (2017). Towards a new taxonomy of circular economy business models. *Journal of Cleaner Production*, 168, 487-498.

Van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *scientometrics*, 84(2), 523-538.

Van Eck, N. J., & Waltman, L. (2014). Visualizing bibliometric networks. In *Measuring scholarly impact* (pp. 285-320). Springer, Cham.

Van Eck, N.J., & Waltman, L. (2017), Citation-based clustering of publications using CitNetExplorer and VOSviewer. *Scientometrics* 111 (2), pp. 1053-1070.

Vermunt, D.A., Negro, S.O., Verweij, P.A., Kuppens, D.V., & Hekkert, M.P. (2019). Exploring barriers to implementing different circular business models. *J. Clean. Prod.* 222, 891-902.

Waltman, L., Van Eck, N. J., & Noyons, E. C. (2010). A unified approach to mapping and clustering of bibliometric networks. *Journal of Informetrics*, 4(4), 629-635.

Webster, K. (2017). *The circular economy: A wealth of flows*. Ellen MacArthur Foundation Publishing.

Whalen, K. A. (2019). Three circular business models that extend product value and their contribution to resource efficiency. *Journal of Cleaner Production*, 226, 1128-1137.

Witjes, S., & Lozano, R. (2016). Towards a more Circular Economy: Proposing a framework linking sustainable public procurement and sustainable business models. *Resources, Conservation and Recycling*, 112, 37-44.

Xue, B., Chen, X. P., Geng, Y., Guo, X. J., Lu, C. P., Zhang, Z. L., & Lu, C. Y. (2010). Survey of officials' awareness on circular economy development in China: Based on municipal and county level. *Resources, Conservation and Recycling*, 54(12), 1296-1302.

Yu, C., Davis, C., & Dijkema, G.P. (2014). Understanding the evolution of industrial symbiosis research. *Journal of Industrial Ecology*, 18(2), 280-293.

Yuan, Z., Bi, J., & Moriguchi, Y. (2006). The circular economy: A new development strategy in China. *Journal of Industrial Ecology*, 10(1-2), 4-8.

Zhu, Q., Geng, Y., & Lai, K.H. (2011). Environmental Supply Chain Cooperation and Its Effect on the Circular Economy Practice-Performance Relationship Among Chinese Manufacturers. *Journal of Industrial Ecology*, 15(3), 405-419.

Zott, C., & Amit, R. (2007). Business model design and the performance of entrepreneurial firms. *Organization Science*, 18(2), 181-199.

Zott, C., & Amit, R. (2010). Business model design: An activity system perspective. *Long Range Planning*, 43(2-3), 216-226.

Zott, C., Amit, R., & Massa, L. (2011). The Business Model: Recent Developments and Future Research. *Journal of Management*, 37(4), 1019-1042.