The transition towards circular economy and waste within accounting and accountability models: a systematic literature review and conceptual framework

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Abstract

A transition towards a circular economy is a challenge. It is vital to know that circularity and sustainability are two different segments. So, circular economy can only be achieved in the long-term perspective. This study investigates accounting and accountability for circular economy and waste. Considering these principles and based on a critical review of the literature, economic gains from the transition toward a circular economy are measurable; the problems for corporations and governments are diverse; the way to handle the stakeholders who are losing control in the circular economy is considerable. Diffusion of innovation theory is used to conduct this study. It is essential that an organisational design built should help implement the circular model. Targeted questions responded by adopting a systematic literature review approach by applying PRISMA protocol. This study examines 78 publications in English between 2012 and 2021, which present a map of the circular economy-related knowledge published in web of science and Scopus. Besides, this study includes 03 European Commission reports, 01 Ellen Macarthur Foundation report, 01 Council for the Environment and Infrastructure report, 01 report from SUN IZA, 01 UN Global Compact and 01 the Brundtland Commission report. The results highlight how circular economy, waste management, sustainability, accountability, and management accounting practices help to develop an ecosystem and achieve sustainable development goals of the United Nations 2030 Agenda. Theoretical and practical implications are discussed.

Keywords Circular economy and waste · Sustainable development goals · Digital transformation · Accounting practices · Accountability practices

1 Introduction

Developmental waste management that facilitates new business models, design thinking, and a more productive approach for consumption and production are all the circular economy (CE) concepts as per recent literature. We have existed in a linear economy since the

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industrial revolution. Our consumption and habits for "special use" make the planet a world of "taking, creating, and disposing of" (Esposito et al., 2018). Due to institutional voidnesses, packaging waste management in poorly institutionalised nations, such as emerging nations, is challenging. Large MNEs for fast-moving consumer goods (FMCG) have to reconsider how they see their products. Consumers are becoming increasingly inclusive where packaging forms part of their product (Ajwani-Ramchandani et al., 2020). The findings show that the pillars of institutional quality (such as voice and accountability, the rule of law, and regulatory quality), the value created per capita, and participation in ecological associations are all important variables for a successful waste separation process. These factors are particularly significant for collecting organic waste, paper, glass, and plastic (Agovino et al., 2020). The extent to which the study can alter that addresses the people who do it is doubtful. This issue motivated some researchers to devise strategies to mobilise social and environmental accounting research to advocate organisational change inside the capitalist system (Adams & Larrinaga-González, 2007). There is a growing availability of information about environmental management accounting in municipal waste management (Qianet et al., 2011).

A burgeoning accounting literature is emerging, the circular economy, and the COVID-19 epidemic, testing some concepts to inform an ecological criticism of accounting that might help us fight off "dreams of escape" the ecological disaster (Latour, 2018). Investors, creditors, consumers, and the government are all potential users of accounting data. These users are uninvolved in the day-to-day operations and administration of the firm. The branch of accounting that gives information to non-accountants is known as financial accounting (Warren et al., 2012). The incorporation of CE into professional practice accountability frameworks has been one of the most significant improvements in the last 20 years. As regulatory bodies tried to develop accountability mechanisms, participation in CE was typically the method of choice. On the other hand, these new criteria have been chastised for ostensibly encouraging accountability while doing little or nothing to address the fundamental issue of competency (Queeny, 2000). The term "accountability" has become a buzzword in modern government. Each two-year cycle between 2001 and 2006, the phrase "accountability" featured in the title of between 50 and 70 bills filed to the US Congress (Dubnick, 2007, 8). The concept of accountability is very complex but have a core meaning. "Accountability is the quality or state of being accountable; especially an obligation or willingness to accept responsibility or to account for one's actions (Merriam–Webster, 2004)".

In the background of a CE viewpoint, Bohringer and Rutherford (2015) presented and evaluated a model that analyses and examines the economic implications of a technical transition and regulator policies, emphasising how to improve finite resources' assignment efficiency. According to Tuladhar et al. (2016), the authors developed a computer model that simulated and evaluated CE scenarios to reduce new resources and produce waste not reused in output. On the other hand, the concepts of CE are (a) the equilibrium between stock and sustainable flows is controlled; (b) inventory, commodity, or part usage is circulated as far as possible; and (c) the application of modern models reduces negative externalities of output and consumption processes (Jabbour et al., 2019).

In a CE, the focus is on waste, a constantly circulating resource in any economy. Unchecked waste generation and building up inappropriate material in waste disposal sites challenge and industrial growth globally, making it difficult to reach the sustainable development goals (SDGs) adopted by the United Nations (UN) general assembly formally in 2015 under Agenda 2030 (Elgie et al., 2021). Three pillars of sustainable development are directly or indirectly linked to waste management: economic growth, environmental health,

and social health (Lenkiewicz, 2016; Schroeder et al., 2019). Material flow accounting (MFA) is an accounts tool that proposes a system-based solution relating to importing, consuming, and recycling of goods. MFA helped find issues and prospects for waste management of different economies (Eckelman et al., 2014; Millette et al., 2019). It is significant to identify and quantify factors that help to measure and control waste. Furthermore, it is concluded that quantitative measurement and assessment of waste management processes are essential because decision-makers cannot control what they cannot quantify. Sound data are vital in leading the transition to sustainable, circular waste management systems (Imoniana et al., 2020; Elgie et al., 2021).

It is found that companies attempt to counter rapid technological development, significant environmental challenges (WCED, 1987; Murray et al., 2017), and national and international directives that are much more draconian (European Commission, 2011, 2017; Mathews & Tan, 2011, 2016) also evidence by Rosa et al. (2019). According to Ciulli et al. (2019), the company intermediary network association has become a new organisation that takes an innovative approach to waste recycling thanks to the surge of digitalisation. Digital innovations offer these organisations the possibility of creating a market model to recover waste from the site. It is puzzling that the missing concern of the market-intermediate platforms based on food waste recovery, primarily because of its legal, environmental, and social value. Furthermore, Pagoropoulos et al. (2017) found that the literature analysis determines it; the application of the digital technologies indicated in the transition to the circular economy is significant. There has been no apparent demarcation between multiple layers of technology in several areas of study and practice, such as distributed headlines, blockchains, and smart contracts (Casino et al., 2019; Crosby et al., 2016). Otherwise, this methodology is suitable for generating modern, practice-based theoretical perspectives (Langley & Abdallah, 2011).

Reporting practical CE implementation activities will help researchers and enterprises develop awareness about sustainable circular economic business models and businesses to hear about the circular ecological economy business models (Upward & Jones, 2016; Arjaliès & Mundy, 2013; Cho et al., 2020; Kirchherr et al., 2017; Michelon et al., 2019). Moreover, scientists can demonstrate the relevant results (Reike et al., 2018).

There is a considerable research gap in fresh ideas about converting a linear business model (BM) into a circular one in practice. Indeed, there is still a clear line supporting a BM shift from a linear economy to CE (Rosa et al., 2019). It is important to remember that circularity is not always synonymous with sustainability and that CE should only be pursued in the context of long-term sustainability. Unfortunately, despite numerous attempts and advancements in many areas, the remnants of earlier and current linear approaches continue to haunt and obstruct our efforts to reform our resource recovery systems (Iacovidou et al., 2021). On one side, theories of science principles are given mainly to corporations and policymakers. On the other hand, the best practice is too difficult for small- and medium-sized firms to implement. This study investigates the accounting and accountability for circular economy and waste (CE&W), considering these principles and building on a critical literature review. Furthermore, it emphasises and clarifies the aim of this study on how CE, waste management, accounting, and accountability models by implementing digitalisation to develop an ecosystem that ultimately provides firm grounds to achieve the UN 2030 Agenda. It is concluded by Carmona and Ezzamel (2007), historical accountability worked in three spheres: the individual state, the state, and the individual. The spheres were managed by canals that make hierarchically, horizontally, and automatically. These degrees of accountability were based on religious and societal rules and beliefs, but accounting played an important part. According to Immoniana et al. (2021), technological

maturity might be related to CE uptake. The link between auditing and the circular economy is based on sustainable technology, which is still developing in different organisational aspects. The harmful impacts of unsustainable and environmental consumption and production pattern are hard to regulate. It is vital to investigate to increase resource performance across the world economy significantly. This phenomenon enhances social sustainability, ecology, and economy, leading to a new paradigm shift (Rajput & Singh, 2019a, 2019b). Indeed, these newly growing criteria are promising but strongly criticised for their willingness and worthy focus (Jamali, 2010). Mainly, this study investigates how digital transformation influences accountability and accounting models to achieve the CE&W. Data collection provides ample evidence that previously no rigorous systematic literature review was conducted while using appropriate theory and bibliometric analysis using VOSviewer. Moreover, there is a dire need to address this current paradigm shift because these terminologies and keywords have passed through the evolution stage. It ensures the novelty of why an SLR is novel to demonstrate harmony and synergy among accounting, accountability, and CE&W. Which suggests an appropriate mode to address this paradigm shift and define measures to adopt (actions) under the pinning theory of diffusion of innovation. A systematic literature review approach is adopted to respond to targeted questions (Massaro et al., 2016). However, quantitative and qualitative methods can both be modified in accounting analysis. This study will address the following research questions (RQ):

RQ1 What is the role of accounting and accountability for the circular economy and waste?

RQ2 How do accounting and accountability models achieve the circular economy and waste towards the UN 2030 Agenda?

RQ3 What is the role of digital transformation in the accounting and accountability models for a circular economy and waste?

Under the lens of "diffusion of innovation (DOI) theory", this study would illuminate the new position of the circular economy and waste accounting and accountability. It further outlined the emerging deficiencies in CE&W literature and reflects the effect of digital transformation and accountability models in the UN 2030 Agenda, bibliometric and literature studies, and a systems analysis on the accounting and waste circle economy. This study answers the following questions by a bibliometric analysis of 78 articles.

The arrangements of this study outline are as follows. Section 2 introduces the theoretical background. Section 3 details the methodology. Section 4 highlights the data analysis and results. Then, Sects. 5 and 6 will provide an in-depth discussion on the results; the development of research propositions, theoretical and practical implications, policy recommendation, limitations of the study and conclusions.

2 Theoretical background

2.1 Background theories and theory in action

There are additional possibilities for study in these areas as theoretical inter-pollinations of directly used ideas at the same research stage. It can be generalised and related to big data and IT organisations and technology theories in one area, such as economic and policy theory (CE) (Jabbour et al., 2017). Two institutional theories, New institutional sociology and old institutional economics have evaluated the findings. In order to develop an analytic approach to give a more contextual one and in the words of Creswell, "real" and "alive"

insights have been taken from these two theories (Contrafatto, 2014). Neo-institutional theory gives scientists a practical and informative toolkit to create ethical living and ecological thinking commitments and encourage a sustainable future route (Ball & Craig, 2010). The power shift with dedicated funds has allowed shared interests between accountable and those engaged in technical work, research shows (Collier, 2001).

MNCs in underdeveloped nations are often accused of using weak rules, authoritarian regimes, and inadequate environmental rules, avoiding calls for transparency and accountable profitability and short-term advantages (Kolk et al., 1999; Shamir, 2004; Waddock, 2004). The challenge of controlling MNCs' free space and influence is not new: the introduction of International CSR Accountability Norms seems to give fresh perspectives and promise for improved transparency by fostering good behaviour and convergence around shared values (Williams, 2004). 'Power circuits' might be beneficial to provide a more vibrant description of how institutional forces influence organisations and provide a more extensive explanation of changes/reproductions, particularly in organisational contexts, of the rules followed by the institutions (Ribeiro & Scapens, 2006). One of the first theories in social sciences is DOI theory, founded by E.M. Rogers in 1962; in a given demographic or social structure, an idea or a commodity gains popularity and diffuses (or spreads) over time. An in-depth literature review shows that large- and small-scale organisations adopt digitalisation, enabling DOI theory functions. The key to achieving an ecosystem that allows accounting and accountability models, sustainability, waste management practices ultimately leads to achieving the UN 2030 Agenda.

There is no doubt that legitimacy, and institutional theories played a significant role during the evolution of SDGs benchmarking (D'Adamo, 2019). The crossing of functional integration is vital nowadays for the correct declaration of innovative processes, harmonising engineering and economic ventures (Koksharov et al., 2019). According to Boons et al. (2013), radical creativity and innovative market models have to develop the CE paradigm. Bocken et al. (2014) argued that the surplus sources for businesses could be considered lost, ruined, or wasteful. On the contrary, waste sources will deliver value innovation opportunities by new practices and partnerships through catching lost value. Gregson et al. (2015) stated that a recent study has also been undertaken in the EU with conflicting CE social and physical scales to promote creativity to save factory jobs. Comments show a favourable role in linking sustainable development to CE by renewable resources (D'Adamo, 2019).

2.2 Circular economy and waste, accounting, and accountability

The definite dates of 2021 and 2012 raised the urgency, ambition because the CE does not strictly describe what it means; however, this uncertainty and wide range seem to have increased this appeal to date. According to the DOI theory, it gives space to creativity and strengthens dedication to extending, challenging, and disrupting the situation. In conclusion, all the objectives are highlighted by CE programs, which reveal their roots in current activities. Digitalisation will play a key role in harmonising accounting and accountability models, sustainable development, which collectively as an ecosystem will contribute to achieving SDGs adopted under the UN 2030 Agenda. According to Rajput and Singh (2019a, 2019b), The integrated industry 4.0 CE can improve sustainability, reuse and remanufacture goods to evolve technologically, and is more suited to automation and process innovation.

According to The Ellen MacArthur Foundation (2013), CE transformation cannot use only to overlay the linear economic model "take, create, and dispose of", and three concepts are described in this regard by the Ellen MacArthur Foundation; (a) "design out waste and pollution" (b) "keep products and materials in use" (c) "regenerate natural systems". The European Union (EU) approved the 2015 CE Action Plan (European Commission [EC], 2015); in January 2018, there was a "Circular Economy Package" (EC, 2019). In the Implementation Plan, the program itself will be in operation by 2030, "instrumental in achieving the SDGs and objective twelve (12) to achieve sustainable consumption and production patterns" (EC, 2015, p. 3). Accountants who aid organisations through the intricacies of the era and scholarly viewpoints need information. The strong impact of climate change on the world is enormous as food production systems are moving, water strain, biodiversity, and the human population globally are disturbing (Vallero, 2019; Bouten & Hoozée, 2021).

A document entitled "Platform for Accelerating the Circular Economy" (PACE) was issued by the World Economic Forum in 2017, in partnership with many organisations, including the Ellen MacArthur Foundation and the World Resource Institute, to implement CE values on a global scale (Sikdar, 2019). It is observed that a linear economy's pollution harms the environment and human health. Instead, waste introduced into a circular economy that emerges from various processes offers "beneficial artefacts". According to Kirchherr et al. (2017), multiple studies contribute to the conceptualisation of CE. Several contributors have made the following remarks. The first is that CE is not often related to 3R (reduction, reuse, reuse) and waste hierarchy in general but is usually only referred to within the recycling environment. Second, CE is a shift in the status quo and a change to the framework. The third indicates that CE and sustainability are poor because economic growth is considered environmental quality. However, impacts on social justice are not evaluated. Finally, the challenge is the close synchronisation of social and technical characteristics. The end performance will be creating appropriate technologies to process this waste. According to D'Adamo (2019) the CE model is essential to build a close loop cycle as a linear model substitute, argues the author. For this reason, the meaning concept for both the atmosphere and the economy must be illustrated.

2.3 Circular economy and waste, digitalisation and SDG's

According to Mayer et al. (2019), a mass balance approach refers to a broad-filed accounting system for resource transfer. A full range of metrics, calculating size and circularity and closing socioeconomic and environmental loops between the overall material and waste streams are proposed. Jacobi et al. (2018) concluded that it is methodologically possible to integrate multiple data sources into the single CE reporting system, even though it involves technical difficulties in data aggregation and data coverage, and derivative metrics.

According to Okoli and Schabram (2010), today, the information systems (IS) study has virtually unknown the systematic, structured technique for performing an SLR, evolving in health sciences and other areas. CE model can be an advantage for small businesses if they can intervene with the production/sale of green goods while at the same time demonstrating an increasing interest in the brand (De-Juan-Vigaray & Seguí, 2019). Each year, one-third of food provided for human consumption is discarded, mentioned by the UN Food and Agriculture Organisation. The analytical method highlights that the transformation to CE may respond to the local business problem (FAO, 2017). The irony is that one billion people worldwide are still suffering from food scarcity is a cause of immense ethical waste, as scholars and practitioners stress (Ribeiro et al., 2018; World Bank, 2014). Ciulli et al. (2019)

mentioned that sustainability literature has highlighted how to blame emissions and spread food waste across the supply chain. Digital transformation-based platforms enable users to register and share food periodically (Bockel et al., 2020). Six brokerage functions established on food waste platforms: connecting, informing, protecting, mobilising, integrating, and measuring. It is concluded that a new development recently seen in the food and other supply chains of the digital marketplace has helped the recovery of waste by bridging the vacuum of circularity (Ciulli et al., 2019). In terms of measurement and implementation of CE, there are numerous challenges. For instance, Littengerger (2020) concluded that Croatia is the country's paradigm where it must comply considering the EU legislative structure. The application of the waste hierarchy is incomplete, and the handling of waste is over-emphasised.

According to RLI (2015), resource shortage and efficient use are essential concerns for the twenty-first century. One of the challenges is the economic value-creation method, which generally follows the linear economy: the extraction of resources, manufacturing the product, utilising the product, and waste disposal (Andrews, 2015). Although the Dutch Government accepted the 2012 CE transition (Tweede, 2012), circular companies are inconvenienced by liner economy firms, some of which relate to the accounting environment (SER, 2016).

Accounting standards and recommendations must bring, and the accounting experts need to know how to integrate CE into their operations (SER, 2016). There is still a tremendous gap in waste resource quantification in the global economies and tracking these waste resources from scratch to consumable goods with verifiable digital technologies as far as management is concerned. On the other hand, where accounting and accountability play their role, there is still a lack of implantation of accounting standards and low expertise of accountants in these areas, leading to inferior accountability measures. This vicious cycle evolves due to the limitations of linear economies and the slow pace towards the transition of CE. This vicious cycle is the key hurdle in developing an optimised ecosystem to achieve the UN 2030 Agenda. DOI theory reinforces digitalisation with all its segments will open new horizons of innovation to develop an ecosystem where accounting, accountability, sustainable development, and CE&W will be optimised to achieve the goals included in the UN 2030 Agenda (see Fig. 1). It is evident from the reports of international organisations, European institutions, and industry (see Table 1) that it is essential to adapt and implement accounting and accountability models for the smooth transition towards a circular economy and waste.

3 Methodology

A quantitative analysis system is used in this article. Between 2012 and 2021, seventy-eight (78) articles from Scopus and Web of Science (WoS) were gathered for analysis based on research and technique offered in previously published bibliometric studies (Bonilla et al., 2015). In addition, eight (08) reports from international organisations and institutions are also considered to conduct this study. It evaluates articles related to CE, accounting, waste management, digitalisation, and the UN 2030 Agenda. The Scopus and WoS databases were picked as sources based on different abstracts, references, and scientific summaries following established processes (Fink, 2010, 2014, 2019). Content analysis is an investigative technique that uses software to organise comparative samples of multiple documents on the same subject (Krippendorff, 2004; Massaro et al., 2016). According to Elsevier (2020), Scopus is the biggest curated and reviewed abstract and indexing database

Table 1 International organisations and industry reports on CE, accounting and accountability models

Organisation/industry expert	Report title	Topic/related discussion	Year
Ellen Macarthur Foundation	Towards the circular economy-vol. 1 (2013)	The mainstreaming phase will include organising reverse-cycle marketplaces, rethinking taxes, sparking innovation and entrepreneurship, ramping up education, and releasing a more appropriate set of environmental standards and rules, especially regarding correctly accounting for externalities. Due to a wide variety of unaccounted for indirect costs—the so-called "externalities", the system has had difficulty self-correcting. Moreover, regulations in consumer and corporate accountability, accounting, accreditation, and standardisation might assist in swiftly attaining scale. If firms must retire goods before their useful life is over, reconsider the legal and accounting frameworks that necessitate it, and put in place infrastructure to ensure that products retired while still usable are fixed or sold rather than destroyed	2021
European Commission	Report on the implementation of the Circular Economy Action Plan COM (2019) 190 final	It has also been observed that other indicators, such as evaluating material flows in industrial symbiosis and accounting for natural capital, may be used to address some of the gaps in the circular economy	2019
Council For The Environment And Infrastructure (Raad Voor De Leefomgeving En Infrastructure, Rli)	Circular Economy From Wish to Practice	At the moment, efforts are being made to move towards a circular economy. For example, in the Netherlands, construction and demolition waste is created, accounting for about 40% of all garbage. Accounting standards were also developed using the concepts of the linear economy	2015

Table 1 (continued)

Organisation/industry expert	Report title	Topic/related discussion	Year
European Commission	Closing the loop—An EU action plan for the Circular Economy COM(2015) 614 final	The European Union has been granted a particular and ambitious mission to support the transition to a circular economy due to this action plan. Other levels of government, including those in the Member States, regions, towns, and other interested parties, must stay committed. The Commission invites the European Parliament and Council to support and actively engage in the execution of this action plan in collaboration with all relevant stakeholders	2015
Report To SUN IZA (SUN – Stiftungsfonds Für Umweltökonomie Und Nachhaltigkeit Gmbh IZA—Forschungsinstitut Zur Zukunft Der Arbeit Gmbh))	The Circular Economy – An Economic Impact Assessment	Accounting for base-year emissions must be coupled with economic input–output data and environmental satellite reports on sector-specific energy demands and emissions. Technological advancement is like manna from heaven. It's all around you. It is impossible to argue convincingly that technological development is free and will result in higher GDP and economic efficiency improvements, either partial equilibrium accounting or complicated general equilibrium computations. Moreover, unconditional technology forecasting does not quantify the economic cost (e.g. in R&D) or the opportunity cost of achieving certain technical development. Because they presume resource savings on one side while failing to account for resource demands on the other, accounting for base-year emissions must be coupled with economic input–output data and environmental satellite reports on sector-specific energy demands and emissions	2015

Table 1 (continued)

Organisation/industry expert	Report title	Topic/related discussion	Year
European Commission	Roadmap to a Resource Efficient Europe COM(2011) 571 final	Estimation of the economic value of natural capital, as well as support for the incorporation of these values into European and national accounting and reporting systems Environmental economic and social accounting systems, have advanced significantly, but opinions differ on whether indicators should be used, changed, or developed to assist guide better policy or investment decisions	2011
The UN Global Compact	The un global compact: The challenge and the promise	There have been very few big U.S. businesses that have joined, which is an issue. Even while the biggest U.S. businesses are involved in meeting society's legitimate demands, there is concern regarding accountability. Accountability is a problem in four major areas: Assert that globalisation is beneficial to the least fortunate. Second, responsibility indicates that the company's actual behaviour is consistent with its rhetoric. Third, accountability legitimises a two-tiered price system and other measures to assist the poor in developing countries. Fourth, what societal expectations are multinational corporations held accountable for in terms of human rights? To hold them accountable, it would be important to properly assess whether the poor and rising nations have benefitted from economic globalisation. The Global Reporting Initiative's reporting processes, which would allow for verification and monitoring, may represent the best hope for openness and accountability rules (GRI)	2004

Table 1 (continued)

Organisation/industry expert	Report title	Topic/related discussion	Year
The Brundtland Commission, Formerly The World Commission On Environment And Development	Report of the World Commission on Environment and Development: Our Common Future (1987–2008/ A/42/427)	Air, water, and soil are all resources that are not capitalised in business or national accounting and so are not properly accounted for. Economic development, whether in rich or poor countries, must account for changes in natural resource reserves when assessing growth. To fight the extinction catastrophe, governments may incorporate species conservation requirements and possibilities in land use planning and explicit inclusion of their genetic resourcestocks into the national accounting system, recognising that it is a key resource and development concern. Creating a natural-resource accounting system that focuses on species as high-value but undervalued resources may be essential. Transportation is given a major place in national energy and development plans. In most developing nations, it accounts for 50–60% of total petroleum use	1987–2008

for academics, government, and business organisations since 2020. In this context, Scopus has over 24,000 current titles indexed. Scopus has added 820 new publications last year (+3.5% title growth). In addition, 225,000 books and book goods have also been added (+11.7% increase). Scopus added 3.29 million new records (+4.15%) between August 2019 and August 2020. As of August 2020, 79.8 million records are currently in use (Scopus, 2020). The h-index utility that displays an article, author, or journal's quality is also impossible to overlook (Hirsch, 2005). Li et al. (2018) conducted pioneering research on the web of science with the critical focus on database, a scientific study conducted in 1997 and 2017 to uncover the WoS academic usage characteristics in countries/regions. Eugene Garfield's most incredible legacy (Li et al., 2018; Jacso, 2018), WoS Core database specifically includes three classical citation indexes: Expanded Science Citation Index (SCIE), SSCI, and the Arts and Humanities Citation Index Collection (A&HCI). These citation indexes are globally famous and widely preached in academia (Hu et al., 2018; Liu et al., 2020; Tang & Shapira, 2011).

It is necessary to distinguish the shortcomings of architecture for a particular reason from Google Scholar (GS) and the different types of errors made by the search engine (GS) when processing the data. Errors are anomalies from the tool's standard or intended working. On the other hand, limits apply to features that may jeopardise the suitability of an instrument for a specific reason. The list was then processed using VOSviewer software-version 1.6.15 for generating a document with the required networking structure and format (www.vosviewer.com; Van Eck & Waltman, 2014). It is an open-source software used in bibliometric network design and development. A mapping representation of bibliographic data was developed to provide a broader and more precise understanding of the effects of research questions. Moreover, a text-mining feature is supported by VOSviewer. It is used for building networks connected in a body of scientific literature to meaningful terms.

Fig. 1 Theoretical framework on CE&W by adopting digitalisation, accounting and accountability models to achieve SDG'S

The mode of study was split into two phases: first, the extraction and review of the relevant documents and bibliometric analysis. First, the retrieved papers were reviewed based on these parameters: (i) search identification, (ii) data screening, (iii) data eligibility, and (iv) data inclusion. A systematic approach to data collection was provided in Fig. 2; these measures were adopted to ensure that the method was firm. According to Selçuk (2019), a review article analyses, synthesises, and assesses scientific publications and research published in peer-reviewed journals. A systematic approach to a review will eliminate bias and maximise its usefulness since Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) is employed.

During the first component of the research, the two central databases, e.g. Web of Science or Scopus, the principal research recommendations for researchers in the area have been addressed using these tools. At this stage, the timelines were not explicitly applied to gather all the comments on this subject from 2012 to 2021 (default years of WoS and Scopus databases). Instead, the search was carried out with the aid of a truncated combination of nine separate search string classes to classify the related articles:

Group 1 Accounting practices AND circular economy.

Group 2 Accounting practices AND circular economy AND waste.

Group 3 Accountability AND waste management AND circular economy.

Group 4 Accounting practices OR waste management OR circular economy.

Group 5 Waste management AND circular economy AND sustainability AND accounting.

Group 6 Accounting practices AND accountability practices AND circular economy AND waste.

Group 7 Accounting practices OR accountability practices OR circular economy AND waste.

Group 8 Circular economy AND waste AND sustainable development goals AND digital transformation.

Group 9 Digital transformation AND circular economy AND waste.

Fig. 2 Research design and methodology

The number of articles selected from Scopus is one hundred and eighty-seven (187). The second step was to classify the articles involved. After reading the abstracts, we decided on the content of each article to ensure the consistency of the research purpose, emphasised their unique importance in our research. All study authors evaluated and highlighted their essential aspects in the final phase and worked separately. Finally, after extracting outdated publications and duplicates, the writers compared the results and split them into sections to update the literature. Seventy-eight (78) articles were produced in the final list and analysed.

These (78) articles are divided into nine (9) groups named Group 1, Group 2, Group 3, Group 4, Group 5, Group 6, Group 7, Group 8, Group 9, and each group holds a specific number of shortlisted articles respectively (9), (4), (1), (6), (10), (35), (4), (7), (2). The first four (4) groups are focused on answering research question one (RQ1), groups (5), (6), (7) deal with research question two (RQ2), and the last two (2) groups respond to the research question (RQ3). Nine variations are designed to get as many publications on the subject as possible and validate the similarities between the articles analysed in the different study categories. This study is extended to include all CE, accounting, and waste management analyses.

Section 4 explains the bibliometric analysis. The fourth and last phase reviewed each article and highlighted its essential aspects separately from the present authors.

4 Data analysis and results

The quantitative analysis of the selected articles is comprehensive in sub-sections. The number of articles is centred on year, journal, publishing country, business organisations, and authors' contributions; we analysed several publications on the CE interface, accounting, and waste management trends. We used bibliographical information from the databases Scopus, ISI and WoS.

4.1 Bibliometric Aspects of the selected articles

4.1.1 Keyword analysis

After presenting methods, we led to an overview of the keywords. Using the VOS viewer 1.6.15 text-mining routine (Van Eck & Waltman, 2014), the research streams created by this large number of articles are helping us to imagine. In existing bibliometric research, this approach has been checked (Marzi et al., 2017). The text mining process generates a map where the distance between terms is interpreted as a relation between keywords. In conclusion, the shorter the gap between two or more keywords, the more effective the terms associated with each other are. The co-occurrences in the publications were examined to judge the words' relatedness (Van Eck et al., 2014). In particular, the Author Keywords review, comprising those keywords which appear at least twice in the database, was undertaken for this bibliometric study. In addition, we relied on a human selection to verify data dependability, which led to 24 of the 242 keywords considered appropriate for the study. The keywords that could not explain anything on their own (e.g. literature, evaluation, content analysis) were filtered out in Fig. 3. The author's keywords network overview map for the headings is shown the most often used terms for the headlines are highlighted. The word size depends on its presence exclusively in the selected articles in the photo.

Fig. 3 Network visualisation map of the author keywords

As Fig. 3 shows, "CE", "Waste Management", and "Management Accounting Practices", which are at the core of the map, were our study's keywords. These keywords have been used as a constant throughout the research period of our data collection (Zhong, 2012; Olukanni et al., 2013; Wu X., 2014; Corsini, 2015; Iacovidou et al., 2017; Jacobi et al., 2018; Helander et al., 2019; Abraham et al., 2020; Aranda-Usón et al., 2020; Bari et al., 2020; Lin et al., 2020; Mirzaie et al., 2020; Scarpellini, Valero-Gil, et al., 2020; Scarpellini, Marín-Vinuesa, et al., 2020; Taleb and Al Farooque, 2021). The terms CE, waste management, and management accounting practices appeared (Table 2 and Appendix 1).

Based on the bibliometric analysis, the conceptual diagram demonstrated the relationship between keywords (Van Eck & Waltman, 2014). The keywords and the calculation of co-occurrence or co-words are shown in Fig. 3; they also offer some well-known themes in the CE, accounting practices, and sustainable development literature. It is essential to note ex multis in colour matching that, in addition to the words "creativity, employee creativity, and organisational culture", the terms CE, waste management, sustainability, management accounting practices, and sustainable development have a relation. This index of co-occurrences shows how strongly CE is associated with waste management by spreading CE, enhancing CE's understanding. Table 2 shows the top keywords used by several researchers.

4.1.2 Documents and source types

There were (67.95%) article papers containing the most various types of documents in the 78-record sample. This is surprising, followed by conference papers (16.67%). The descriptions of the various kinds of papers can be seen in Table 3.

The most numerous journals were written concerning the source of documents (80.77%). Table 4 includes a comprehensive description of the sources.

Table 2 Top keywords

Author keywords	Frequency	Percent
Circular economy	52	21.49
Waste management	12	4.96
Business models	9	3.72
Sustainability	9	3.72
Sustainable development	6	2.48
Circular business model	5	2.07
Business model	4	1.65
Dynamic capabilities	4	1.65
Environmental management Accounting	3	1.24
Industrial ecology	3	1.24
Recycling	3	1.24
Resource recovery	3	1.24
Sustainable development goals	3	1.24
Cleaner production	2	0.83
Environmental management	2	0.83
Environmental pressure	2	0.83
Industry 4.0	2	0.83
Information technology	2	0.83
Innovation	2	0.83
Management accounting practices	2	0.83
Policy	2	0.83
Solid waste management	2	0.83
Stakeholders	2	0.83
Waste prevention	2	0.83

Total key words = 242

Table 3 Document type

Document type	Frequency	% (N = 78)
Conference paper	13	16.67
Article	53	67.95
Book chapter	02	2.56
Review	04	5.13
Editorial	0	0.00
Article in press	06	7.69
Conference review	0	0.00
Note	0	0.00
Book	0	0.00
Letter	0	0.00
Short survey	0	0.00
Erratum	0	0.00
Total	78	100.00

Table 4 Source Type

Source type	Frequency	% (N=78)
Journals	63	80.77
Conference proceedings	13	16.67
Book series	0	0.00
Books	02	2.56
Trade publications	0	0.00
Total	78	100.00

4.1.3 Year of publications: evolution of published studies

Figure 4 illustrates the evolution of publications on the current subject from 2012 to 2021. CE, waste management, sustainability, and accountability publications have been gradually expanded. In 2012 and 2014, the lowest number of publications was observed, with a persistent rise to 2020 and a sharp increase in 2021. The reason for a sharp decrease in 2021 is the beginning of the year 2021. Trends in the data collected and from the figure suggest the increasing interest of researchers in CE, waste management, sustainability, and management accounting practices. A maximum interest in these topics is observed from 2018, 2019, and 2020, the maximum interest shown. Table 5 shows a detailed list of numerous years in which articles were published.

Fig. 4 Document by year **Table 5** Year of publications

Year	Frequency	% (N=78)	Cumulative percent
2012	2	2.56	2.56
2013	3	3.85	6.41
2014	2	2.56	8.97
2015	3	3.85	12.82
2017	7	8.97	21.79
2018	14	17.95	39.74
2019	21	26.92	66.66
2020	24	30.77	97.43
2021	2	2.56	100.00
Total	78	100.00	

4.1.4 Most active source titles

The most popular and vital journals are mentioned in Table 6, publishing CE, waste management, sustainability, and management accounting practices articles. *Journal of Cleaner Production (JCP)* and *Business Strategy and the Environment* are examples. It presents articles especially important to CE, waste management, sustainability, and management accounting practices. It explores the contributions of CE, waste management, sustainability, and management accounting practices in achieving SDGs of the UN 2030 Agenda (Scarpellini, 2020).

4.1.5 Geographical distribution of publications: the most influential countries

Table 7 presents the percentage of contributions by the top 20 countries in publications written in various countries. Italy (15.38%) is the leading country to publish in the journal, followed by the UK (14.10%) and Germany (11.54%). This data validates that the initial nerve centre was in Italy, the UK, and Germany for CE, waste management, sustainability, and management accounting practices studies. Interestingly, Spain (8.97%) places fourth and fifth China (6.41%) on the table. Italy records a high growth rate and promotes CE, waste management, sustainability, and management accounting practices. That has given rise to many studies focused on CE, waste management, sustainability, and management accounting practices in the context of Italy to determine the causes of the country's continuous growth. At the bottom of the table are Australia, Canada, Finland, France, and Greece, contributing 2.56% to the overall publications. Another important aspect is that fewer studies are available for CE, waste management, sustainability, and management accounting practices from the best countries, such as Canada, the USA, Switzerland, etc. Therefore, the article focused on CE, waste management, sustainability, and management accounting

Table 6 Most active source title

Source title	No. of documents	%
Journal of Cleaner Production	14	36.84
Business Strategy and the Environment	8	21.05
Proceedings of the 26th International Business Information Management Association Conference—Innovation Management and Sustainable Economic Competitive Advantage: From Regional Development to Global Growth, IBIMA 2015	7	18.42
Journal of Industrial Ecology	4	10.53
Resources, Conservation and Recycling	4	10.53
California Management Review	2	5.26
Corporate Social Responsibility and Environmental Management	2	5.26
Economics and Policy of Energy and the Environment	2	5.26
Energy Policy	2	5.26
Environmental Monitoring and Assessment	2	5.26
Journal of Fashion Marketing and Management	2	5.26
Shengtai Xuebao/ Acta Ecologica Sinica	2	5.26
WIT Transactions on Information and Communication Technologies	2	5.26
Central European Business Review	1	2.63

Total source titles = 38

Table 7 Top 20 Countries contributed to the publications

Country	Frequency	% (<i>N</i> = 78)
Italy	12	15.38
United Kingdom	11	14.10
Germany	9	11.54
Spain	7	8.97
China	5	6.41
Sweden	5	6.41
Denmark	4	5.13
Japan	4	5.13
United States	4	5.13
Austria	3	3.85
Brazil	3	3.85
Malaysia	3	3.85
Poland	3	3.85
Russian Federation	3	3.85
Thailand	3	3.85
Australia	2	2.56
Canada	2	2.56
Finland	2	2.56
France	2	2.56
Greece	2	2.56

Total countries = 40

practices that are more common in countries with current needs in waste management to develop an ecosystem for CE to achieve SDGs optimally as the UN 2030 Agenda.

4.1.6 Authorship

Table 8 indicates the number of authors per article. This segment represents the social structure of science mapping, including the conceptual and intellectual structure. It is imperative that more than one author/researcher/scientist is responsible for creating this idea, so this section explains mathematically in percentage contribution of each group

Table 8 Number of author(s) per document

Author count	Frequency	% (<i>N</i> = 78)
1	07	8.97
2	20	25.64
3	15	19.23
4	20	25.64
5	07	8.97
6	06	7.69
8	01	1.28
9	02	2.56
Total	78	100.00

of authors. The maximum number of articles have been written by two and four authors (25.64%), followed by three (19.23%), one and five (8.97%), and six (7.69%), and so on. It can be safely stated that published articles with more than one author appeared to be of higher quality than those written by one author.

Table 9 shows the most productive authors in CE, waste management, sustainability, and management accounting practices. Scarpellini S. (Spain) dominates the table with three documents, followed by Aranda-Usón A. (Spain), Corsini F. (Brazil), Leipold S. (Germany), and till the end with two articles. Interestingly, all these authors are of mixed gender, and all are from developed countries.

Collaboration among diverse researchers is vital for developing any area; consequently, greater cross-national cooperation is essential (Turner & Baker, 2020). Figures 5I, ii and Fig. 6 exhibit the degree of collaboration between researchers with an analytical unit as countries and authors. It is more clearly visible in Fig. 5ii, in which authors have collaborated actively in the past five (5) years. The influential countries in collaborative efforts are Italy, Spain, Germany, and the UK. It offers a powerful network of collaboration across many regions, predominantly European countries, Brazil, the US, China, UAE, and Australia. Scarpellini S., Aranda-Usón A., and Mayer A., Haas W. and Frey M., Corsini F. are the most illustrious. Scarpellini S., Aranda-Usón A. Increased cooperation in research with researchers from various countries. Co-authorship's preference is decided by cultural relationships, geopolitical position, or language (Schubert & Schubert, 2020). This analysis reveals that linguistic and geopolitical similarities are essential to co-authorship decision-making across nations. However, Italy's research articles are the highest, and its scholars are more open to cooperating with their counterparts in other countries.

Table 9 Most productive authors

Author's name	No. of documents	Percentage (%)
Scarpellini S	3	1.28
Aranda-Usón A	2	0.85
Corsini F	2	0.85
Esposito M	2	0.85
Frey M	2	0.85
Gusmerotti N.M	2	0.85
Haas W	2	0.85
Leipold S	2	0.85
Mayer A	2	0.85
Millward-Hopkins J	2	0.85
Pedersen E.R.G	2	0.85
Petit-Boix A	2	0.85
Portillo-Tarragona P	2	0.85
Purnell P	2	0.85
Soufani K	2	0.85
Wiedenhofer D	2	0.85

Total Authors = 234

Fig. 5 **i** Network visualisation map of the co-authorship. Unit of analysis= Authors. Counting method: Fractional counting. Minimum number of documents of an author=2. Minimum number of citations of an author=5. **ii** Network visualisation map of the bibliographic coupling. Unit of analysis= Authors. Counting method: fractional counting. Minimum number of documents of an author=2. Minimum number of citations of an author=13

Fig. 6 Network visualisation map of the co-authorship. Unit of analysis= countries. counting method: fractional counting. Minimum number of documents of a country=2. Minimum number of citations of a country=5

4.1.7 Most influential institutions

Table 10 shows the top influential institutions within CE, waste management, sustainability, accountability, and management accounting practices to achieve a smooth CE transition. With a maximum of two publications. "Hult International Business School, Cambridge, Ma, United States" contributed the maximum number of articles (02)" on second, third, fourth. Till end number "Chair of Societal Transition and Circular Economy, University of Freiburg, Tennenbacher, Germany" "Department of Management Engineering, Division for Quantitative Sustainability Assessment, Technical University of Denmark, Lyngby, Denmark" "Department of Management, Economics and Industrial Engineering, Politecnico Di Milano, Italy" and "Economics Division, Leeds University Business School, University of Leeds, Leeds, UK" produces an equal number of articles (01). Most of the institutions contributed a minimum number of articles (01). However, the most popular article in citations is from "Economics Division, Leeds University Business School, University of Leeds, Leeds, UK". Though, articles from "Economics Division, Leeds University Business School, University of Leeds, Leeds, UK" are not top of the most popular articles.

4.1.8 Citation analysis

A study's influence is beneficial for other researchers (Bornmann et al., 2008). Table 11 presents the citation metrics of the 78 records from the year 2012 to 2021. Approximately ten years, the total number of citations is 717, resulting in 79.67 citations per year and 9.19 citations per article. Citations are intended to indicate that a publication has utilised the contents of several other publications (in the form of others' ideas, research results, etc.); thus, the number of citations applied in research assessment serves as a determiner of the influence of the research (Bornmann & Daniel, 2007).

The most cited authors are shown in Table 12. As can be observed, Iacovidou E., Millward-Hopkins J., Busch J., Purnell P., Velis C.A., Hahladakis J.N., Zwirner O., Brown A. are top the list, with their widely cited article "A pathway to a circular economy: developing a conceptual framework for complex value assessment of resources recovered from waste", which identifies and analyses the CE, waste management, sustainability and management accounting practices in achieving SDGs of UN 2030 Agenda.

4.1.9 Textual exploration

An organised approach was adopted to investigate and display keywords with VOSviewer. A map is developed on the details from the bibliography. The "association strength" is used to standardise the association principles relating to the keywords (Van Eck & Waltman, 2007, p. 2). The Visualisation of Similarities (VoS) approach positions each word on the map graphically (Van Eck & Waltman, 2014). Finally, the VOSviewer algorithm provides different resolution parameters to detect the various clusters. In this case, we nullified and picked 24 keywords. The entire power correlated with co-occurrence correlations with other keywords was determined. Then four distinct clusters of colours (green, red, light brown, and blue) were distinguished.

The co-words or keywords coincidence graphics are seen in Figs. 7I, ii and 8. The structure of ideas or information from the earlier literature is described in the main in Fig. 7I, ii (Hughes et al., 2019). The discovery of words is seen in circles in varying colours and sizes. The circle's size corresponds to the frequency of an apparent term; the greater the

Table 10 Most influential institutions with a minimum of two publications

Institution	Frequency	% (N = 78)	Citations
Hult International Business School, Cambridge, Ma, United States	2	1.18	42
Chair of Societal Transition and Circular Economy, University of Freiburg, Tennenbacher Str. 4, Freiburg I. Br., 79,106, Germany	1	0.59	50
Department of Management Engineering, Division for Quantitative Sustainability Assessment, Technical University of Denmark, Lyngby, Denmark	1	0.59	44
Department of Management, Economics and Industrial Engineering, Politecnico Di Milano, Piazza Leonardo Da Vinci 32, Milan, 20,133, Italy	1	0.59	31
Economics Division, Leeds University Business School, University of Leeds, Leeds, Ls2 9jt, United Kingdom	1	0.59	75
Escp Europe Business School, London, United Kingdom	1	0.59	42
European Commission Directorate-General Joint Research Centre Sustainable Resources Directorate, Ispra, Italy	1	0.59	40
Foiesie Business School, Worcester Polytechnic Institute, 100 Institute Road, Worcester, Ma 01,609–2280, United States	1	0.59	64
German Environment Agency (UBA), Dessau-Roßlau, Germany	1	0.59	40
Harvard University, Cambridge, MA, United States	1	0.59	42
Institute of Social Ecology (Sec), Department of Economics and Social Sciences, University of Natural Resources and Life Sciences (Boku), Vienna, Austria	1	0.59	40
Judge Business School, University of Cambridge, Cambridge, United Kingdom	1	0.59	42
Montpellier Business School, Montpellier Research in Management, 2300, Avenue Des Moulins, Montpellier, Cédex 4, 34,185, France	1	0.59	64
School of Civil Engineering, University of Leeds, Leeds, Ls2 9jt, United Kingdom	1	0.59	75
Sustainability Research Institute, School of Earth and Environment, University of Leeds, Leeds, Ls2 9jt, United Kingdom	1	0.59	75
UFSCAR—Federal University of São Carlos, Department of Industrial Engineering, Rodovia Washington Luiz Km 235, São Carlos, Cep 13,565–905, Brazil	1	0.59	64

Table 11 Citations metrics

Metrics	Data
Publication years	2012–2021
Citation years	09 (2012–2021)
Papers	78
Citations	717
Citations/year	79.67
Citations/paper	9.19
Citations/author	3.06
Papers/author	0.33
Authors/paper	3.00

frequency of summaries and titles (Van Eck et al., 2014). The colours of the circles in the hunt were observed parallel to the numerous clusters. The distance between the circles (i.e. the keywords) is informative: the narrower the distance, the stronger the relation. The combination of the terms and conditions in abstracts and title publications (Van Eck & Waltman, 2014) depends on the number of results. Figure 7i clearly shows a solid relationship between waste management, management, and technology under digital transformation. Figure 3 gave obvious insights into a strong relationship between management accounting practices, waste management, and information technology. This ultimately concludes that digital transformation in all its segments helps achieve the broader outcomes of accounting and accountability of circular economy (Figs. 9, 10).

The description of the articles holds in the table of the appendix, using the subtitles' schematic and the brief intent explanation of each article, by separate columns including policy recommendations, academic and managerial implications. In general, most scientists have examined the consequences for CE, accounting, accountability waste management, sustainability, and management accounting practices in achieving the SDGs of the UN 2030 Agenda (Zhong, 2012; Olukanni et al., 2013; Wu, 2014; Corsini, 2015; Iacovidou et al., 2017; Jacobi et al., 2018; Helander et al., 2019; Abraham et al., 2020; Aranda-Usón et al., 2020; Bari et al., 2020; Lin et al., 2020; Mirzaie et al., 2020; Scarpellini, Valero-Gil, et al., 2020; Scarpellini, Marín-Vinuesa, et al., 2020; Taleb and Al Farooque, 2021).

5 Discussion of results

In response to RQ1, this study found that improved accounting practices can play an essential role in quantification and accountability during the analysis. Accounting and accountability frames tend to align with low carbon or circular economy ideologies due to recirculating capital and preserving their technological importance (Iacovidou et al., 2017, 2018). The need for such decisions to be taken will, by extension, begin to escalate (Guinée et al., 2009), and increase consumer "residues" mechanisms will expand the ties between sectors even more frequently. Furthermore, concerning RQ2, it is highlighted that once CE achieves its optimum level, it will contribute massively to fulfilling the UN 2030 Agenda. According to the results, there are a few studies for the quantification and regulation of CE. It is essential to gain the CE's real benefits by putting tariffs on undesired industries and subsidising those useful for CE. Applying new regulations and digital transformation will yield long-run benefits for society and the environment and contribute to the UN 2030 Agenda.

Table 12 Highly cited articles—most influential papers

No	Authors	Title	Year	Cites	Cites per year
1	Iacovidou E., Millward-Hopkins J., Busch J., Purnell P., Velis C.A., Hahladakis J.N., Zwirner O., Brown A	A pathway to circular economy: Developing a conceptual framework for complex value assessment of resources recovered from waste	2017	75	18.75
2	Jabbour C.J.C., Jabbour A.B.L.D.S., Sarkis J., Filho M.G	Unlocking the circular economy through new business models based on large-scale data: An integrative framework and research agenda	2019	64	32.00
3	Petit-Boix A., Leipold S	Circular economy in cities: Reviewing how environmental research aligns with local practices	2018	50	16.67
4	Stewart R., Niero M	Circular economy in corporate sustainability strategies: A review of corporate sustainability reports in the fast-moving consumer goods sector	2018	44	14.67
5	Esposito M., Tse T., Soufiani K	Introducing a Circular Economy: New Thinking with New Managerial and Policy Implications	2018	42	14.00
6	Mayer A., Haas W., Wiedenhof D., Krausmann F., Nuss P., Blengini G.A	Measuring Progress towards a Circular Economy: A Monitoring Framework for Economy-wide Material Loop Closing in the EU28	2019	40	20.00
7	Rosa P., Sassanelli C., Terzi S	Towards Circular Business Models: A systematic literature review on classification frameworks and archetypes	2019	31	15.50
8	Principato L., Ruini L., Guidi M., Secondi L	Adopting the circular economy approach on food loss and waste: The case of Italian pasta production	2019	25	12.50
9	Rebely P.C.P.W., Costa A.L., Campello C.A.G.B., de Freitas Espinoza D., Neto M.J	Innovative social business of selective waste collection in Brazil: Cleaner production and poverty reduction	2017	24	6.00
10	Fuldauer L.I., Ives M.C., Adshead D., Thacker S., Hall J.W	Participatory planning of the future of waste management in small island developing states to deliver on the Sustainable Development Goals	2019	24	12.00
11	Jacobi N., Haas W., Wiedenhof D., Mayer A	Providing an economy-wide monitoring framework for the circular economy in Austria: Status quo and challenges	2018	21	7.00
12	Frishammar J., Parida V	Circular business model transformation: A roadmap for incumbent firms	2019	19	9.50
13	Burritt R.L., Herzig C., Schaltegger S., Viere T	Diffusion of environmental management accounting for cleaner production: Evidence from some case studies	2019	19	9.50

Table 12 (continued)

No	Authors	Title	Year	Cites	Cites per year
14	Luttenberger L.R	Waste management challenges in transition to circular economy – Case of Croatia	2020	18	18.00
15	Zacho K.O., Mosgaard M., Riisgaard H	Capturing uncaptured values & #x2014; A Danish case study on municipal preparation for reuse and recycling of waste	2018	16	5.33
16	Spósito P., Preka R., Cappellaro F., Cutiaia L	Sharing economy and circular economy. How technology and collaborative consumption innovations boost closing the loop strategies	2017	14	3.50
17	Youssef M.A	Management accounting change in an Egyptian organisation: An institutional analysis	2013	13	1.63
18	Ferasso M., Beliaeva T., Kraus S., Clauss T., Ribeiro-Soriano D	Circular economy business models: The state of research and avenues ahead	2020	11	11.00
19	Singh P., Giacosa E	Cognitive biases of consumers as barriers in transition towards circular economy	2019	11	5.50
20	Prieto-Sandoval V., Jaca C., Santos J., Baumgartner R.J., Ormazabal M	Key strategies, resources, and capabilities for implementing circular economy in industrial small and medium enterprises	2019	11	5.50

Fig. 7 i, ii VOSviewer visualisation of a term co-occurrence network based on title and abstract fields (binary counting)

CE's jurisdiction is vast; therefore, to respond to RQ3, the only adoption of technological change, innovation, and digitalisation can help smooth CE transition and optimum outcomes. According to the DOI theory (Rogers, 2003), adapting digital transformation will help support the accounting and accountability models and play a vital role in achieving a smooth transition towards a CE. This interconnected system will put checks and balances on the incentivised industries and collectively help the UN 2030 Agenda globally.

In Germany, Siemens Inc.'s experience highlights that essential organisations have implemented critical technology improvements and have initiated an inventive approach to cope with dynamic business developments. However, small and medium-sized organisations are unavailable to adjust themselves to technological development. Zaco et al. (2018) explored and suggested that the new demand for a transition to the CE is projected to catch opportunities for generating capital and developing infrastructure. This study seeks to provide

Fig. 8 VOSviewer visualisation of a term co-occurrence network based on title and abstract fields (full counting)

Fig. 9 VOSviewer visualisation of a term co-occurrence network based on abstract fields (binary counting)

further information about waste resources' potential benefits and characteristics. The findings highlight that the current law on waste business would not sufficiently transition to a circular economy. In addition, waste management has to concentrate on value creation and

Fig. 10 VOSviewer visualisation of a term co-occurrence network based on abstract fields (full counting)

better re-utilisation activities focusing on cost-performance. According to innovation and technology theories, there must be incentives for small and medium-sized organisations to adopt new regulations for the successful transition of CE.

Extensive dependence on economic growth has led to numerous environmental issues, including pollution, global warming, and ozone layer loss. Most contend that the root reason for these environmental problems lies in commercial activities (Schaltegger et al., 2016). According to Imperatives (1987), an increasing number of existing organisations are putting environmental issues at the top of the organisation's agenda. According to Kauflin (2017), Siemens is one of the most energy-efficient organisations globally, including US firms Cisco and Johnson & Johnson. These examples depict that it is easier for large-scale organisations to adapt and implement innovations through digitalisation than small-scale organisations. It enables developing an optimised accounting, accountability, and waste management ecosystem to achieve the UN 2030 Agenda.

The existing expansive economic system offers an alternative to rising global environmental pressure, and the CE has gained much attention (Korhonen et al., 2018; Maina et al., 2017). However, others see inconsistencies in the sustainability link (Geissdoerfer et al., 2017). Helander et al. (2019) argued that it is essential to analyse the relationship between environmental pressures and CE. Further, they emphasised CE's necessity and urgency because it is generally established in political and science discussions and is closely related to the SDGs' accomplishment by scientists and politicians. Helander et al. (2019) recommended that CE operations' environmental viability be measured—but not adequately—by a resource-based footprint approach considering significant ecological inputs and outputs. The CE is of academic importance as a transformative and creative economic paradigm concerning government policy, corporations, and customers. (Esposito et al., 2018).

An environmental agenda has driven a waste hierarchy focused on regulation and the taxation of waste and incineration. These taxes make energy disposal cost-effective with most waste forms (with a few exceptions). Ferronato et al. (2019), Good answers are supplied by waste recycling in packaging that overcomes the EU aim of a 55% recycling rate,

where legislation and regulations are passed due to accepting standards from high-income nations that might not be financially feasible.

Frishammar and Parida (2019) found that circular economic theory can provide enormous economic, environmental, and social advantages. Many businesses struggle to transition from linear to circular business models. According to Principato (2018), very few studies adopted the CE viewpoint to analyse food loss and waste (FLW). It is one of the critical social, economic, and environmental challenges eroding the planet's sustainability. Indeed, CE's quantification is crucial and can only be achieved by strict accountability measures.

Stewart and Niero (2018) revealed that the correlation between CE and sustainable growth remains largely ambiguous. The partnership with corporations is the most identifiable. It concludes that accounting frames that endorse market practices and industrial transformations would quickly be established (Millward-Hopkins & Purnell, 2019). As the effects of sustainability strategy on market outcomes become more pronounced over time, comparability between CSR engaged firms and observationally equivalent firms will likely account for CSR matching criteria more systematically than just industry and financial criteria (Durand et al., 2019). This approach will benefit from doing more for less, working quicker, thinking creatively, and incorporating acceptable practices in other branches (Esposito et al., 2018). The CE model will inspire and draw interest among politicians, academics, and practitioners, promoting sustainable growth (Ghisellini et al., 2016).

As a result of a comprehensive literature examination throughout 2012–2021, the three unique issues attempted to identify and explain CE, waste management, and sustainability components. Academic writing benefits from the recognition of these components. It will allow them to speak of intangible aspects, assess their contributions properly to the UN 2030 Agenda, and, ultimately, identify them as part of a seamless transition to CE&W measurable practices.

Hence, three research questions are discussed based on results acquired after analysis. According to Martens et al. (2013), the theoretical framework's scope is based on content analysis, which includes the following key tasks: universe definition and sampling and coding and interpreting findings. Nadae and Carvalho (2019) presented a conceptual model linking the key components, variables, and their interactions are provided to understand better the function of IMS as a driver for sustainability. This study's findings help develop a conceptual framework to understand the smooth transition towards CE while adopting accounting and accountability models. These propositions are developed based on the content analysis of this study and the conceptual framework presented in Fig. 11I, ii. These figures describe the relationship of key variables adopted in this article regarding direct and indirect relationships. Moreover, the width of connecting lines shows how strongly these variables are correlated.

Hence, in the light of RQ1, four propositions suggested based on the relevant literature reviewed.

Proposition (P1) *describes the direct relationship between CE and accounting models; Businesses are adopting standardised procedures and controls as part of the transition to a circular economy, which includes eco-innovative operations and, as a result, a circular business model. When used in a circular model, eco-innovation entails changes to an organisation's environmental management and accounting systems for natural resource management. The theoretical framework's dynamic capabilities propose certification*

Fig. 11 i, ii A conceptual framework for a smooth transition towards CE by implementing accounting and accountability models

standards and other management and environmental accounting methodologies used in eco-innovation and CE (Scarpellini, Valero-Gil, et al., 2020).

Proposition (P2) *is evidence of a direct relationship between CE and accountability models; Based on the dynamic capabilities theoretical approach, various environmental competencies that firms use during this process are investigated. Environmental management systems, corporate social responsibility, reporting and accountability, and other environmental accounting practices are analysed using the same analytical methodology as environmental capabilities influencing a firm's circular scope (CS). The findings suggest*

a connection between a company's CS, environmental accounting procedures, corporate social responsibility (CSR), and accountability. Stakeholder pressure has a mediating effect on a firm's CS (Scarpellini, Marín-Vinuesa, et al., 2020).

Proposition (P3) suggests that CE, accounting, and accountability models are correlated; The environmental capabilities of the CE are linked to its financial performance. The findings support the validity of the investigated concept by giving empirical support for the positive relationships between CS and the variables EMS (Environmental Management System), environmental accounting practices, and other management competencies. Establishing a positive link between ECA (CE environmental capabilities) and CS, as well as demonstrating that when ECA is included in the model as a mediation variable, the positive relationship between ST (Stakeholders) and CS weakens or becomes insignificant (Scarpellini, Marín-Vinuesa, et al., 2020).

Proposition (P4) depicts that waste is directly related to key variables CE, accounting and accountability models. A significant conclusion is that the examined skills impact the CE-related activities taken by enterprises, which enhances organisations' environmental and financial performance in a CE framework. Furthermore, because this connection has not been well investigated for the CE, the function of stakeholders in mediating the CE's introduction into enterprises is a little-explored topic of investigation. Because the criteria that may be used for enterprises are still being developed, measuring an organisation's level of CE is a research area. Firms' CS is established by examining the actions and investments presently being conducted by businesses and are deemed relevant in terms of the CE (Scarpellini, Marín-Vinuesa, et al., 2020).

In the light of RQ2, there are three propositions suggested based on research conducted.

Proposition (P5) suggests a direct relationship between CE and sustainability; different economies often face a slew of sustainability challenges due to their distance, size, reliance on imports, and limited waste absorption capacity. At the end of their useful life, most imported items end up as garbage in dumpsites, resulting in a one-way material flow. The "circular economy" (CE) idea is a potential resource management method for island governments to enhance solid waste management. In a CE, trash is a resource that is constantly cycled through the economy. According to the study, small economies may reduce waste output using circularity measures. Its mission is to push for improved data collection, the adoption of the polluter pays principle, the prohibition of substitutable, problematic materials, and the development of waste management strategies for unsuitable materials (Elgie et al., 2021).

Proposition (P6) suggests a direct link between CE and management; practitioners from various sectors fast recognise circular economy business models as feasible for addressing long-standing ecological challenges such as climate change, biodiversity loss, and rising natural resource scarcity. However, despite increased interest in the potential of circular business models, little is known about the relationships between organisational characteristics and business model generation processes. The model also highlights organisational conditions and management practices that hinder linear BM (business model) replication and, as a result, allow for early CBM (circular-based model) innovation. A collection of assumptions about how organisational transition management should be managed and

what incumbents require to traverse circular business model innovation successfully. The findings serve as a foundation for the current understanding of circular business model transition management and an impetus for further study (Hofmann & Jaeger-Erben 2020).

Proposition (P7) *demonstrate a direct relationship of practices with management and sustainability. Business intelligence (BI) solutions are constantly being created to assist decision-makers at all company levels. These technologies simplify compiling, aggregating, and summarising massive amounts of data. As a result, the business value supplied by these systems grows as they enable increasingly complex analytics, ranging from descriptive analytics to predictive analytics to prescriptive analytics. On the other hand, internal data are frequently used by the majority of businesses. Nevertheless, despite countless references to the value buried in external data in the literature, there are few ways to leverage it. When paired with an operational BI system, the findings show how external data from several external data sources may be used collaboratively to provide descriptive, predictive, and prescriptive analytics (Strand & Syberfeldt, 2020).*

Finally, considering the RQ3, two propositions that are suggested as per the literature shortlisted.

Proposition (P8) *suggests that the transition towards CE is directly related to accounting models but indirectly to accountability models; Small island developing states (SIDS) have unique waste management challenges due to their high per capita infrastructure investment, remoteness, and limited resources resource bases, and reliance on tourism. The lack of comprehensive planning frameworks that take these SIDS components into account has impeded progress towards sustainable waste management. To address this issue, SIDS should develop an integrated system for long-term waste management planning to achieve the United Nations Sustainable Development Goals (SDGs). The modelling of waste infrastructure is linked with multi-level participatory SDGs visioning and back-casting. SDG fulfilment is calculated using a national accounting model for three island-specific waste management portfolios (inaction, circular economy, and technology-led) built through stakeholder back-casting. The findings emphasise the need for waste reduction and re-use strategies that involve island people. Furthermore, participatory techniques based on evidence-based waste management plan design and evaluation may help achieve the aim (Fuldauer et al., 2019).*

Proposition (P9) *suggests a direct relationship between the transition and waste but an indirect relationship with sustainability. During the transition period, the corporation will confront several challenges, including financial, organisational, technological, social, policy-related, market-based, and logistical obstacles. A method was developed to identify policy-related barriers for a supply chain transition to CE and analyse possible consequences for improving a company's corporate environmental performance. The absence of adequate recycling processes to achieve quality in waste management has been the least essential element. In contrast, a lack of attitude and awareness about CE in government institutions has been the most influential. As ways for businesses to improve their corporate environmental performance, the government's perception of CE and the current linear economy, cooperation with nongovernmental organisations (NGOs) and civil actions, the government's vision towards circular principles, circular public procurement, local*

governments in circular policymaking, and awareness of bureaucracy and government were all suggested (Kazancoglu et al., 2021).

Moreover, a cloud of words is presented in Fig. 12 by using Zipf Law to support above mentioned propositions.

5.1 Holistic comparison with past studies

A comparison with other studies of our results is already explained a unique pattern in our findings for the quantification and accountability measures through accounting practices while adopting digital channels (Arjaliès & Mundy, 2013; Cho et al., 2020; Kirchherr et al., 2017; Michelon et al., 2019). There is ample evidence already partially discussed by different scholars; some focused-on technology and quantification, while others concentrated on accountability and regulations. For instance, Tuladhar et al. (2016) designed a model computer for simulating and analysing scenarios of CE; Kauflin (2017) mentioned Siemens is the most energy-efficient company; Elgie et al. (2021) stressed quantitative measurement and assessment of waste management processes; Ciulli et al., (2019) focused on digitalisation. This article provides a unique blend of accounting and accountability for the smooth transition of CE, which ultimately contributes to achieving SDG's 2030. There are numerous articles available for each keyword for different fields of study with a specific set of issues but broader. However, this mix of keywords is unique and difficult to find articles with the same blend. The diversity of topics covered and discussed in this document makes this study unique, with a broader overview of keywords and an optimal portfolio for the keywords used. This study will provide firm grounding to scholars, practitioners, and policymakers to consider the deep linkages of the accounting and accountability model for

Fig. 12 Zipf Law (Cloud of Words)

a smooth transition of CE, ultimately pursuing SDGs. In addition to that, it will open more wide horizons for scholars to think on this initial effort, leading to the development of a new dimension of research.

5.2 Theoretical and practical implications

This study provides a distinctive trend important to a smooth transition to CE and contributes to the UN 2030 Agenda in quantification and transparency in accounting practice. Enhanced organisational, creative, and technical improvements have been introduced to large businesses. On the other hand, SMEs are slow to introduce innovative, systemic, and technical reforms because of lower standards of transparency. The possible start-up costs associated with applying blockchain technology are recognised, while we see that the advantages are likely to surpass the hurdles. It is essential to coordinate the system fitted to customers with industrial businesses to execute the technologies properly. The seamless transformation of CE is generally acknowledged to provide enormous advantages. It can be accomplished using a holistic and collective strategy on an organisation, global, and individual level. Will it be necessary to support preferred approaches and initiatives if unwanted processes are a disincentive to tariffs? The use aspects of CE literature remain under-represented, despite the growing literature on CE. It is necessary to alter the CE framework so that individuals and behaviours become equal and lead to a broader and more sophisticated dialogue on the consumer's role. In terms of cognitive impairment, consumers currently have a small presence in CE literature. Waste perceived as a burden inside the system was regarded as a resource as it became a new revenue stream. Companies recognised new agents or goods as a helpful resource in their production and consumption systems. Corporate leaders must work effectively and quickly on eliminating hurdles to sustainable waste management via the circular use of presently wasteful resources. It is crucial to address the current status of garbage and recycling adequately. The main drivers for this rise are SME's, large corporations, corporate leaders, legal advisors, global leaders, consultants, legislative, public, and non-governmental authorities, non-governmental organisations, and consulting companies.

5.3 Policy recommendation

This study proposes discounts and incentives for those sectors that can contribute to a smooth CE transition and enforce tariffs where possible. It is crucial to quantify the CE and achieve transparency through accounting methods. Training for the phenomena of CE can take place in companies, small to medium-sized organisations. The leadership must interact and guide its subordinates to improve. Digital transformation can provide excellent outcomes for CE quantification and the application of accounting rules. However, the EU and the UN have already established the competence and dynamics of the CE. These giant entities will determine the future of CE and its dynamics by the commitment to CE. Researchers should acknowledge and initiate intelligent discussions, further comprehend, develop, promote and amend the plan via involvement with organisations: improved accountability processes and absence of social and environmental responsibility. Researchers can explore the organisational senses, procedures, components, speeches, and values leading to a lack of accountability for social concerns and ecological challenges by involvement with organisations. A legislative standard for circularity would be the first step in setting the government's circular accounting policy. The construction of a legislative framework for the

circular economy must continue to be encouraged, and society must progressively reach "zero waste". The government can regularly publicise the projected expenditures for environmental damage and waste disposal. It allows tax lawmakers to evaluate whether sectors require additional taxes. It also demands accountants to integrate environmental value factors into their duties.

5.4 Limitations of the study

Various technology and service progress sectors have revealed that reasonable improvements, despite their demonstrated value, take longer than anticipated to attain broad-based adoption. This study explores CE's transition, quantification, and sustainability through digitalisation, accountability, and accounting to establish an ecosystem. Moreover, it is essential to note that the information in Scopus and WoS is updated every day, leading to a variation in the number of quotations and articles (Valenzuela-Fernandez et al., 2019). One of Scopus/WoS restrictions is for articles to be uploaded only if writers or journals (including those in Scopus and WoS) ask. As a result, the accuracy of the datasets from Scopus and WoS is disputed on a specific day.

5.5 Avenues for future research and recommendations

Future experiments can disclose a significant finding of moving to a low-carbon economy and the CE model's correlation with renewable energy use. Moreover, manufacturing shipments (e.g. company creativity, efficiency, and performance) and market shifts (consumer preferences, conduct, and practices), rethinking the concept of waste, conditions, and possibilities, CE strategy analysis, the position of subsidies, and penalties and taxes. Future research will improve understanding of the relationship between circulatory and sustainable economies conceptually, empirically, and through a quantitative assessment of circular practices. Other study topics to address will be whether and how the transition to circularity increases the competitiveness of the industry and its supply chains and the context in which organisations incorporate environmental targets into their agendas. In certain instances, this essay will include a radical contribution for scholars to promote the exploration and extension of CE to future analysis and hypotheses development. Scholars may also use other data and theories to evaluate hypotheses and include different insights and findings for future studies. For example, future studies will investigate how innovations affect circular business dynamics and how the circular economy will adopt disruptive technologies. Other study subjects include integrating industrial 4.0 processing technologies (e.g. 3D printing) into sustainable growth and how companies can integrate intelligent manufacturing with their circular operating models. Additional investigation is necessary when other examples of waste design are explored. Future research should incorporate the generation of professional designers utilising garbage. In addition, researchers and practitioners should further research and promote the institutional component of CE and its relationship to the measurement of sustainable outcomes.

6 Conclusion

This article explores the field of study on accounting and accountability functions for the CE of waste through practices of responsibility and transparency, analysing the contribution of digital transformation to achieving the UN 2030 Agenda. The findings revealed that CE is undoubtedly at the centre of world political discussions because it relates to the SDGs achievement. However, it still sends a solid policy design to support accounting frameworks to measure and quantify operations' environmental feasibility. International financial institutions (IFIs) can be a significant driver in the absence of solid local drivers, e.g. by legislation or by popular public opinion. In this sense, digital transformation's role can foster better reporting of resources, considering ecological inputs and outputs significantly for sustainable growth. Using ICT and IoT enhances waste management systems effectiveness and efficiency, despite technical constraints such as restricted sensors, system complexity, and restricted mechanical technology, which must all be resolved before product creation. According to Adams and Larrinaga (2019), it is crucial to recognise what conservatives use well-established theories and concentrate on criticism rather than tackling environmental issues.

A wide variety of evidence has been examined partly by various researchers, some of whom centred on technologies and quantification. This article will include a specific trend that will be important for a smooth CE transition and lead to the UN 2030 Agenda by quantifying and rendering accounting practice accountable. The circular economy's maximum capacity and advantages must be re-designed under circular economic model development processes, an excellent scenario to support working environments and ambitions in the face of increased demand and natural capital. Material cycle management or new business models in product design are not particularly widespread and come under strategies for large-scale resource-saving. Yet, these techniques are crucial to the strategic revision of a circular economy. This article aligns with Jabour et al. (2019) findings; by 2030, European GDP could rise by 11% if the CE principles extend to various economic sectors (The Ellen MacArthur Foundation, 2015). This analysis aimed to summarise business model patterns and the CE and broaden their current knowledge base by establishing a research objective. We analysed the relations between the key terms using a bibliometric network analysis performed with VOSviewer. It extends beyond the usage of traditional libraries to examine network authors, individuals, and quotes. Using the VOSviewer as a tool for data mining, selected articles, good gaps in a future study may be investigated, and articles identify the key phrases chosen. This process variates from the study of the qualitative and quantitative literature. With additional thorough qualitative literary analysis, it enables the identification of the major groups and their relationship.

Appendix 1: additional data

The supplementary details in this article are as follows:

See Table 13.

Table 13 Appendix I: Literature Review

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2021	Taleb M.A., Al Faroque O	Journal of Cleaner Production	Article	Sustainable development; full cost accounting approach Circular economy;	This article describes that the municipal waste (MW) industry continues to be a critical input for food, emissions, and energy recycling. Various accounting methods and research are examined to identify the most cost appropriate and cost-effective method for sustainable MW management. It is found that research documents demonstrating the lowest waste costs in the prepaid kit scheme according to the volume-based PAYT process	Quantitative Study	Scenario-based Pay-As-You-Throw (PAYT) Full Cost Accounting approach	In Egypt, the GHG decrease per ton tends to be very significant in environmental terms and positively impacts all shareholders	The integrated PAYT system is intended to assist waste managers in implementing PAYT schemes	The proposed PAYT model can fill this void by creating an interconnected system that can help policymakers and waste management implement PAYT schemes
2021	Elgie A.R., Singh S.J., Telesford J.N	Resources, Conservation and Recycling	Article	Solid waste management; Material flow accounting; Circular economy;	This article suggests that island nations' good resource management plan to enhance solid waste management is the 'circular economy' model. The remoteness, scale, import reliance, and restricted absorption potential of small islands are also challenging for the small islands' survival. According to a survey, Grenada created 46,097 tons per day of waste or 1,14 kg per human in 2017	Quantitative Study		In order to enforce the CE, it is necessary to improve data collection. As a result, data collection can be enhanced by (1) collecting on Sundays and public holidays weight data, (2) studying the viability of Dumfries weighbridges installation, and (3) tracking and weighing of materials removed from both sites	In construction programs, but not globally institutionalised, biogas systems were introduced. Therefore, a strategy for managing organic waste, including research on the citizen's expectations and the corporate view of organic waste, is expected	What they do not calculate is not managed by policymakers. Sound data is essential to drive changes to sustainable and circular structures for waste management. We also aimed at quantifying waste materials, mainly plastics, pipes, and motor oil, as issue materials. In addition, we intended to propose realistic and imaginative means of implementation in Grenada of the circular economy

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2020	Umeda Y., Kriagawa K., Hirose Y., Akaho K., Sakai Y., Ohta M	International Journal of Automation Technology	Article	Digital transformation; Industrial policy; Circular economy	The EU Circular Economic strategy will alter the EU market and the center of market competition. The distinction between circular and conventional 3R (reduced, reused, and recycling) strategy is unclear to multiple Japanese manufacturers. Life cycle engineering is technology important for CE development	Qualitative Study	Based on discussions in the Circular Economy Research Group	Companies are proposed that sustainability should be proactively integrated into their core industry	Its composition of double layers, the various attitudes to CEs between European and Japanese firms, and some CE notices are of interest to the Japanese manufacturers	Although ecodesign, process innovations, market strategies and planning, and digital technology are several indispensable to CE development is lifecycle architecture, which synthesizes a sustainable circulation mechanism through the integration of CE technologies
2020	Nikitina B.A	Lecture Notes in Networks and Systems	Book Chapter	Waste management; Circular/sharing economy	Modern Russian society has not yet matured to harness the digitalisation opportunity in full, the article states. Digitisation has provided young people with access to best practices knowledge internationally, the study states. The essay says that the improvement of universities' corporate culture is more critical than waste management optimisation	Book Chapter		CE and SE activities can be marketed to international and financial assistance by virtual community initiators and local authorities	More responsible people's daily lives, geared to advanced activities in the field, promote the growth of sectors in CE that fell away from existing practical and science discourses	Virtual (information) and material networks are essential to establish CE and SE practices in everyday life successfully. The respondents include those who are currently adopting these policies, along with local governments, among those who institutionalise these activities

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2020	Mirzaie S., Thuring M., Allacker K	International Journal of Life Cycle Assessment	Article	End-of-life (EoL) allocation; Product environmental footprint (PEF); Sustainable building Circular footprint formula (CFF)	Internationally agreed-on approaches to measure the environmental effects of buildings are Life Cycle Evaluations (LCA). EN 15,804 + A1 and EN 15978 were compared with the EC commodity environmental footprint system and the CEN criteria. The PEF approach has been developed to capture business reality and accelerate circulareconomy objectives adequately. More prescriptive and meticulous guidance will largely make LCA research equivalent and accurate	Quantitative Study		When applying the methodology, different methodological problems were found. The key reasons are the absence of libraries consistent with all approaches in terms of modeling end-of-life. The incompatibility involved the restructuring of end-of-life data sets and was time-consuming	Therefore, the building industry and the LCI database developers are advised to make efforts to include this shortage of knowledge	It is recommended that the EC PEF system and the CEN guidelines should be more harmonised for end-of-life monitoring with higher levels of detail
2020	Scarpellini S., Valero-Gil J., Moneva J.M., Andreus M	Business Strategy and the Environment	Article	eco-innovation; environmental accounting; circular economy	In eco-innovation, this thesis analyses and tests formal and informal environmental management processes, marks a step towards a circular economy (CE). It explores the relationship between causes and consequences between the "circular eco-innovation" of businesses and environmental capability	Quantitative Study		A circular paradigm eco-innovation involves improvements in the environmental regulation of enterprises and accounting procedures for the management of natural resources	The interrelated topics of the study are market eco-innovation and CE, as eco-innovation means a favourable environmental contribution to the circular business models	It is necessary to study patterns over a longer time and to obtain longitudinal data to illuminate dynamic capacity growth. Companies belong to the European Community

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2020	Aranda-Usón A., Portillo-Tarragona P., Scarpellini S., Llena-Macardilla F	Journal of Cleaner Production	Article	management accounting; Sustainability accounting; Circular economy;	Companies are increasingly implementing circular economy-related practices, from a specific practice to a larger range of activities. These practices do not respond to the rise in material loop closures within the context of the circular economy. The metrics applied to improve the information applied to the environmental accounts for the CE	Quantitative Study	Stakeholders Theory	This thesis aims to fill this void in the measurement, as a topic little discussed in academic literature, of the CE implementation in business from a regional perspective	For all managers responsible for environmental accounting systems for the design and development of climate policy, this integrated measuring mechanism at the territorial level is additional expertise	This coordinated territorial assessment mechanism enables policymakers to assess their environmental planning activities
2020	Scarpellini S., Marín-Vinuesa L.M., Aranda-Usón A., Portillo-Tarragona P	Sustainability Accounting, Management and Policy Journal	Article	Stakeholders; Circular economy; management accounting;	This paper is intended to describe and quantify the environmental capacities applied to enterprises as the circular economy is implemented. A CE requires a transition into a circular, linear economic paradigm to minimise dependency on raw materials and resources. The research indicates that corporations' environmental accounting activities are linked to their CS positively. Sabina Scarpellini states that this research is the first step towards an early inquiry	Quantitative Study		These findings also provide practitioners with insights into internal CE and CSR calculation processes, particularly for SMEs. These can be extended in part, depending on the procedures implemented in each company	A more precise understanding of the implementation of the CE in companies would help policymakers to improve its delivery	Future research should seek to address these constraints and better grasp the complex capabilities that are particularly necessary for implementing the CE. Changes to the business model and the EMA are needed

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2020	Aboulamer A., Soufani K., Esposito M	Thunderbird International Business Review	Article	business models; circular economy; finance	The concept of open markets that immediately accommodate new knowledge on scarcity, demand, and production processes is the foundation of capitalism. Sadly, free markets have collapsed, and the Gulf oil crisis environmental list BP is a clear example of tobacco health's challenge	Qualitative Study		Governments, particularly in Europe, have taken the lead and begun to enact legislation for a targeted circular economy. Still, the importance of the circular business model must be understood by private capital	In the last few decades, the approach to spending and creating profit has shifted. Investors expect a three-dimension business model, in which, in addition to financial consequences, social and environmental considerations are taken into account. But in the distribution of funding, the financial factor will still play an important part	The financial importance and the uncertainties for the company's value should not be ignored by a stable and competitive circular business model
2020	Msooni M.P., Ngibe M., Bingwa L.L	Problems and Perspectives in Management	Review	Innovation; Sustainability; Small businesses;	It was encouraged to implement Management Accounting Standards (MAPs) for having a positive administrative and policy effect on large corporations. Lack of owner-manager knowledge and preparation, and a lack of expertise, played a role in shaping MAP incorporation as a creative technique	Review Quantitative Study		It claims that investing capital into small and medium-sized companies without adequate incubation could be a source of failure and eventually lead to premature termination of companies	It is advised that SMEs give priority to the widespread use of MAPs irrespective of their age or years of business experience. The reason is that MAPs can be integrated quickly and implemented into the company with transformations	The research further considers the use of technology and MAPs to be essential strategic instruments for promoting fast innovation and competitive benefits. It is projected to have a favourable and sustained effect on business innovation and its sustainable growth

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2020	Hofmann F., Jaeger-Erben M	Business Strategy and the Environment	Article	transition management circular economy; sustainability innovation;	Circular market models may help address current ecological challenges such as climate change, the depletion of biodiversity, and the increasing shortage of natural resources. Despite a rising emphasis on circular business model opportunities, there is an under-exploration of relations between organisations' operational facets and their business models	Mixed Study	Grounded Theory	The model also shows organisational and management strategies which prevent linear BMs from replicating and allow initial moves towards CBM innovation	This paper includes a series of proposals on the configuration and requirements for the efficient navigation of the circular business model innovation by corporate change management	The results offer a basis for an interpretation of the change management of the circular business models while driving forward analysis
2020	Whalen C.J., Whalen K.A	Journal of Economic Issues	Article	public policy; business models; circular economy;	The growing number of academics and practitioners has, in recent decades, declined to embrace the traditional, "linear" interpretation of the economic activity. Many business models influence this modern outlook. Our critique, however, shows that many	Qualitative Study		A higher level of productivity that emphasises the value of biodiversity should be encouraged by public policies, says CE scientist. He says that this conception then has to form a detailed political plan	Humanity should tackle the economic and environmental problems of the earth. In our overarching approach, we find means of using sensitive CBMs. We must be aware that business models of this kind are not a remedy	Achieving the sustainability aim associated with the CE perspective requires more than firms. The different yardstick is what institutional economists call "higher efficiency", and the vantage point must be that of the public sector. Only through collective action can we channel business and consumer decisions in directions that reduce environmental harm

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2020	Strand M., Syberfeldt A	Journal of Decision Systems	Article	decision-support system; waste management; Business intelligence;	Most organisations mainly use domestic info. Despite various literature references to the meaning concealed in external records, there is little information about how it can be used. We discuss the findings of a comprehensive case analysis by a government-owned waste treatment firm in this article	Quantitative Study		This paper provides information about one of BI practitioners' critical problems, i.e. predictive analysis. It gives explanations of various methodological principles at multiple levels of the organisation	The findings also encourage businesses to use external data more effectively in their BI solutions. Our results will help your argument as to how positive external data can be integrated for data providers	How routing plans and fleet investment are carried out, the authoritarian characteristics allowed for complete reform. The organisation's former seasoned decision-making culture is being turned into a culture of decision-making centered on results
2020	Kazancoglu I., Sagnak M., Kumar Mangla S., Kazancoglu Y	Business Strategy and the Environment	Article	corporate environmental management; supply chain management; circular economy	Values are produced via the shut-down processes, reverse logistics, product cycle management, and clean output during the transition to the circular economy (SE). The most critical obstacles have been found a lack of efficient CE regulation, a lack of obligatory standards and duties for farmers or manufacturers, and government funding for green policies. The guidelines for the enhancement of the environmental performance of enterprises were created	Quantitative Study		Future research will focus on assessing barriers to their priorities and interdependencies through various decision-making techniques and further establishing crucial consequences for overcoming the barriers	Other obstacles like economic, corporate, technology-driven, social, regulation, market-based and logistic barriers can be identified as significant obstacles for the textile industry	Different sectors can identify a wide range of policy obstacles depending on their demands and considerations

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2020	Ferauso M., Belaieva T., Kraus S., Claus T., Ribeiro- Sotiano D	Business Strategy and the Environment	Article	circular business model; network analysis; bibliometrics;	This thesis discusses how the circular economy and market models in the existing literature are linked. The Scopus, Science Web, and ScienceDirect scientific databases have been retrieved for 253 journals. The papers have been analysed using network analysis concepts, and main words have been maps into a network	Quantitative Study		His findings described hot topics and offered information on his emerging research topics and white spots. This is expected to contribute to stimulating further research	The findings also highlighted various emerging issues, such as business models' management, supply-side, demand-side, networking, efficiency, and meaning	In particular, taxonomy has been established of management management-level implementation techniques for a circular economy that has consequences for managers to achieve higher ring levels
2020	Daño F., Drábik P., Hampláková E	Central European Business Review	Article	textiles and apparel sector; circular economy;	A circular economy is known as a green economy, which tries to retain the best demand for goods and resources. The garment and apparel industry is the fastest-growing market. Slovakia faces the same challenge as an EU Member State	Quantitative Study	Grounded Theory Method (GTM)	The transition to a revolving business model needs enough room to be implemented. Experts agree that the lack of funding and coordination between all interested players is critical for progress	Business people and managers from the sector involved would enable them to recognise market opportunities in the current businessmodel	Favouring those benefits/benefits to others should be given preference. This includes the proposals and resources required for implementing quality legislation
2020	Wiesmeth H., Stauduberts N V	Economy of Region	Article	Waste prevention; Waste utilization; Circular economy;	In recent years there have been changes to Russian regulations that have resulted in increased volumes of urban solid waste (MSW) and environmental destruction. The key aim is to eliminate waste disposals, enhance usage, and implement the concept of expanded producer liability (EPR)	Qualitative Study	Research-Based View	Strengthening these principles is necessary, and the government must implement an appropriate mechanism. It is not always possible to do, and if private organisations are to participate, they must regulate their operations	MSW does not cover these operations, and the authors propose that their regulatory inclusion be taken into consideration	These first steps must be learned, and the EPR method developed to incorporate a waste hierarchy, which is an integral aspect of any plan for creating a circular economy

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2020	Rovanto I.K., Bask A	Business Strategy and the Environment	Article	circular business model; natives and adopters; sustainable development	This research aims to conceptualise a viable circular business model (CBM). The study used a three-tier structure adapted from literature on the circulatory economy (CE). The study emphasises two major claims: organisational mechanisms developed and economic will prevented adopters	Qualitative Study	CBM Theory	In the future, research is recommended that concentrates individually on the three levels of CE implementation, especially at the social level	Adopters and new natives will take a structural perspective from the observations. Speaking about CE problems will be a means of reaching society with every organisation adopting a CE	The findings will be helpful to decision-makers and the community to understand various locations of locals better
2020	Khodajit J.D., Christopoulos D	Worldwide Hospitality and Tourism Themes	Article	Triple Bottom Line; Circular Economy; Sustainable Development Goals	TEMES Ltd. And two leading hotel companies in Greece are Grecotel Hotels and Resorts. The authors analysed the role played in the industry by the UN Sustainable Development Goals. The three-fold bottom line and the circular economy were both analysed	Qualitative Study		Greece is far from achieving effective, sustainable growth. Hotel corporations are increasingly emphasising their sustainability	Through individual government commitments to the UN SDGs, governments around the world play an essential part. The local economic model changes as businesses invest in these countries	UN SDGs can be a guide path for a smooth transition towards a circular economy
2020	Khan O., Daddi T., Iraldo F	Corporate Social Responsibility and Environmental Management	Article	organisational performance; circular dynamic environment; dynamic capabilities	An intricate circular ecosystem (CDE) may be an opportunity for businesses to adopt CE. We find that the survey and underlying operational operations of 220 companies in Italy have been evaluated utilising partially the smallest square structural equation modelling (PLS-SEM) DCs and make CE execution considerably simpler	Quantitative Study		Such relationships can be modulated or not by CDE: (a) CDs or CE application, and (b) DCs and total output. Future studies may investigate. Finally, it would be beneficial for a comprehensive observational analysis on how DCs contribute to CE use	In order to recognise and achieve CE prospects, we strongly propose businesses have to aspire to improve and implement sensing, to seize, and reconfiguring abilities	Company management should identify CE goals, assign the human and financial capital needed to achieve these CE goals, and include all stakeholders

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2020	Dagilene L., Frenzel M., Suteene K., Wunk-Pel T	Journal of Cleaner Production	Article	Neo-institutional theory; Circular economy; Sustainability reporting	In order to overcome waste, the Circular Economy encourages elimination, recycling, and recuperation. Manufacturing firms aim by representing systemic reasoning to legitimise their status and behaviour. By enhancing data on CE, production firms, owners, workers, and society will achieve more credibility	Mixed Study	Neo-institutional theory	In addition, experiments in the form of case studies will provide a greater view of how and when businesses use environmental KPIs. These drawbacks are grounds for more qualitative research	It may be helpful for businesses and consumers to apply environmental standards or best practices (the company provides the information, which is helpful for stakeholders and in the form of improving comparability)	For decision-making systems, the outcomes obtained may be implemented. In the studied firms, practitioners should compare the current CE environmental monitoring profiles
2020	Rajput S., Singh S.P	Journal of Cleaner Production	Article	Ethical business; Industry 4.0; Circular economy; Energy consumption;	The manufacturing sector is backward due to the high cost and high energy demand induced by uncertain market conditions or the inclusion of smart, all-encompassing components. To boost the circular economy and a cleaner output by improving the product allocation, the paper proposes a mixed-integer linear programming (MILP) model	Qualitative Study		With carbon constraints, economic and sustainable characteristics, the model can be further expanded. The quantitative synergistic may also be used	The proposed model seeks to lead to the achievement by optimum assignment of products in the Industry4.0 environment of the CE and healthier processing	The proposed Industry 4.0 statistical model is a new effort to cover CE and safer manufacturing. The efficient allocation of products by computer ethically reduces the energy demand by computers

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2020	Djou A., Mallat C., Chammas G., Cerantola N., Kaved S., Saliba N.A	Journal of Cleaner Production	Article	Wine sector; Business model; Circular economy;	This paper proposes Ecomcavias as a mechanism assisted by a methodology that allows organisations to devise ideas for circular meaning regularly. The method is useful to reconsider biodiversity and to personalise circular economies. We add to the discourse on the literature on sustainable growth and business model	Qualitative Study		As a methodological answer to the lack of interaction between business and sustainability, the thesis suggests an instrument that tackles the shortcomings of philosophical approaches both to sustainability and the circular economy	As a methodological answer to the lack of interaction between business and sustainability, the thesis suggests an instrument that tackles the shortcomings of philosophical approaches both to sustainability and the circular economy	This study contributes to sustainable, circular, and environmental policy studies literature
2020	Luttenberger L.R	Journal of Cleaner Production	Review	Waste management; Biowaste; Marine litter	In Croatia, waste management needs major reform in order to fulfill circular economy requirements. There is no clear goal in Croatia. The model can be seen in other transitional countries and in those that already focus on waste management	Review	Croatia and other countries in the Mediterranean should incorporate urban waste treatment in a systemic manner. A sankey diagram should be created for individual countries with respect to biowaste and other material flows	To meet its foreign commitments, Croatia should begin and accelerate its transition to a circular economy	Public bodies should use the green public procurement instrument to encourage local food and tap water access and consumption	

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2020	Kurniawan T.A., Avtar R., Singh D., Xue W., Dzurfan Othman M.H., Hwang G.H., Iswanto L., Albadarin A.B., Kern A.O	Journal of Cleaner Production	Review	Resource recovery; Zero-waste; Circular economy; Polluters pay principle;	The unchecked development of urban solid waste has forced Indonesia to confront environmental problems. In the sense of community-based solid waste management, the village of Sukunan (Yogyakarta, Indonesia) supports waste reduction in services. The urban group is mobilising for waste (organic and non-organic) separation and waste recycling	Review		The high population density of the region and rapid industrialisation have been due to MSWM problems in Jakarta. They have not been a government priority since	The taxation of a direct tax on the production of waste by the manufacturers is also effective. The tax could be used in Indonesia to develop the recycling industry, comprehensive waste management, and training tools	Countries must have economic tools, the rule of law compliance, and resource recovery programs as core factors in policy areas
2020	Massaro M., Secinaro S., Dal Mas F., Brescia V., Calandra D	Business Strategy and the Environment	Article	waste management; business models; circular economy;	Students see how the effect of Business 4.0 on the circular economy is going to take place. It will improve waste management and facilitate the reconstruction of vital resources, including water, electricity, gas and carbon dioxide, and improved production	Quantitative Study		The legitimacy theory, coproduction theory, and participatory architecture are the basis of new study sources. These elements help to decrease the divide between academics, say the writers	We have seen that, from the realistic perspective, the overall debate primarily concerns the use of intelligent resources in waste management, resource utilisation and cooperation, emerging market models, and the purpose of businesses	A study that focuses on all realities individually could have been left out of the notion of mixing clinical and technical outlets

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2019	Helander H., Péit-Box A., Leipold S., Bringezn S	Journal of Industrial Ecology	Article	environmental pressure; sustainable resource use; socio-economic metabolism;	Science proposes a set of metrics for tracking and assessing practices of the circular economy. We demonstrate that many metrics do not capture environmental pressures associated with their CE operations. We recommend a resource-based footprint approach that takes into consideration significant environmental inputs and outputs	Qualitative Study		Simultaneously, investigators have shown that burden shifts are at risk and that CE operations are not contributing to reduced environmental pressures	In environmental protection, the recommended metrics need to be complemented by environmental constraints interventions to ensure that the imposed CE operation contributes	Many scientists call for sustainable development back to CE, claim writers. The actual exchange is a move with complete details
2019	Principato L., Ruini L., Guidi M., Secondi L	Resources, Conservation and Recycling	Article	Pasta production; Agri-food chain; Food supply chain;	FLW mitigation systems were developed in 2017 by just 20 percent of the world's 50 biggest food corporations. There is a saving of 14 dollars in running expenses for any dollar spent in FLW reduction. An analysis would measure the FLW in the supply chain for the first time	Quantitative Study	Evidence-Based Theory	Other supply chains, such as animal feed or energy generation, says the CE, should be based on research	Quantifying waste from agriculture and agro-industry will help reduce our existing reliance	Policymakers and companies should base their attention on the achievement of the outcomes of observational studies
2019	Mayer A., Haas W., Wiedenhofer D., Krausmann F., Nuss P., Blengini G.A	Journal of Industrial Ecology	Article	secondary materials; circular waste management	Politicians, businesses, and academia are gradually paying attention to the idea of a circular economy. We are providing a method to test a CE straightforwardly and economically. We observed that 7.4 Gt of secondary products, just 0.71 Gt of secondary products, were processed in the EU	Qualitative Study		These enhancements make it possible not only to understand the degree of circularity better but also to the consistency	All of this requires reporting systems to include benchmarks for evaluating ties between a CE and sustainable targets at all levels	Over and beyond the political sector, an essential element is well-attended joint action by politicians with businesses

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2019	Faraca G., Astrup T	Waste Management	Article	Sampling: Circular economy; Material flow analysis;	We know nothing about the detailed features and how they will impact the disposal of plastic waste. Strong plastic, plastic film, and PVC waste obtained in three Danish recycling centres are characterised in this research. For hard plastics, the average recycling capacity was 52%, for plastic films 59%, and for PVC waste 79%	Quantitative Study		Based on the results from this study, more in-depth assessment studies should be carried in the future	Present facilities have measured their recycling potentials to be about 50%. The highest possible recycling efficiency was observed for food packaging plastics. Car, car,	Plastic waste appears to comprise many products with different physical, chemical, and technical characteristics
2019	Millward-Hopkins J., Punell P	Energy Policy	Article	Carbon accounting; Resource recovery; Circular economy	The majority of wood pellets used for the manufacture of electricity are wood waste. Many individuals who otherwise firmly condemn the industry deem this practice appropriate. We want to stress that it should be explicitly challenged because waste-wood is a waste, its carbon-neutral credentials. Then we look at a parallel growth in the same manufacturing structure	Qualitative Study		There are also no apparent implications of using residues of the sawmill for manufacturing pellets of wood. This residue will appear very poor in carbon as it was burned in enormous 'wigwams'	The way pollutants are assigned is not driven by empirical data but is influenced by the needs of the business	But we hope we have delivered a real-world review of how emission-responsibility policies should change in light of emerging developments under low carbon and circular economic agendas

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2019	Dounavis A.S., Kafatis P., Ntanos N	Global Nest Journal	Article	Western Macedonia; Circular economy; Online platform	Industrial symbiosis arises in situations where the advantages of two or more sectors and the circular economy grow. A European LIFE M3P project will be developed, which is still in progress and finishes at the end of September 2019	Quantitative Study		The efforts will concentrate on two priorities: Environmental protection, clean transport, and public infrastructure promotion, and local economic strengthening	All of the project activities would provide a quantified outcome of 1.1 Web platform (M3P), built by at least ten small and medium enterprises in the four manufacturing districts and applied under real operating conditions	Below are the key objectives and scopes for industrial symbiosis and the circular economy: Priority is given to the sorting of materials at the source so that autonomous management processes are then taken into account in the valuing of MSW
2019	Svensson N., Funck E.K	Journal of Cleaner Production	Article	Circular strategy; Circular economy; Management control	The role of management controls in the promotion of sustainability has been illustrated with cynicism. This paper examines how businesses operate in the circular economy and how management regulation adjusts to the company model. It recognises the significance of the dissemination of circular principles of cultural influence and long-term planning	Quantitative Study		The results show that it is necessary to improve product design, procurement, and manufacturing phases as CE is implemented and applied regardless of the intentions or circular techniques used	This study shows how circulatory work continues to focus the attention of the organisations, regardless of what circular approaches are used, on the early phases of the product life cycle	Public organisations, on the level of micro or macro, prefer to promote CE growth
2019	Forster E.J., Healey J.R., Dymond C.C., Newman G., Davies G., Styles D	IOP Conference Series: Earth and Environmental Science	Article	construction; sustainability; Sustainable development; Economics; Forestry; Gas emissions;	We intend to show institutions' position in improving or hindering the idea of CE. It is found that Advanced recycling technologies could supply up to 80%	Qualitative Study		The values of social and cooperation occupy the CE vacuum, which would otherwise be inefficient	The SSE operates at the local or provincial level, putting together joint efforts and encouraging political engagement in economic activities	By putting people above benefit, the SSE explicitly explains its belief system for fairer working practices and participatory decision-making and seeks to achieve social welfare and the general democratisation of the economy

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Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2019	Ahmad N., Rababany M.G., Ali S.M	International Journal of Manpower	Article	Organisational and human factors; Circular economy; Environmental sustainability	In a—economy, the study discusses the issues facing ISO 20000 IT service management standard. The most critical obstacle in effectively integrating IT Service Management Systems was senior management assistance. Other challenges included justifying considerable investment, premium customer service, collaboration and communication between IT support teams	Qualitative Study		Interviews with a diverse spectrum of stakeholders should be done in the future to broaden this analysis and achieve a broader perspective	In order to tackle sustainability and circulating economies in their organisations through knowledge generation and processing, IT managers are recommended to take suitable HRM initiatives	Planning organisations for ISO 20000 should consider carefully all of the issues found in this report and take steps to address those challenges. Training, literacy, and proper preparation will overcome these problems
2019	Pedersen E.R.G., Earley R., Andersen K.R	Journal of Fashion Marketing and Management	Article	Sustainability; Business models; Circular economy	Recently, circular market models were launched to balance business needs as a potential panacea. Solutions in the circular economy rely on many stakeholders' commitment to business models. Mode businesses interested in the circular economy would ultimately replenish traditional value approaches	Qualitative Study		The Service Shirt represents a design and practical solution	This article argues that the design of diverse combinations of business models and their ability to revitalise the circular economy should be emphasised in study and practice	The designer and practical strategy offered by Service Shirt provides new ways to analyse and address the future of circular business models in a time frame that is very distinct from existing linear business models

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Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2019	Kant Hvass K., Pedersen E.R.G	Journal of Fashion Marketing and Management	Article	Textile reuse and recycling; Circular economy; Product take-back	In designing circular business models, apparel companies must face numerous obstacles. An analysis reveals new insights into the real cyclical mode process	Quantitative Study		Findings from this study can be extended to a wider variety of strategies for the circular economy. Further analysis is needed. Both phases of a product's life cycle can concentrate on future research. We propose a more thorough analysis of broader social aspects	The creativity of the business model affects many building blocks of a business model and several phases in the value network of the value chain and stakeholders	Innovation and associated systemic reform, transformations of the value proposition, bring about the transition to the circular economy
2019	Jabbar C.J.C., Jabbar A.B.L.D.S., Sarkis J., Filho M.G	Technological Forecasting and Social Change	Article	Sustainable operations; Circular economy; Sustainability	The convergence of the circular economy (CE) and large-scale (LD), also known as large data, is seen by this work. For researchers, professionals, administrators, and politicians, the proposed integrative paradigm offers social-technically sound perspectives	Qualitative Study	Stakeholders Theory	Innovation and associated systemic reform, value proposition, bring about the transition to the circular economy	Industrial sustainability involves a new view of how knowledge is gathered and exchanged by stakeholders in the supply chain	In this research, the methodology suggested could guide future research innovations such as sustainable operations, the philosophy of stakeholders, LD administration, and CE policies
2019	Singh P., Giacosa E	Management Decision	Article	Cognitive biases; Circular economy; Consumer perspective	Owing to their visual impairments, customers have a poor relationship with the numerous circular market models. Circular market models do not address the psychological, social, and cultural needs of the customer. In the CE study, this paper provides a shift to a constructive approach to market conceptualisation	Qualitative Study	Research-Based View	In future studies, the ethical issues to be addressed in relation to the consumer-centered approach in the CE transformation can be focused on	This paper finds it urgent to change how the CE is structured to make it more inclusive for individuals	This paper gives insight into the effect of these cognitive prejudices at various stages when formulating a plan aimed at changing customer behaviour

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Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2019	Frishammar J., Parida V	California Management Review	Article	Manufacturing; Circular economy; Sustainability	Manufacturers also have difficulty converting linear market models into circular ones. Measures to effectively transform are also little known. This essay provides a blueprint for the transformation of the circular business model	Case Study		Challenges in the business model are linked to the creation and establishment of the current sales model	Management and business had to deal closely in the implementation of processes and capabilities	The results of the circular economy entail increased use of materials, efficient repairs, and a decrease in the overall demand for vehicles
2019	Tangwanichapong S., Logan M., Visuvanathan C	Circular Economy: Global Perspective	Book Chapter	Policy; Circular economy; Packaging waste,	This chapter explores the status of the circular (CE) economy in Thailand. The presentation will be made of existing CE procedures and policy tools used in Thailand for sustainable resource management. The latest circular economy practice was tested to use packaging waste in Thailand as a case study	Book Chapter		Consumers have favourable attitudes to the role of CE activities in improved resource waste management. The role of the government in fostering green purchases and greener development is small	CE indicators mainly based on 3R concepts are currently being developed. It is advisable to take account of other sub-sections of CE as well	In order to encourage consumers to follow new consumption habits in favour of CE, environmental education is required. Instruments for the economy and regulation are needed
2019	Koksharov V., Starodubets N., Ponomareva M	WSEAS Transactions on Business and Economics	Article	Investment projects; Circular economy; Small cycles	In this respect, the adoption of the business model for the circular economy in an organisation is a crucial consideration for increasing the country's productivity and ensuring sustainable economic development. An undertaking has a significant effect on the circular economy growth through its energy conservation and energy savings	Qualitative Study		These limits may be resolved by methodological instruments suggested by authors in the paper, which provide for a direct calculation of the significance of circular economy for companies	An appraisal characterises the stage of growth of the company's circular economy	The lack of accounting and including external considerations are a significant deficiency in developing and appraising a company's energy policies

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Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2019	Prieto-Sandoval V., Jaca C., Santos J., Baumgartner R.J., Ormazabal M	Corporate Social Responsibility and Environmental Management	Article	SMEs; circular economy; environmental management	As a framework for building a prosperous environment, small and medium-sized businesses are central players in adopting the circular economy (CE). SMEs must build these main techniques to obtain a strategic advantage in order to promote eco-innovation	Mixed Study	Industrial Symbiosis Theory	A valuable strategic approach in this area is to devise training strategies that help people migrate to jobs and activities consistent with the company's movement to CE	Education in the environmental awareness needed should be given to employees	Further analysis is required to understand the organisations' diverse abilities better
2019	Termeer C.J.A.M., Metz T.A.P	Journal of Cleaner Production	Article		Global governments strive to step up the transition to a circular economies. Concrete outcomes from profound and modest improvements define limited incomes. In the long run, these little wins will be compounded and accumulated by non-linear processes into transformative improvements	Qualitative Study		Which offers more supportive, efficient, and scalable strategic interventions than other recent studies provide	This needs the leadership to refrain from organising to monitoring and deal with the seeds of transition	The methodology shall be applied by operation of the main principles in tables with characteristics and metrics for analysis and policy activities

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Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2019	Burritt R.L., Herzog C., Schaltegger S., Viere T	Journal of Cleaner Production	Article	Temporal paths of development; Diffusion of innovation; Environmental management accounting	A collection of instruments was provided to support management in making informed cleaner production decisions—environmental management accounting. The diffusion of innovation theory drives the mechanisms of environmental sustainability accounting application	Qualitative Study		Research is required in other industries, sectors, and countries to explore the paths of EMA growth. Via this wider study, small and large companies may differentiate themselves	These cases mean that managers begin with one or more resources and then increase their knowledge base. You then use more methods as they surface	Either parallel to or after the initial data collection, environmental and monetary information was required. No organisation has requested only monetary or physical details within its EMA routes. This highlights the terms such as ecoefficiency and resource efficiency have practical relevance. It reveals possible vulnerabilities in traditional accounts
2019	Rosa P., Sansanelli C., Terzi S	Journal of Cleaner Production	Review	Literature review; Circular Business Models; Circular economy	This paper suggests a systematic analysis of the latest Circular Business Models (CBM). A total of 283 publications relating to the CBMs, describing five archetypes, nine methodologies, five problems related to implementation, four decision-making methods, and three new study fields, have been evaluated carefully in depth	Review Quantitative Study		Six other dimensions advise researchers and practitioners: i) best practices and resources to promote CBMs' implementation, ii) obstacles for them to implement, and iii) creative lifecycle evaluation and circularity calculation efficiency	Aspects that call for additional investigation have thus been identified, in particular, for the more efficient transition from linear to CBMs: i) best practice has been developed for manufacturers to help manufacturers approach CE effectively	More studies involving industries should be undertaken to understand better the kind and advantages of companies of which PSSs or CBM archetypes can contribute better to the implementation and implementation of CE

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Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2019	Fuldauer L.I., Ives M.C., Adshhead D., Thacker S., Hall J.W	Journal of Cleaner Production	Article	Strategic planning; Uncertainty; Waste management; Sustainable development goals;	Due to their high per capita cost of sanitation, remoteness, restricted resource base, and high reliance on tourism, waste management is especially difficult for Small Island Developing States. This paper provides an integrated approach to meet the UN Sustainable Development Targets for long-term waste management planning	Qualitative Study		Future analysis will assess technique on and around other SDS. Infrastructure will affect 72 percent of SDG goals	The suggested approach allows policymakers to assess the results of the decisions before agreeing to them rather than proposing accurate alternatives. A long-term strategy will also help make waste investments adaptive	This strategy will build trust that infrastructure capabilities can meet demand effectively in the future
2018	Jacobi N., Haas W., Wiedenhofer D., Mayer A	Resources, Conservation and Recycling	Article	Sustainability; Circular economy; indicators; Waste and emissions	In business, policy, and academia, the idea of circular economies (CE) is gathering traction. EU reform package involving a transition between the Member States from linear-to circular output cycles before 2050. A circular economy can help to mitigate climate change	Quantitative Study		However, methodological feasibility requires technical difficulties related to data integrating and covers and derivative metrics to combine various data sources into a common platform to track CE execution	Increase recycling in high energy and commodity sensitivity, while incentives to reinforce sharing and reuse should be given primary priority, with a goal of total decreases in the use of resources, including complete decarbonisation of the energy grid	We claim that, by including fossil energy usage and the resulting carbon emissions as the main element for discussion of advantages and trade-offs of the EC, the CE may play a more prominent role even in meeting climate change in Austria
2018	Zach K.O., Mosgaard M., Risgaard H	Resources, Conservation and Recycling	Article	Sustainability; Circular economy; Value creation	Waste administrators need to shift their attitude and concentrate on adding value and increasing reuse. The study shows that new waste business laws do not adequately transition to a circular economy	Mixed Study		Further measures to improve recyclable recycling and processing would not result in new economic benefits or even higher local expenditure	Circular economies is a regenerative mechanism in which slowing, restricting and closing materials and energy loops reduce resource intakes and waste, pollution, and electricity leakage	Under a previous environment policy based on laws and taxation on waste and incineration, migration up the ladder of waste has been propelled

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Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2018	Ali M., Gong Y	Environmental Monitoring and Assessment	Article	Resource conservation; Circular economy; Low carbon development	<p>Proper health waste management is a key issue in resource-constrained South Asian countries. A case study was conducted in a general government hospital in one of Pakistan's major towns. The latent embodied potential of numerous recyclable waste fractions made them even more attractive than their price on the market suggests</p>	Quantitative Study		Scientific research has so far ignored the issue of energy in health waste	<p>The population in the district of Gujranwala is higher than in big European cities like Rome and Berlin</p>	<p>There is no freely available data for a cradle-to-grave life cycle assessment. The lack of available evidence limits the possible replicability of this analysis</p>
2018	Kjellén M	Water Alternatives	Article	Wastewater; Governance; Sanitation;	<p>This essay focuses on the subject of World Water Week and collected articles on more comprehensive socio-environmental transformations. The week centered on "Water and waste: reduce and reuse in line with the circular economy". The publications discuss the building of scientific expertise and its role in the control of emissions</p>	Qualitative Study		<p>If strictly followed, the local economy will also be affected if the industry is transferred or if larger companies are encouraged to invest and fulfill</p>	<p>The conference highlighted the importance of considering all wastewater treatment aspects</p>	<p>In order to ensure success in achieving the SDGs, planning, intervention, and surveillance, and developing partnerships to transcend differentiated interests are required</p>

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Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2018	Bianchini A., Pellegrini M., Rossi J., Saccani C	Proceedings of the Summer School Franco Turco	Conference Paper	Circular economy; Business model; Fourth Industrial Revolution	<p>A circular economy (CE) is recognised as an apparent ability to create demand that can offer the enduring advantages of a more innovative, durable, and efficient economy.</p> <p>To date, the study and application of circular models have concentrated primarily on the end-of-life commodity. CE will help this inevitable digital transition within the "Fourth Industrial Revolution"</p>	Conference Paper		In order to unlock and perform CE strategy, the latest and updated business model reveals the full value chain between suppliers and users	Companies can see the Fourth Industrial Revolution as a great chance to revise their corporate model	In order to exchange knowledge with stakeholders, this requirement needs the essential help of emerging technology
2018	Corrado S., Sala S	Waste Management	Review	Food waste; Circular economy; Food loss; Estimation	<p>The global food system's food waste constitutes a significant inefficiency. Countries agreed to halve retail and consumer food waste by 2030 per capita. The latest figures vary from 194–389 kg per person per year for food waste and waste production</p>	Review Qualitative Study		This research demonstrated the need for increased heterogeneity in outcomes and methodology approaches	In this analysis, the data available provided a global and European overview of FW generation	Private and public policymakers should specifically set the policy priorities for optimising the quality and efficiency of data collection. The provision of FW data plays a significant role for farmers, businesses, and customers
2018	Esposito M., Tse T., Soufiani K	California Management Review	Article	business models; circular economy; competitive strategy; sustainability	<p>We have been working in a linear economy since the Industrial Revolution, John Bare writes. This industrial manufacturing and mass use model checks the physical borders of the earth, he said</p>	Review		The aim is to explore further the value development inherent in a circle California Management Review special issue	Adopting the model of the circular economy allows companies to implement disruptive technologies and business models	The transition to a circular economy has projected economic benefits. Corporations and decision-makers ought to understand how the

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2018	Kozel R., Podlasová A., Sikyř P., Smelek R	IDMT 2018: Strategic Modelling in Management, Economy, and Society—26th Interdisciplinary Information Management Talks	Conference Paper	Economic benefits; Circular economy; Waste management	The essay reflects on waste management method advancement through the implementation of modern information technology. The goal of updating individual waste transactions is to fulfill the criteria of the 2015 Circular Economy Package of the European Commission	Conference Paper		It would need to rely on a further review to set up the waste management scheme properly	A significant number of utility providers are included in the service chain in intelligent communities. The biggest thing is in continued improvement of the selector infrastructure will do this. Based on a tariff scheme, the mechanism should influence the industry	In order to achieve recycling goals set for 2035, the infrastructure must be further established. The continued improvement of the selector infrastructure will do this. Based on a tariff scheme, the mechanism should influence the industry
2018	Szafraniec M	Proceedings of the 32nd International Business Information Management Association Conference, IBIMA 2018—Vision 2020: Sustainable Economic Development and Application of Innovation Management from Regional expansion to Global Growth	Conference Paper	Environmental management system; Circular economy; Eco-Management;	This article focuses on introducing the eco-management and audit scheme (EMAS) registered entities in the circular economy (CE). Multidisciplinary literature review on subjects such as EMAS, waste control, recycling, the atmosphere, and management	Conference Paper		In the strategic components of the environmental management structures, EMAS organisations that have taken care of CE definition aspects were assessed	EMAS organisations in Poland are implementing the CE principle. The decisions are focused on information included in environmental statements	Main metrics have been identified that organisations should track in the context of environmental efficiency

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2018	Górecki J., Núñez-Cacho P., Corpas- Iglesias F.A., Molina V	Proceedings of the 31st International Business Information Management Association Conference, IBIMA 2018: Innovation Management and Education Excellence through Vision 2020	Confer- ence Paper	Organisational behaviour; Circular economy; Project stakeholders	However, in many sectors, Circular Economic (CE) is still seen as a comparatively recent term in the construction industry. For the CE's successful application, improvements in legal rules, business models, and construction methods are required. The author defines crucial requirements to be met by an organisation to convert the EC successfully	Conference Paper		Centrifugal forces are indispensable to drive creative systems to fulfill industry requirements. There are structural changes and processes	Innovative companies are most likely to pay high costs and to take risks associated with innovation execution. For specific industries, it is a high priority to experiment with innovative technologies	Innovations must be implemented, and any corporate management process must be restructured. The success of an organisation's implementation of inventions
2018	Pascu D., Tamăşilă M., Diaconescu A., Prosteau G	Proceedings of the 31st International Business Information Management Association Conference, IBIMA 2018: Innovation Management and Education Excellence through Vision 2020	Confer- ence Paper	Multi-criteria decision analysis; Environ- ment; Waste management	The study team defines new ideas for potential ways to optimise municipal solid waste (MSW) systems. Waste management is regarded as an integrator of logistics facilities, contrary to experience plurality. Waste management issues have become increasingly complicated	Conference Paper		The conceptual basis for investigating, analysing, solving various problems is created by new approaches, including the multicriteria decision-making (MCDM), including the analysis hierarchy process (AHP)	AHP Methodology Decisional assistance The MCDM approaches provide a logical basis for investigating, analysing, and resolving various problems	In and near the public recipients, there would be even less pollution. The amount of content obtained is much more significant

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2018	Rosu M.M., Rohan R	Proceedings of the 32nd International Business Information Management Association Conference, IBIMA 2018—Viston 2020: Sustainable Economic Development and Application of Innovation Management from Regional expansion to Global Growth	Conference Paper	Products/services innovation—development; Circular economy; Renewable resources	A circular economy is built on creativity in technology, culture, and organisation. It requires using the same materials by recycling and reusing some items in multiple processing cycles. The transition from the use of fossil fuels to the use of renewable energy is often presupposed	Conference Paper		The paper presents a theoretical model of how products/services are related to the CE definition concepts	The circular economy is focused on creativity in technology, society, and organisation. It requires recycling and reusing such materials by using the same tools in many production cycles	For the goods/services industries, the use of the proposed model can have positive consequences
2018	Petit-Boix A., Leopold S	Journal of Cleaner Production	Review	Industrial ecology; Circular economy; Sustainability	A variety of projects are being launched in cities to make them integrated circular structures. The environmental implications of the techniques chosen by cities in their search for circularity need to be identified. Study and practice will benefit from working together to prioritise the CE techniques, which better serve each metropolitan region's requirements	Review	Review-Based Study	Cooperation may help to deepen cities' needs based on their sustainable objectives and priority parameters	Studies to support decision-making systems would be helpful for study to provide cities	The study shows that environmental assessment does not necessarily follow the same patterns in decision-making and vice versa

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2018	Stewart R., Niero M	Business Strategy and the Environment	Article	sustainable development; food and beverage; packaging	While Circular Economy is increasingly involved, there remains minimal research on industry adoption. The bulk of activities reported are focused on the principal commodity and packaging. Collaborations with corporations are most often reported, and consumer-oriented projects are largely absent	Quantitative Study		To test the statistical importance of discrepancies, authors add, the future study should extend our research by researching other times and industries	Based on these results, we have defined the need to explore researchers and practitioners further	The findings indicate that both concepts remain essentially implicitly linked to CE with sustainability
2017	Iacovidou E., Millward-Hopkins J., Busch J., Purnell P., Velis C.A., Hahladakis J.N., Zwirner O., Brown A	Journal of Cleaner Production	Article	Waste management; Circular economy; Sustainability assessment;	Economic and institutional decision-making based upon facts can help the transition to a circular economy. This analysis aims to examine how complex value is produced, lost, and dispersed in waste system resource recovery	Qualitative Study		One main factor in enabling the use of the CVORE platform is an operating analytics selections framework	Private sector stakeholders working with RRFW provide a working atmosphere in which RRFW programs can be evaluated holistically	An RRFW paradigm change calls for methods that go beyond piping strategies

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2017	Gallo M., Marotta V., Magrassi F., Taramasso A.C., del Borghi A	Economics and Policy of Energy and the Environment	Article	Research; Circular economy; Waste management	An agreement to determine the university's carbon emissions was signed between the University of Genève and the Ministry of the Environment in 2014. To build a project to reduce the pollutant impacts resulting from waste disposal, a circulatory economy approach has been used. The project aims to conduct experiments and studies on rules, roles, and behaviours towards regeneration, recycling, and reuse by the community	Quantitative Study		A circular economic model for other universities and medium-sized communities can be created	The project plans to carry out guidance, attitudes and behaviour surveys, and analysis	In view of the failure to incorporate an accounting model and track waste materials
2017	Sposato P., Preka R., Cappellaro F., Cutaia L	Environmental Engineering and Management Journal	Article	Sharing economy; Circular economy; Waste prevention	Company knowledge sharing the economy is growing increasingly internationally, says Gh. The Asachi Technical University of Iasi. Instead of an older private property model, goods and services promoted by shared business structures pop up. This is very much related to the circular economy methods, particularly the avoidance, elimination, and valorisation of waste of the European objectives	Qualitative Study		The data available would also be viewed from a shared economy viewpoint that examines the most strategic industries regarding environmental impacts	Collaborative models will also be analysed in strategic and sensitive areas to demonstrate how a shared economy will lead to a circular economy	This article provides a summary of the economic sharing, including drivers and barriers to its successful development

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2017	Sarti S., Corsini F., Gusmerotti N.M., Frey M	Economics and Policy of Energy and the Environment	Article	Social initiative; Circular economy; Innovative business model	Food distribution sites provide excess food to other site members for people and corporations. While they have beneficial social and environmental impacts, they are criticised because of the absence of a leading player and the high consumer heterogeneity	Quantitative Study		There are two types of social programs and two dominant market models, as seen by the results. Platforms for social sharing, social business	The study investigates the models are followed in market-oriented food sharing activities (for-profit or non-profit)	Platforms for food sharing empower individuals and companies to exchange surplus food with other members of the forum
2017	Andreopoulou Z	Rivista di Studi sulla Sostenibilità	Article	Internet of Things; Circular economy; Sustainable development goals	In recent research attempts at sustainability, circular economy prevails. The food crisis is primarily in 10 of 17 of the Sustainable Development Goals recently identified	Qualitative Study		Internet of Things" is the extensive network of Internet-based computers without the intervention of human beings	Problems in the food sector, such as reducing food waste, can be resolved within circular economies	In 10 of the 17 latest sustainable development, the food problem is prevailing
2017	Oliver Castañeda Lima R., Fernando Larrios Meoño J., Mougnot B	Proceedings of the 30th International Business Information Management Association Conference, IBIMA 2017—Vision 2020: Sustainable Economic development, Innovation Management, and Global Growth	Conference Paper	Informal sector; Contingent valuation; Waste management	Ineffective structures and resource shortages ultimately require informal labour. We use the contingent evaluation approach and a logit model to predict readiness for adoption by recyclers. More than 70% of the recycler's monthly preparation to accept the economic importance of solid waste	Conference Paper		More study is needed on the implications of training, perceptions, and understanding of solid waste management by both private and public sectors	Through relationships between the public and private companies in the formal sector, the informal sector's position is vital for municipal waste management	Similarly, developed countries are becoming more responsive to creating an equitable and sustainable waste management strategy

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2017	Rebelo P.C.P.W., Costa A.L., Campello C.A.G.B., de Freitas Espinoza D., Neto M.J	Journal of Cleaner Production	Article	waste management; Social business; Solid Waste pickers	In Brazil, solid waste (MSWM) urban management has a range of difficulties in its transition from the waste disposal paradigm to another focused on targeted recycling and reuse collection. The presence of socially exclusive collectors, public-private relationship contract formats are influences that have been recently embraced. The solution that the characters found in this case are a social organisation that involves those at the bottom of the pyramid	Qualitative Study		The produced model could be evaluated, also in other developing or underdeveloped countries, in future research in different contexts. The thesis also includes checking whether social and environmental viability is achieved by maintaining this course	Multidimensional analysis should be taken of the effects of the model	This model's use of collectors as the principal agents leads to poverty reduction
2015	Jibril J.D., Sipan I.A.B., Shika S.A., Aminu D.Y., Abdullah S., Shahril Mohd A	Proceedings of the 26th International Business Information Management Association Conference—Innovation Management and Sustainable Economic Competitive Advantage: From Regional Development to Global Growth, IBIMA 2015	Conference Paper	Municipal solid waste management; Kano state; Residential area	In the last seven decades, the population in Nigeria's Kano state has risen rapidly, estimated at 9.38 million inhabitants. The change contributed to the need to find suitable alternatives for people's sustainable exit. 3r's is suggested to use the solid waste management hierarchy (Reduce, Reuse, and Recycle)	Quantitative Study		Survey; lack of general knowledge about 3R and a lack of cooperation in the majority of citizens	The actions of scavengers may have a significant effect on the economy, according to Agunwamba et al	At the moment, the lack of government policies to promote reuse and recycling limits their commitment

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2015	Hamadan N.B., Sapri M.B., Mohammed A.H.B., Iezuan N.M., Lah B.N., Awang M.B., Doorasol N.B., Rahman M.S.B.A., Mohamed N.E.B.	Proceedings of the 26th International Business Information Management Association Conference—Innovation Management and Sustainable Economic Competitive Advan-	Conference Paper	Hospital; Clinical waste; Implementation level	Clinical administration and disposal are regulated in Malaysia according to the Environmental Quality Legislation, 2005. An assessment of the execution rate of clinical waste in Sultanah Aminah Hospital, Bahru, is presented. Mainly nurses and workers who served for less than 1 to 5 years are the community who do not enforce the practice	Conference Paper		However, the study performed does not reflect the treatment of clinical waste as a whole in Malaysia	So that health hazards and harm to flow-ers, fauna, and the ecosystem are avoided, clinical waste must be appropriately managed	The health and environmental risk of medical waste is a particular class of waste
2015	Corsini F., Rizzi F., Gusmerotti N.M., Frey M	Business Strategy and the Environment	Article	Sustainable development; China; E-waste; Sustainable supply chain	Extended producer accountability (EPR) is an alternative to environmental legislation that may theoretically affect various market climate determinants. However, there are underrepresented overt and indirect consequences on national testing ecosystems where EPR is not directly applied	Quantitative Study		The opportunity to gain expertise on reuse and resource management may become a significant competitive advantage	Based on our findings, concern in subjects relating to emission levels and sensitivity of human beings to e-waste chemicals, primarily in Eastern countries	The growing interest in subjects relating to soil and air quality and human exposure to chemical products

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2014	Wu X	WIT Transactions on Information and Communication Technologies	Conference Paper	Rewards and punishments measures; Extended producer responsibility; Waste cars' recycling	This paper looks at the optimum recycling policy of the carmaker. It analyses how to create a waste cars recycling is an unavoidable need for creating a circular economy	Quantitative Study		An analysis of the development to help manage the recycling rate is made of rewards and punitive schemes	An analysis is made on how to build incentives and punitive schemes to improve the regulation of recycling rates	The findings of this paper will provide the government with a recommendation to implement appropriate recycling strategies for waste vehicles
2014	Sukholtham P, Shirohada K	PICMET 2014—Portland International Center for Management of Engineering and Technology, Proceedings: Infrastructure and Service Integration	Conference Paper		Consumerism and waste production can work together. For an effective MSWM scheme, citizen engagement is necessary. In order for the scheme to operate successfully, people should be provided with a simple public utility	Conference Paper Qualitative Study		The results of quantitative and conceptual assessments for an economically friendlier waste management scheme must be constructed	The two-sided environmental effects have been achieved by technological advancement. One impact has increased the use	The AT has to satisfy all parties' fundamental criteria, meet professional specifications, and be cost-effective for the region
2013	Youssef M.A	Journal of Accounting and Organizational Change	Article	Organisational change; Institutional theory; Management accounting practices	Extranet made it easier to change the availability of details and reform the company process. The results indicate that management accounting standards have improved in this situation. Some considerations may support routine and institutionalisation procedures. The case indicated	Quantitative Study		More case studies are needed to explain this new subject claimed by scientists	In potential analysis management accounting changes, it will be helpful to review e-commerce organisations that adopted B-to-B	But rather than inquiring what impact B-to-B e-commerce systems have on management accounting

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2013	Mi C., Zhang Z., Sun H., Wang R., Sun J	WIT Transactions on Information and Communication Technologies	Conference Paper	Circular economy; Development; Luozhuang district of Linyi city	The definition of scientific progress is an essential encapsulator of circular economics. The growth of the circular economy is a necessity to accomplish the task of developing a well-to-do community	Conference Paper Qualitative Study		Three countermeasures to improve the circular economy of the county. Firstly, the infrastructure should be enhanced and the budget increased	A vital indicator of the implementation of a sustainable growth plan is the circular economy. It is indeed a matter of urgency	The circular economy is an essential incarnation of scientific progress since it is a modern new form of development
2013	Olukanni D.O., Ede A.N., Akinwumi I.I., Ajanaku K.O	Creating Global Competitive Economies: 2020 Vision Planning and Implementation—Proceedings of the 22nd International Business Information Management Association Conference, IBIMA 2013	Conference Paper	Health impact; Environmental impact; Wealth generation	The production rate of urban solid waste has risen at an alarming rate in the metropolis of Ota, Ogun State, Nigeria. The research proposes a new path to safe and efficient sanitation through organisations and government departments	Conference Quantitative Study		The study proposes a new path to achieving safe sanitation through organisations and government departments	The analysis showed that the proposed construction strategy is not currently being invested	Over the years, urban solid waste production has risen rapidly in Ota metropolis, Ogun State, Nigeria. Nigeria is currently projected to generate 25 million tons of solid waste annually

Table 13 (continued)

Year	Authors	Journal	Article type	Subtopic	Aims and findings	Methodology	Theories	Academic Implications	Managerial Implications	Policy recommendation
2012	Zhong Z., Weng B., Huang Q., Huang X., Chen Z., Feng D	Shengtai Xuebao/Acta Ecologica Sinica	Article	Energy analysis: Complex circular ecosystem; Sustainability evaluation	Energy defines one category of energy available, which is used directly or indirectly, to create a substance in transition. The emerging analytical approach was partially updated and explicitly adapted for circulatory agriculture systems in this analysis. The revolving system is primarily a multi-sub-system interactive hybrid. It should not be measured by the supply chain's length but by system quality, its ecological benefits	Quantitative Study	Energy Theory	In order to increase usability and applicability, more research is needed into model performance	Circular agricultural systems are a multi-subsystem interactive hybrid. Measure ecological advantages	It has been calculated that the sustainability of the traditional 'pig only' farm is 2.8% — 11.52% over that of the circular systems tested
2012	Ciaschini M., Pretaroli R., Severini F., Soggi C	Research in Economics	Article	Environmental taxation; CGE analysis; Social Accounting Matrix	The greenhouse effect compels national policymakers to formulate environmental tax schemes for coping with global warming and the detrimental effects of decreased pollution. The goal of this paper is to track the effect of a fiscal change on the environment. The appeal is made for the year 2003 on a two-regional matrix of Social Accounts for Italy	Quantitative Study		The double dividend literature has supported many different views on double dividends in recent years	The findings demonstrate the necessity to detect the impacts of environmental tax changes using a robust database in the general balance review. In both cases, but only in the north center, we found a second job dividend	The sustainability of the traditional 'pig only' farm was calculated to be 2.8% — 11.52% higher than the circular systems tested

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