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Drivers and barriers of circular economy business models: Where we are now, and where we are heading

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ABSTRACT

Literature on the circular economy business model (CEBM) has witnessed a sharp upsurge in recent years. Although scholars have investigated CEBM from several perspectives, including the green business model, waste management, digital technology, the supply chain, and the financial impact of CEBM, critical analysis of the extant literature has not attracted scholarly attention. The current systematic literature review (SLR) on CEBM is an attempt to critically analyse and appraise the prior findings by following robust research protocols. We analysed a pool of 126 studies to identify the thematic research areas, recognise the research gaps and present future research agendas. Subsequently, we classified the research themes, namely the drivers of and barriers to CEBM. The paper thus provides a comprehensive assessment of the current state of the art on the drivers and barriers involved in executing CEBM. By identifying existing research gaps and presenting avenues for future research, the SLR illuminates the nuances of CEBM implementation. Moreover, we propose an actor-network theory-based conceptual framework for CEBM implementation for further investigation. We conclude the study by providing the theoretical and practical implications for those attempting to overcome the barriers and address the challenges involved in CEBM implementation.

1. Introduction

The rapid demographic increase is exerting pressure on biological resource consumption and thus stimulating governments, organisations and societies to work to conserve available resources (Velenturf and Purnell, 2017). For example, global resource consumption has exhibited an eightfold increase due to the increase in global demand for natural resources (Kok et al., 2013). Consequently, the circular economy (CE) approach has gained significant attention, and scholars have highlighted the urgent need to adopt CE and thereby preserve resources at all levels (Velenturf and Purnell, 2021). This call has led business organisations to transform their existing linear business model (LBM) into a circular economy business model (CEBM) (Palmié et al., 2021). The LBM, which has prevailed for more than a century—since the dawn of industrialisation (MacArthur, 2013), depends upon products made from virgin materials; these products are sold and, finally, disposed of after use, resulting in a polluted environment (Jones and Comfort, 2017). However, the traditional model does not consider the societal and environmental impact of this process. This limitation of the traditional model has resulted in the emergence of alternative business models, which are collectively termed CEBM. CEBM is characterised and defined as an organisational ecosystem to create, capture and deliver value by expanding products' useful lives through remanufacturing, repairing or designing long-life products (Nußholz, 2017; Oghazi and Mostaghel, 2018; Bocken et al., 2016). The growing popularity and need for CEBM globally engenders the need to better understand the various drivers of CEBM.

CE and CEBM have one fundamental difference. CE is an economic model, which emphasises the preservation and upgrading of materials to keep long-life products in use by remanufacturing, reusing, refurbishing,

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repairing, recycling and maintaining them (Antikainen and Valkokari, 2016; Geissdoerfer et al., 2017). CEBM, meanwhile, is an approach through which organisations create value by adhering to CE principles (Lewandowski, 2016; Planing, 2015). Policymakers, practitioners and scholars have increasingly considered the utility of CEBM (Bocken et al., 2016). Several studies have investigated CEBM in terms of business collaborations (Mishra et al., 2019), eco-innovation (Donner et al., 2021; Jabbour et al., 2015), CEBM designs (Martin et al., 2021; Ranta et al., 2021), waste management (Shevchenko et al., 2021) and policy frameworks (Milios, 2021). Scholars have widely recognised the benefits of CEBM; for example, Urbinati et al. (2017) argued that CEBM underlines proficient utilisation to keep products in the economy for an extended period by recycling, reusing and remanufacturing them. Considering this relative importance, scholars have also investigated the factors that drive organisations to execute CEBM. For example, Jensen et al. (2019) identified the remanufacturing business model as a potential driver for the implementation of CEBM. Scholars have also recognised stakeholder pressure as a significant force impelling organisations' efforts to adopt CEBM (Ranta et al., 2018). Further, the growing inclination towards a healthy lifestyle and increasing environmental concerns drive CEBM implementation (D'Agostin et al., 2020).

Despite the various benefits and driving forces of CEBM, the implementation of CEBM in the manufacturing industry remains restricted (Urbinati et al., 2017), thus triggering the investigation of the factors that impede CEBM adoption. Prior studies have identified several barriers that restrain CEBM implementation and make organisations reluctant to adopt CEBM (Aid et al., 2017; Kazancoglu et al., 2020; P. Singh and Giacosa, 2019). Some of the important barriers highlighted in the prior literature include financial uncertainties and more complex business operations compared to the LBM (Bocken et al., 2018). Moreover, consumers' inclinations, the absence of suitable infrastructure and regulatory restrictions hinder the successful implementation of CEBM (Guldmann and Huulgaard, 2020). These issues are compounded by barriers that are internal to organisations, such as the lack of management expertise required to implement CEBM (Bocken and Geradts, 2020). Scholars have recognised different barriers from specific perspectives, such as CEBM innovation (Guldmann and Huulgaard, 2020), waste management (Aid et al., 2017; Donner et al., 2021) and consumer perceptions (P. Singh and Giacosa, 2019). Interestingly, scholars have primarily utilised a case study approach to examine these barriers (Tura et al., 2019; van Loon and Van Wassenhove, 2020; Werning and Spinler, 2020).

Although these drivers and barriers hold critical importance for the successful implementation of CEBM, scholars have paid little attention to their explicit investigation. Furthermore, the findings of prior studies are widely scattered across the various areas and contexts in which CEBM has been investigated. These fragmented findings present challenges for scholars and practitioners working to advance the current body of literature. Addressing the lacunae in the extant literature requires, first, conducting a systematic literature review (SLR) of prior studies (e.g., Kraus et al., 2021). The current study proposes to advance the prevailing understanding of CEBM by rationally systemising and critically analysing the prior literature. Examining existing work on CEBM also allows us to identify fruitful opportunities for future research (Blomsma et al., 2019).

Some notable literature reviews already exist in the context of CE. These studies, which narrowly touch upon different drivers of and barriers to CEBM, focus either on a particular aspect of CEBM or on a specific sector. To begin, Govindan and Hasanagic (2018) systematically reviewed prior studies to identify and categories he drivers, barriers and practices of CE from a supply chain perspective. Hofmann (2019) explicated the idea of sustainability and CEBM's operational process as a business approach for sustainability while also discussing the inconsistencies involved in limiting the analysis of CEBM. Sarja et al. (2020) examined the obstacles, ambivalences and catalysts involved in a business's transition towards CE. Finally, S. Singh et al. (2021) review recognised the intersecting challenges and opportunities of CE for specific sectors, including food, chemicals, metals and minerals, electronics and building and infrastructure. The present SLR specifically and comprehensively analyses the extant literature to identify the various drivers and barriers that companies confront when successfully implementing CEBM. The current SLR can thus guide scholars by discussing various factors hindering or driving business organisations to implement CEBM. In addition, the study illuminates the various gaps in the extant literature and suggests future avenues of research to address them. The current study intends to answer four key research questions (RQs): **RQ1**. What is the research profile of the current literature on CEBM? **RQ2**. What drivers and barriers are involved in successful CEBM implementation? **RQ3**. What key research gaps in the area of CEBM require further investigation? **RQ4**. What future research avenues have the potential to address the existing research gaps?

This study contributes in several ways. First, this study is the first known effort to systematically review, analyse and synthesise the prior literature's findings on various drivers of and barriers to CEBM implementation. Furthermore, the study highlights gaps in the existing literature while suggesting a future research agenda. Second, the current review does not focus on any specific industry; instead, it presents a general overview of all possible research themes central to CEBM. Therefore, it is helpful for practitioners and scholars irrespective of their domain. Third, the findings of this study promote discussion regarding the various factors that may function as barriers in one context but drivers in another. Finally, this SLR enhances the conceptual understanding of CEBM implementation by proposing a research framework to assist prospective scholars as well as practitioners in investigating the relationships among the various factors (i.e. drivers and barriers).

2. Methodology

The SLR is a method that enables the robust investigation of the current state of the art of any specific research area while recognising research gaps to promote future investigation and knowledge advancement (e.g. Dhir et al., 2020; Kraus et al., 2020; Kaur et al., 2021). This study adopted the SLR approach utilised by recent studies (Chauhan et al., 2021a,b; Talwar et al., 2021) to holistically appraise and synthesise the current progress of relevant literature on the drivers of and barriers to CEBM implementation (Sahu et al., 2020).

This SLR reviewed the prior studies in a sequential manner: first, identifying the studies; next, determining the pertinent studies; third, retrieving information; fourth, synthesising the data and, finally, reporting the findings. A review panel, comprising two professors and a researcher, established the conceptual boundaries of this topic. Consultations were held at every level from the initial identification to the final selection of the relevant studies. These consultations helped to resolve disagreements among the authors and reach the final consensus to proceed with the study. We followed established protocols to ensure the replicability and precision of our findings (Chauhan et al., 2021a,b) and conducted the study in the following steps (see Fig. 1):

Step I Planning the review by establishing the research criteria to identify the relevant studies.
Step II Screening studies to assess their eligibility by delineating the inclusion and exclusion criteria.
Step III Analysing content and extracting data by reviewing the prior studies while utilising several screening levels.
Step IV Data execution by synthesising the research findings.

2.1. Planning the review

The first step in conducting an SLR is to establish the research protocol. The research protocol begins by developing the research question to support the investigation's subsequent steps. These steps include

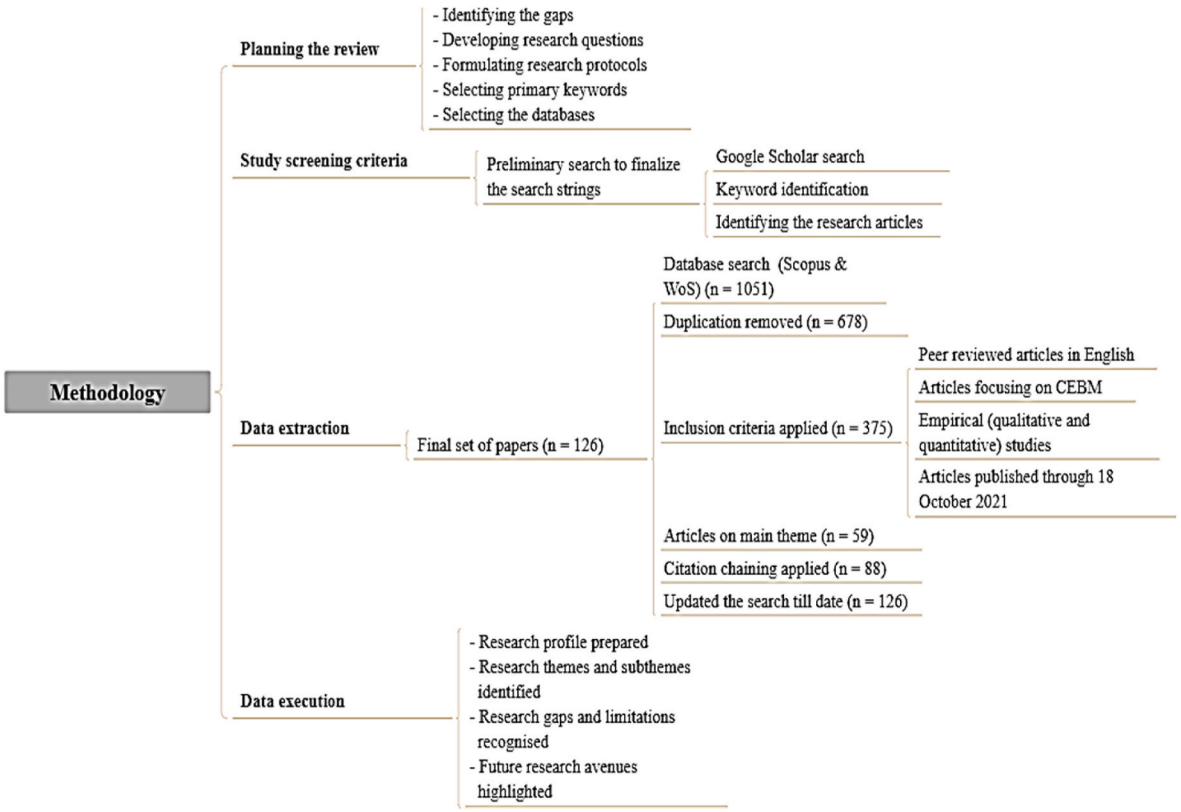

Fig. 1. SLR process and protocols.

selecting the search strategy, identifying relevant studies, establishing inclusion and exclusion criteria and selecting the specific synthesis method. Initially, we devised the RQs for this SLR. Consistent with prior studies (Ibn-Mohammed et al., 2020), we explored two acclaimed databases—*Scopus* and *Web of Science*—to address these RQs. Initially, we used 'circular economy and business model' as a primary keyword to search the databases and further define and refine the comprehensive keywords to be used as search strings. Our search was not confined to any specific time frame; rather, it considered all related studies.

2.2. Study screening criteria

We defined academic research articles as the unit of analysis for our SLR (Madanaguli et al., 2021). Next, we established the inclusion and exclusion criteria to identify the specific research publications (see Table 1). The initial research via the selected databases generated an extensive list of articles. Therefore, we manually selected peer-reviewed articles and removed all non-peer-reviewed studies. Overall, the studies we considered were either qualitative or quantitative; however, they all focused on CEBM. We did not consider the grey literature encompassing white papers, working papers, project reports, theses and conference proceedings. Moreover, recognising the language barrier, we included only articles written in the English language. We also ignored studies that focused only on the circular economy where the business model aspect was not highlighted.

Table 1
Inclusion and exclusion criteria.

Inclusion criteria (IC)	Exclusion criteria (EC)
IC1. Peer-reviewed articles written in English	**EC1**. Non-peer-reviewed articles
IC2. Article focusing on CEBM	**EC2**. Articles not written in English
IC3. Empirical (qualitative and quantitative) studies	**EC3.** Articles not focusing on a CEBM
IC4. Journal articles published through October 18, 2021	**EC4.** Articles not discussing the drivers of and barriers to CEBM
IC5. Articles available in full text	**EC5**. White papers, working papers, conference papers and project reports
	EC6. Thesis, book chapters, editorials and essays
	EC7. Duplicate articles

2.3. Data extraction

Initially, we searched for articles via *Google Scholar* with the keyword of 'circular economy business model'. By reviewing the titles, abstracts and keywords from the top 100 studies returned in this initial search, we further developed a comprehensive list of keywords and defined the final search strings. This process ultimately expanded the initial search string— ('circular economy' AND 'business model') OR ('CE principle' AND 'business model') OR ('Circular Business Model') OR ('bio-economy' AND 'business model')—to the following search string: ('circular economy' AND 'business model') OR ('circular business model') OR ('circular business model' AND 'barriers and challenges') OR ('circular business model' AND 'drivers and opportunities'). We executed our searches on both databases on March 14, 2021. We found 1051 studies total, including 505 articles from *Scopus* and 546 articles from *Web of Science*. We did not restrict our selection of studies to any specific time period. However, the primary review of prior studies revealed that CEBM has captured scholarly attention since 2012. Therefore, the identified articles were published from 2012 to 2021. The screening focus was expanded from the basic bibliographic facts, including the journal title, author and year, to consider each article's abstract as well. The screening process was completed in four stages. The two authors performed this process individually, and discussion was held at the end of each stage to reach a consensus to advance to the next stage.

First, we deleted duplicate articles because some articles available in *Scopus* were also found in the *Web of Science*. Removing duplicates left 678 studies for further screening. Second, we applied the previously

mentioned inclusion and exclusion criteria to these 678 studies. This left a total of 411 studies. Third, we removed studies that focused on either circular CE or business model but did not specifically discuss CEBM. Following this step, 357 studies remained. Finally, we examined the remaining 357 studies and retained only those studies that discussed the drivers and barriers involved in CEBM implementation. This left us with 59 studies. We also applied citation chaining techniques (i.e. forward and backward citation chaining) to ensure the inclusion of all relevant studies. This step led us to include 29 newly identified studies for a final pool of 88 studies at this stage.

To avoid any chance of excluding relevant studies, we executed a new search on October 18, 2021. At this stage, we identified new keywords we deemed relevant for the current study but did not consider in the March 14, 2021 search. The new search consisted of the following keywords: ('Circular economy' OR 'CE' OR 'bio-economy*' OR 'bio economy*' OR 'circular*') AND ('barrier*' OR 'challenge*' OR 'driver*' OR 'opportunity*') AND ('business model*'). We then applied the prior screening criteria to the new search results, which led us to include 38 additional studies. The final review pool thus consisted of 126 studies.

2.4. Data execution

2.4.1. Research profiling

We prepared the research profile of the 126 selected studies in consonance with the prior studies based upon descriptive statistics, including the publication source, publication year, geographical scope and methodologies used (Chaudhary et al., 2021; Tandon et al., 2020). Classifying these studies year-wise highlights the limited number of studies published prior to 2016 (see Fig. 2), while a swift increase is evident from 2019 to 2021. Articles on CEBM have been published in a variety of journals. Most of the publications appear in the *Journal of Cleaner Production*, *Resources Conservation and Recycling* and *Sustainability* (see Fig. 3). Most prior studies have employed the case study approach as a methodological design to investigate the implementation of CEBM (see Fig. 4). Moreover, our SLR reveals the diverse geographical scope of the existing research publications. A considerable number of studies were conducted in the UK (29 articles), Sweden (23 articles), Italy (19 articles), the Netherlands (15 articles) and Denmark (11 articles; see Fig. 5). Table 2 overviews the theoretical foundations of the prior literature. Only a handful of the included studies utilised theoretical frameworks to support their findings. Scholars have utilised theories such as institutional theory (Ranta et al., 2018), stakeholder theory (Jabbour et al., 2020), paradox theory (De Angelis, 2021), organisational life cycle theory (Primc et al., 2020), sustainable design theory (Baldassarre et al., 2020), activity theory (Ávila-Gutiérrez et al., 2020), social capital theory (Leder et al., 2020), the theory of planned behaviour (Elzinga et al., 2020), jobs-to-be-done theory (Hankammer et al., 2019), the natural resource-based view (Mishra et al., 2019) and social practice theory (Hagejärd et al., 2020).

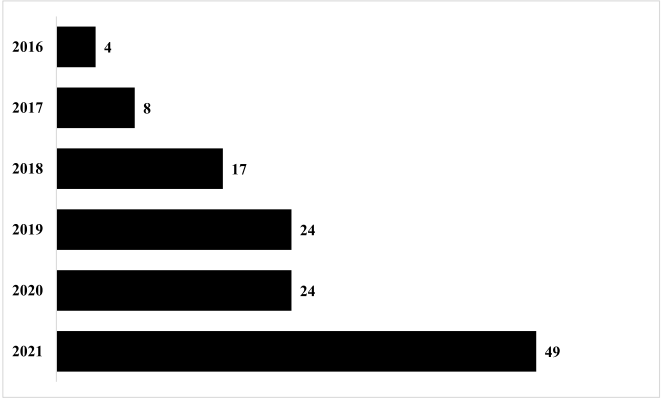

Fig. 2. Year-wise distribution of selected studies.

3. Thematic areas

To organise a broad assortment of findings systematically, we thoroughly assessed all 126 studies for common themes. This approach aligns with recently published SLRs (e.g. Dhir et al., 2020; Chauhan et al., 2021a,b). We utilised a content analysis technique to synthesise the findings of the prior literature. Content analysis is a popular research method for analysing textual data by systematically classifying, coding and identifying the themes (Hsieh and Shannon, 2005). A robust three-step approach produced a clear and impartial narrative of the reviewed literature. The three-steps proceeded as follows: (a) the lead author assigned open codes to each study; (b) inductive and deductive approaches were followed to classify the open codes into axial codes and to recognise the relationships among these open codes; (c) the authors discussed the axial codes to develop a consensus regarding the categorisation of the thematic research areas. This thematic analysis highlights two broad research themes: the drivers of and barriers to CEBM implementation (see Fig. 6).

3.1. Barriers

A CE is an indispensable tool for transforming an organisation's existing LBM. However, this transformation also produces several barriers that can impede the successful implementation of CEBM. Scholars have investigated various barriers and typified them into diverse categories, such as policy-related barriers (van Keulen and Kirchherr, 2021), consumer related barriers (P. Singh and Giacosa, 2019), design-related barriers (Urbinati et al., 2021) and social practices (Hobson, 2020). Classifying these barriers into internal and external barriers, however, is one of the most widespread approaches in the extant studies (Bey et al., 2013; Chauhan et al., 2021). This approach is helpful for capturing and understanding the barriers to CEBM implementation.

3.1.1. Internal barriers

Internal barriers refer to the hindrances that emerge within an organisation attempting to implement a business model (Vermunt et al., 2019). The extant literature has recognised organisational, financial and product characteristics as well as knowledge as internal barriers (Cantú et al., 2021). Guldmann and Huulgaard (2020) considered organisational and employee-level factors as internal barriers. Drawing upon the prior literature, we broadly categorise the internal barriers into seven sub-categories: companies' policies and strategies (van Keulen and Kirchherr, 2021), financial barriers (Kazancoglu et al., 2020), technological barriers (Donner and de Vries, 2021), lack of resources (Guldmann and Huulgaard, 2020), collaborations (Zucchella and Previtali, 2019), product design (Urbinati et al., 2021) and internal stakeholders (Jabbour et al., 2020).

3.1.1.1. Company policies and strategies. A company's policies and strategies are considered a significant cornerstone for the successful implementation of circular principles and a business model (Ferasso et al., 2020). However, when these policies are not devised appropriately in coherence with other sectors, such as service providers, governing bodies and stakeholders, they become a salient restraint (Kumar et al., 2019). Zhou et al. (2007) recognised the absence of adequate policies and strategies as substantial organisational barriers. The absence of a clear business model, design strategies and approaches, such as eco-design and backcasting, restricts organisations from effectively implementing the CEBM (Bocken et al., 2016; Mendoza et al., 2017). Witjes and Lozano (2016) regarded restrictive company policies as a primary concern in the reverse logistics of the CE. For example, the fact that managers are not trained to assess the quality of a finished product by reusing the recycled material underlines the absence of

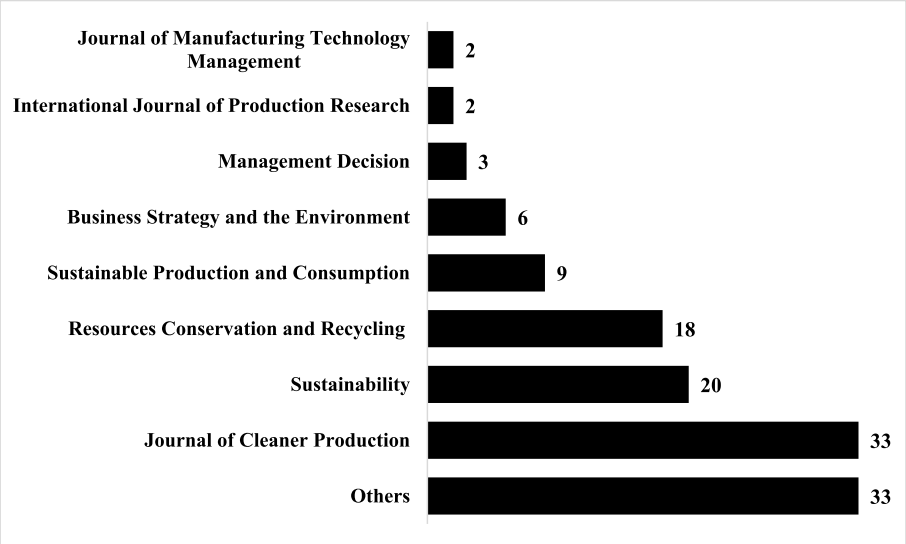

Fig. 3. Journal-wise classification of selected studies.

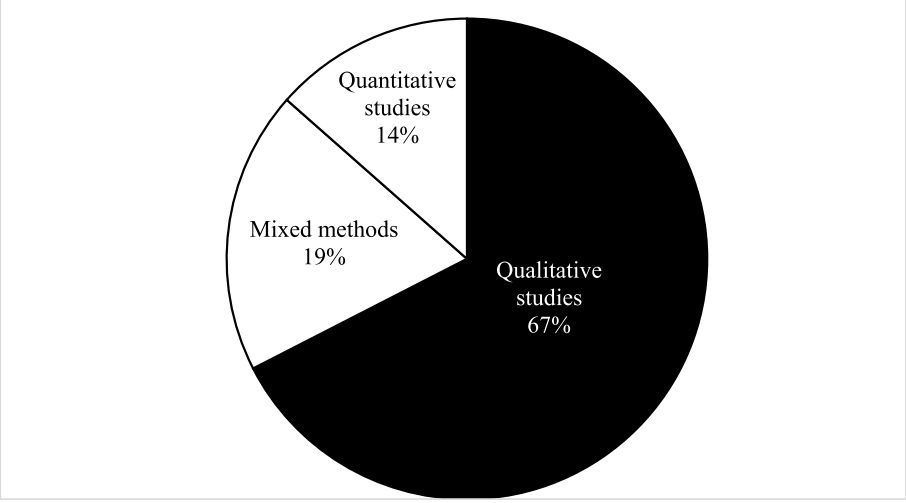

Fig. 4. Research methods used in the selected studies.

strategic consideration for CEBM implementation (Werning and Spinler, 2020). It should also be noted that the increased utilisation of chemical material involving considerable uncertainties and riskier properties may pose a danger to public health (Paletta et al., 2019). However, an extremely strict policy response to this hazard restrains the reuse of polymers in certain applications (Paletta et al., 2019). Moreover, the effective management of operational strategy, product design strategy, business model design and policies as interdependent activities poses a problem for organisations (Bonsu, 2020). The policies companies establish to manufacture new products and use products at the ends of their lives greatly influence the available circular opportunities (Shao et al., 2019).

3.1.1.2. Financial barriers. Linder and Williander (2017) comparative study of CEBM and LBM highlighted that financial risk is higher in CEBM than in LBM because CEBM entails higher costs due to the complexities involved in remanufacturing and refurbishing designs. The extant literature has recognised financial and cost barriers as significant hindrances to CEBM implementation (Kirchherr et al., 2018). A firm's transition to CE requires massive investments in technological ventures, employee training for new operations and the production and sale of circular products (Pathak and Endayilalu, 2019). For example, Olsson et al. (2018) explained that the risk of investing in automated processes derives from the future uncertainty of technological advancements. Moreover, restructuring existing plants to implement new CEBM requires high costs (Agyemang et al., 2019). Currently, firms face uncertainty about the returns they may derive from their circular investments (Kumar et al., 2019). The need to keep the cost of CEBM low poses a barrier to remanufacturing relative to new production (Hopkinson et al., 2018). In fact, the process of manufacturing new products is less expensive than return transportation and labour-based remanufacturing processes, which result in material savings that are insufficient for the costs incurred for the associated labour (van Loon and Van Wassenhove, 2020). Firms struggle to determine and defining the revenue model for CEBM products (Upadhyay et al., 2021). Financial uncertainty with respect to reused products is one such critical challenge (Linder and Williander, 2017). The profitability of used products depends on market demand, which is difficult to foresee, especially in the technology sector (i.e. IoT) (Ingemarsdotter et al., 2020). Consequently, companies are reluctant to invest in circular projects (Narimissa et al., 2020). Wrålsen et al. (2021) recognised such financial barriers as significant, highlighting financial viability and incentives as particular challenges.

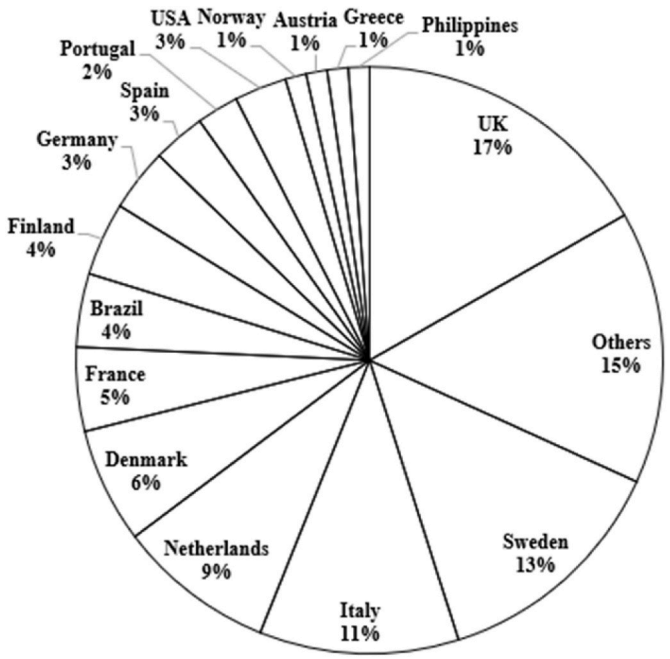

Fig. 5. Geographical focus of the selected studies.

Table 2
Theories employed by the selected studies.

Study	Theory	Research design
Ranta et al. (2018)	Institutional theory	Multiple case study
Jabbour et al. (2020)	Stakeholder theory	Review study
De Angelis (2021)	Paradox theory	Qualitative study
Primc et al. (2020)	Organisational life cycle theory	Qualitative comparative analysis
Baldassarre et al. (2020)	Sustainable design theory	Literature review followed by interviews
Ávila-Gutiérrez et al. (2020)	Activity theory	Eco-Holonic Architecture modelling process
Leder et al. (2020)	Social capital theory	Literature review and focus group discussion
Elzinga et al. (2020)	Theory of planned behaviour	Correlation and multiple regression
Hankammer et al. (2019)	Jobs-to-be-done theory	Case study
Mishra et al. (2019)	Natural resource-based view	Case study
Hagejärd et al. (2020)	Social practice theory	Qualitative study

3.1.1.3. Technological barriers. Technology is the centre of CE and an essential requirement for the implementation of CEBM (de Sousa Jabbour et al., 2018a,b). CEBM is firmly connected to socio-economic innovations involving new products and technologies that are crucial for the transition to CEBM (Donner and de Vries, 2021; Kumar et al., 2021). For example, industry 4.0 technologies including IoT, cloud manufacturing, and cyber-physical system can support the CE loop approach (de Sousa Jabbour et al., 2018a,b). Scholars have reported that the non-availability of technology, particularly in the automobile industry, hinders the CEBM implementation process (Agyemang et al., 2019). The absence of organisations' technological capacity and their inability to access such resources has proven to be a restraint for implementing CEBM (Jabbour et al., 2019). Despite this, several organisations have utilised low-grade technologies and unskilled workers for the assortment of returned parts in the business (Agyemang et al., 2019). Therefore, a lack of technological knowledge and capacity management in this regard have been recognised as critical restraints on organisations' efforts to transform their LBM to CEBM (Tura et al., 2019).

3.1.1.4. Lack of other resources. A few scholars have recognised time as a resource and the lack of time as a restraint in carrying out CEBM transformation (Rizos et al., 2016). However, these scholars have further argued that managers often veil their lack of interest in seeking green solutions as a lack of time (Rizos et al., 2016). Additionally, information and knowledge are considered resources. Odintsov (2012) discussed information resources as the entirety of the data acquired, accumulated and required by people to perform practical management and production activities. For example, when small-to medium-sized enterprises (SMEs) lack information regarding new business approaches and their employees lack technical knowledge, the CE transition becomes problematic (Rizos et al., 2016). The lack of knowledge regarding used products within a market that includes remanufacturing competitors often leads to inaccurate risk analyses and overconfidence among firms (Colucci and Vecchi, 2021). This barrier requires a take-back system where consumers can return a used product and purchase a remanufactured product (Colucci and Vecchi, 2021). Prior literature has also reported the lack of resources, such as organisational resources, financial resources, public funding and capital for collaboration within the supply chain, as a significant hindrance to the effective implementation of CE (Agyemang et al., 2019).

3.1.1.5. Collaborations. Value is created in the business model via the consistent joint efforts of an organisation and its partner businesses as accomplices in the collaboration framework (Sousa-Zomer et al., 2018). Bocken, Schuit and Kraaijenhagen (2016) indicated social relationships and collaboration as crucial components of the closed-loop supply chain. These relationships include SME integration and supplier–buyer relationships (De Angelis et al., 2018). If the leadership role and involvement of relevant stakeholders in the process of business model implementation is significant for developing a shared business model, collaboration can act as a barrier (Sousa-Zomer et al., 2018). Once CEBM understanding is clear at all levels, inter-organisational collaboration can bring challenges regarding the compatibility of a firm's business model with those of partner firms (Linder and Williander, 2017); these challenges can be addressed by developing an integrated management system (Sousa-Zomer et al., 2018). Moreover, substantial barriers to CEBM implementation include aligning incentives among partners and service delivery firms, creating win-win scenarios among partner firms and, finally, conveying the promised offering to consumers (Oghazi and Mostaghel, 2018). However, a lack of knowledge regarding collaborations continues to impede firms' efforts to adopt CEBM (Jabbour et al., 2019). For example, companies involved in cyclical metabolism, specifically inter-firm collaborations, are more likely to be interdependent due to the greater complexities of the CEBM compared to the LBM (Fischer and Pascucci, 2017).

The CEBM constructs a generative and restorative system that requires the joint efforts of business collaborators, such as companies, the global business sector and governmental bodies (Sousa-Zomer et al., 2018). The primary restraint on organisations in the CE transition is difficulty in collaboration with other companies, especially those that continue to utilise the LBM (Narimissa et al., 2020). The long-term association of organisations in the supply chain depends upon knowledge sharing among related businesses (Kazancoglu et al., 2020). However, firms are hesitant to share information due to the competition and length of the supply chain (Tura et al., 2019), and this hesitancy hinders effective collaboration among organisations.

3.1.1.6. Product design. Products are a significant tool to confront the challenges of CEBM in terms of their design (Burke et al., 2021). Integrating the principles of CE in product design can substantially alleviate waste production and enhance innovation and flexible resource consumption (Burke et al., 2021; Suchek et al., 2021). Product material and design are key barriers (Cantú et al., 2021; Luscuere, 2017), however, because companies use substitute material (recycled material) instead of

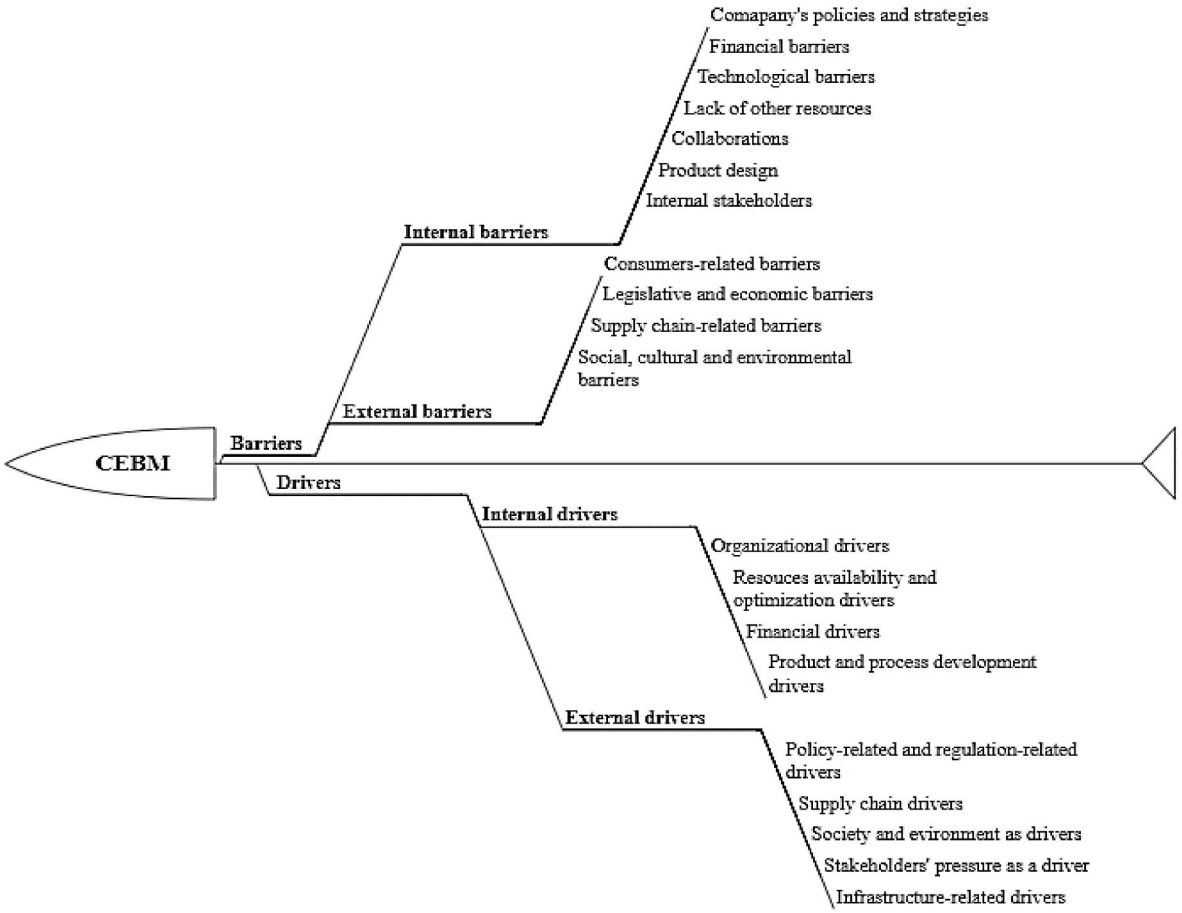

Fig. 6. Thematic areas.

virgin material to comply with CE principles (Bressanelli et al., 2018), which lack standardisation, and companies also face technological barriers in material recovery (Hopkinson et al., 2018; Luscuere, 2017). It should be noted that the characteristics of some materials do not permit substitution without compromising product quality (Cantú et al., 2021), and this, too, hinders CEBM implementation. Prior studies have also noted the perception of circular products as exhibiting lower quality (Ritter et al., 2015). While a product's quality establishes its place in the market, the perception that products produced through CEBM implementation are of lower quality poses a significant restraint to further CEBM implementation (Yang et al., 2018). Circular products, moreover, entail peculiar design requirements, such as avoiding glue and combining parts, and these requirements also impede CEBM (Guldmann and Huulgaard, 2020). Finally, the need for continuous product improvement makes it difficult to guarantee a stable product design that assists remanufacturing in CEBM (Guldmann and Huulgaard, 2020).

3.1.1.7. Internal stakeholders. Prior studies have suggested that various stakeholders, including stockholders and employees, put pressure on CE initiatives (Jakhar et al., 2019). For example, a lack of communication among departments and unclear departmental responsibilities towards an organisation's circular practices hinder CEBM implementation (Jabbour et al., 2020). Moreover, the insufficient availability of personnel and a lack of training engender adverse conditions for an organisation to optimise its value by implementing CEBM (Pesce et al., 2020). Compared to external stakeholders, internal stakeholders, such as a company's shareholders, more significantly influence CE implementation (Jabbour et al., 2020). Thus, the absence of influence and participation among stakeholders hinders the successful implementation of CEBM (Winans et al., 2017).

3.1.2. External barriers

External barriers refer to hindrances in the implementation of CEBM that arise outside the firm (Vermunt et al., 2019). Prior studies have identified several barriers to CEBM, such as consumers' inaccurate perceptions (Baxter et al., 2017), a relative lack of favourable policies for CEBM (Kumar et al., 2019), a trust deficit among supply chain actors (Mishra et al., 2019) and companies' restrictive cultures (Kirchherr et al., 2018). Scholars have categorised these external barriers in diverse ways. For example, Guldmann and Huulgaard (2020) recognised market- and institution-level barriers and value chains as external barriers to the implementation of CEBM. Cantú et al. (2021) classified consumer behaviour, regulatory barriers, infrastructure and supply chain barriers as external barriers. Drawing upon previous findings, the current SLR categories external barriers as consumer barriers (Hobson, 2020), legislative and economic barriers (Paletta et al., 2019), supply chain barriers (Vermunt et al., 2019) and social, cultural and environmental barriers (Donner et al., 2021).

3.1.2.1. Consumer-related barriers. The CE expects consumers to be dynamic participants in reusing products and thus to transform their throwaway culture (Wieser and Tröger, 2018). A consumer's choice to purchase and consume a product is based on various attributes, including the product price, design and quality and as well as the consumer's own perceptions (Jegethesan et al., 2012).

Rather than quality, Brunnhofer et al. (2020) identified price as the first criterion on which consumers decide to purchase a product. Lengthier product life expectancies in the CEBM require high-quality components and product design, which ultimately increase price and negatively affect consumers' decisions to purchase such products (Nishijima et al., 2020). Some consumers may regard CE practices as

costly and may be reluctant to purchase such alternatives in the absence of tangible benefits or inherit unwillingness to alter their ownership or consumption patterns in the absence of tangible benefits (Edbring et al., 2016).

The CE transition requires consumers to alter their behaviours and lifestyles. Scholars have noted the fickle nature of consumers' opinions that undermine CEBM implementation for durable products (Kirchherr et al., 2018). Thus, consumers' reactions are difficult to anticipate because they depend upon external conditions and social norms. Baxter et al. (2017) found that consumers hold false perceptions regarding refurbished or recycled products and even consider these products unreliable. Therefore, they are less willing to purchase these products because of the risks associated with their quality. Furthermore, limited awareness among consumers about CE is another relevant consumer barrier (De Jesus and Mendonça (2018).Consumers' ecological concerns does not show their conviction of utilising the environmentally sustainable products to reduce the wasteful use of natural resources and their conservation, reducing the pollution and improving the environment (Dhir et al., 2021a,b). For example, consumers' lack interest in and awareness of opportunities to return reusable bottles and, instead, simply dispose of them, which contributes to the limited nature of CEBM practices (Kirchherr et al., 2018).

3.1.2.2. Legislative and economic barriers. The government poses a barrier to CEBM implementation in the form of established legislation and regulations for circular practices (Kazancoglu et al., 2021). Frequent variations in government policies and the absence of relevant regulations significantly affect the establishment of remanufacturing companies (Shao et al., 2019). The regulatory uncertainties that result from inconsistent policies place remanufactured products, especially remanufactured bio-based products, in a disadvantaged position (Brunnhofer et al., 2020). Scholars have argued that although various firms intend to use waste as a resource, legislations hinders this process (Kazancoglu et al., 2021). This suggests that the authorities are inherently inclined towards a linear economy rather than a CE (Kazancoglu et al., 2020).

Government support is an absolute necessity for transforming companies' LBMs into CEBMs by converting one company's waste material into other companies' raw materials and thereby reducing material costs and eliminating price volatility (Kumar et al., 2019). For instance, existing waste legislation in the European Union (EU) does not clearly define or classify waste material, such as the distinction between waste material and by-product material; this failure restrains cross-border waste transfers and hence acts as a significant legislative barrier (Van Buren et al., 2016). Consequently, the lack of supportive policies for reusing products and recycled materials obstructs companies' CEBM enforcement (Kumar et al., 2019). For example, companies should higher the staff having formal certification from the government in waste reduction methods (Dhir et al., 2020). In the absence of adequate and supportive policies, firms face problems such as the uncompetitive prices of recycled products and the additional cost of waste management. As a result, firms struggle to manage the significant peaks of waste (Paletta et al., 2019). Similarly, scholars have highlighted that the lack of support for SMEs from focal firms restricts CEBM practices due to the lower bargaining power of SMEs in the context of CEBM implementation (Rizos et al., 2016). In addition, scholars have noted that emerging economies often lack sound legislation, regulations and compliance monitoring, which discourages the implementation of CE initiatives in emerging markets (Flores et al., 2018; Patwa et al., 2021).

3.1.2.3. Supply chain-related barriers. Supply chain management is a crucial concept in CE implementation. The extant literature has recognised the absence of supply chain alliances following complicated business patterns as a significant hurdle to CEBM implementation (Linder and Williander, 2017). To begin, Despeisse et al. (2017) identified the lack of transparency as a barrier to collaboration across the supply chain, which, in turn, hampers the effective implementation of CEBM. Partner incompatibility in the supply chain, which stems from a lack of trust, has also been recognised as a barrier (Mishra et al., 2019). Furthermore, scholars have identified reverse logistics as a barrier to the implementation of CEBM, noting that the reverse logistic supply chain involves high costs due to the geographic dispersion and uncertainty of the material flow (Gupta et al., 2019). Finally, supply chains often suffer from the fragmentation problem, which may prevent the chain's actors from knowing the activities of other actors (Yu et al., 2021).

3.1.2.4. Social, cultural and environmental barriers. Paletta et al. (2019) reported that people's failure to dispose properly of single-use bottles leads to environmental problems. Ferronato et al. (2019) recognised the absence of people's involvement (or social inclusion) in environmental issues as a barrier to CEBM implementation. Finally, scholars have discussed company culture as a barrier to CEBM implementation. For example, Kirchherr et al. (2018) argued that companies are hesitant to incorporate the CEBM concept; they termed this company culture as a hesitant company culture because companies are circumscribed to their environmental and corporate social responsibility departments.

3.2. Drivers

CEBM is considered significant for the development of emerging economies; it is, therefore, fundamental to recognise and comprehend the driving forces of CE (Govindan and Hasanagic, 2018). Stakeholders participate in CE ventures for various reasons—for example, to seize business opportunities, respond to stakeholder pressure, address environmental concerns, pursue collaborations, gain access to limited resources and improve firm performance (Abubakar, 2018; Gaur et al., 2018). Moreover, advanced managerial practices positively influence the environmental uncertainty and thereby effecting the firm performance (Lucianetti et al., 2018). Numerous studies have discussed the driving forces of CE in various areas, including service, manufacturing and construction (e.g. Lieder and Rashid, 2016; Smol et al., 2016; Tukker, 2015). Ilić and Nikolić (2016) recognised these drivers in terms of economic and financial capacity, public health, and resource management. The current study categorises CEBM drivers as internal and external drivers.

3.2.1. Internal drivers

Internal drivers are those factors that impel CE practices from inside an organisation. We classify internal drivers into organisational drivers (Tura et al., 2019), resource availability and optimisation drivers (Genovese et al., 2017), financial drivers (Agyemang et al., 2019) and product design and process development drivers (Sumter et al., 2018).

3.2.1.1. Organisational drivers. Organisational drivers encompass the factors that motivates an organization to implement CEBM; they include good leadership, design strategies, innovation, research and development and organisational infrastructure (Hagejärd et al., 2020; Konietzko et al., 2020; Linder and Williander, 2017; Nogueira et al., 2020). Leadership is considered the primary and most critical element that drives the successful implementation of a business model (Moktadir et al., 2020). Rizos et al. (2016) recognised leadership—a component of a company's culture—as of primary importance for CE projects. Employees' mindset, know-how and commitment can further ease an organisation's transition to the CEBM (Rizos et al., 2016). Bocken, Schuit and Kraaijenhagen (2018) regarded a company's experimentation as a way to acquire internal and external impetuses for a sustainability transition. This transition progressively advances towards the implementation of the CEBM and can result in internal engagement for the model. Poponi et al. (2020) conducted a study in the company spinoff (business subsidiaries) context, which proposed the spinoff company as a tool to encourage the transfer of knowledge and technology to the

production sector and a driver for CEBM.

3.2.1.2. Resource availability and optimisation drivers. Prior studies have discussed the availability of various types of resources, including material, knowledge and technology resources. Resource availability is an essential element of CE because it aims for a regenerative production system and sustains resource circulation within a closed system (Genovese et al., 2017). Consequently, the requirement for new material in the production system is reduced (Genovese et al., 2017). Similar to material, the literature has widely recognised knowledge as a resource that facilitates the promotion of CEBM implementation practices (Ilić and Nikolić, 2016). Finally, in the present era, information technology offers unique opportunities for business visionaries in CE. The development of business models where the nucleus is connected with digital technologies accelerates the inclusion of CE principles in business and transforms the relationships among the economy, materials and resources (Sehnem, 2019). Digitalisation in the form of technologies such as big data analytics and the Internet of Things (IoTs) can offer companies a competitive advantage by helping them to implement CE practices and innovations (Jabbour et al., 2019). For example, with the help of these technologies, companies can design an effective waste collection system for remanufacturing (Moktadir et al., 2018). Similarly, Bressanelli et al. (2018) suggested that IoT-enabled implementations can allow firms to overcome economic and financial challenges, which ultimately reduces operational risks.

3.2.1.3. Financial drivers. The extant literature has reported that LBM involves discarding material at the end of its life—a practice that is both costly and difficult to sustain (Agyemang et al., 2019). However, the possibility of lessening material costs and price volatility can motivate companies to consider the CEBM (Behrens, 2016). For example, reducing raw material costs and generating remanufactured product revenues are drivers to invest in CEBM (Jensen et al., 2019). Industrial networks involving the integration of SMEs and other companies have been found to enhance the sector impact in the market, resulting in lower business costs and promoting the effect of resource utilisation (Ormazabal et al., 2018). Moreover, green technology providers and start-up financing for businesses facilitate the implementation of CEBM (Rizos et al., 2016).

3.2.1.4. Product and process development drivers. The CEBM concept revolves around its end result in the form of a product and its longevity (Bocken et al., 2016). In the CEBM, products are designed to enable future expansion and modification (Den Hollander et al., 2017). Companies ensure the circular products' quality by improving their design to motivate consumers to opt for such products (Cui et al., 2017). Consumers appreciate and derive greater satisfaction from the circular product than from the linear product due to the former's improved quality (Agyemang et al., 2019). Circular practices in product development have been identified as a significant driver of CEBM in organisations (Nußholz, 2018). Organisations improve their efficiency by developing their waste recovery processes and decreasing the production of waste (Gusmerotti et al., 2019). Consumers have a positive attitude towards the recycling of e-waste due to the environmental benefits, that leads to the environment friendly actions (Dhir et al., 2021a,b). Moreover, supply chain redesign has been recognised as an enabling factor for both the recovery of end-of-life products and the efficient utilisation of by-products (Hussain and Malik, 2020).

3.2.2. External drivers

External drivers are the factors that drive CE practices from outside of an organisation, including legislative and economic factors. We organise external drivers into the following categories: policy and regulation (Urbinati et al., 2021), supply chain (Vermunt et al., 2019), society and environment (D'Agostin et al., 2020), stakeholder pressure (Ranta et al., 2018) and infrastructure (Pagano et al., 2018).

3.2.2.1. Policy and regulations related to drivers. Wrålsen et al. (2021) recognised national as well as international policies and regulations as important drivers of CEBM, suggesting that institutions and governments can provide incentives to consumers and businesses to implement CEBM. Political elements include guidelines and regulations, such as taxation, supporting funds and subsidy policies, as driving forces for CEBM designs (Ilić and Nikolić, 2016; Urbinati et al., 2021). According to Malinauskaite et al. (2017), Greek business leaders have implemented CE practices, such as waste management, by following EU policies and rejecting the sharing economy and eco-design business models (Trigkas et al., 2020). Milios (2018) indicated the importance of policies to CE implementation by formulating the pertinent strategic decisions related to recycling, reusing and remanufacturing to implement the suitable CEBM. Moreover, Mallory et al. (2020) described policy support in terms of the subsidies available for fertilisers in CE, which motivate organisations to implement CEBM. The integrated management system and incentive models for partnering firms can overcome misalignments in collaborations (Oghazi and Mostaghel, 2018; Sousa-Zomer et al., 2018). In this regard, government efforts to endorse these policies to promote end-of-life product management and cleaner production enables companies to implement CE practices (Agyemang et al., 2019). Moreover, government policies regarding loans and credits drive companies towards diversified investment for CE implementation (Jakhar et al., 2019).

3.2.2.2. Supply chain drivers. Prior studies have identified the geographical proximity of supply chain partners as an enabling factor that facilitates open communication and collaboration among partners, which, in turn, increases resource availability for CE practices (Rauer and Kaufmann, 2015; Urbinati et al., 2021). In addition, collaborating with different companies in the supply chain could promote waste management, which functions as input in CEBM-driven supply chains (Vermunt et al., 2019).

3.2.2.3. Society and environment as drivers. Social impact refers to the ways in which a company's actions promote change by providing opportunities, particularly for disadvantaged individuals, and by strengthening communities (Bianchini et al., 2019). The circular paradigm benefits not only society but also its own process of implementation. Environmental factors refer to resource shortages and potential adverse environmental effects wrought by business operations, which can drive companies to implement the CEBM (Linder and Williander, 2017; Murray et al., 2017; Urbinati et al., 2021). CE practices enable firms to minimise business operation risks and promote environmental safety (Jakhar et al., 2019). The CE focuses not only on economic prosperity but also on environmental quality and social equity. D'Agostin et al. (2020) recognised environmental concerns and healthy lifestyles as enabling forces for CEBM. Despeisse et al. (2017) identified 3D printing as an enabling factor for circular production systems in an additive manufacturing process that uses recycled plastic material. Likewise, in the automobile industry, CE practices are considered an opportunity to address environmental safety concerns and minimise business operation risk (Jakhar et al., 2019). Like CE, strategic corporate social responsibility (CSR) intends to ensure a company's ability to remain competitive and productive in the long term (Esken et al., 2018). Therefore, CE can be communicated as a long-term goal whose pursuit is driven by CSR, which is a part of the company's social obligation (Esken et al., 2018).

3.2.2.4. Stakeholder pressure as a driver. An essential driver towards the implementation of CE is pressure from a company's stakeholders. For example, Ranta et al. (2018) found that Huawei increased its efforts to promote its products' (i.e. phones') recycling capabilities due to

stakeholder pressure. Jabbour et al. (2020) reported that the public continues to demand that organisations consider more responsible production and consumption methods, and these demands encourage CE practices. Agyemang et al. (2019) and Russell et al. (2020) identified stakeholder pressure as a significant enabler of CE implementation. Prior literature has also highlighted stakeholders' involvement and cooperation in decision-making as an important factor in the transition from the linear economy to the CE (Gupta et al., 2019).

3.2.2.5. Infrastructure-related drivers. Scholars have highlighted the role of infrastructure as an enabler that enhances CE implementation (De Jesus and Mendonça, 2018). Infrastructure, specifically physical infrastructure, such as utilities, buildings and roads, is assumed to be an essential component of CEBM implementation (Pagano et al., 2018). These amenities motivate companies to explore and utilise opportunities for competitive advantage. For example, these amenities help firms to construct green infrastructure and minimise the cost of CE-related initiatives (Russell et al., 2020).

4. Research gaps and future research avenues

This systematic review of prior studies offers a comprehensive understanding of the drivers of and barriers to the implementation of CEBM. By reviewing the extant literature, we identified various research gaps that allow us to propose future research avenues. These future avenues will encourage scholars to explore this area and delineate the implications of their findings for organisations and relevant stakeholders. Table 3 maps the existing research gaps on the relevant themes with future research avenues while also noting the methodical design of prior studies.

5. Framework development

Scholars have explicated the concept of the business model as an approach through which firms create value (Kallio et al., 2006). A popular way of understanding the business model in the extant literature is an accentuation of the systems through which firms, along with other actors (suppliers, business partners, retailers, etc.), create value for their consumers (Osterwalder and Euchner, 2019). Therefore, an actor-network approach has the potential to illuminate the implications of the conceptual framework developed in the present study. The framework utilises the thematic analysis of the present study to understand a firm's CEBM implementation. In conjunction with the extant literature, the term 'actors' is used to depict various business actors involved in the organization's key functions and responsible for the main outcomes of CEBM implementation, which are value creation, value delivery and value capture (Manninen et al., 2018).

The framework focuses on the alignment of business functions (strategy, processes, knowledge and frameworks) with circularity principles (preservation, optimisation, system effectiveness and negative externality minimisation; see Fig. 7). A rational framework capable of incorporating circular characteristics and potentials as inputs and converting them into a value proposition (creation, capture and delivery) as an output (Chesbrough and Rosenbloom, 2002) is essential to ensure the embeddedness of CEBM within these functions. CEBM strategies include procedures for recycling (cycling); extending the usage stage of products with innovative design, encouraging longer use, maintenance and renovation (extension); encouraging more intensive usage with the help of the sharing economy (intensification); and substituting products with solutions related to services (substitution) (Geissdoerfer et al., 2017). Nevertheless, circularity principles must be considered during CEBM implementation. These principles include designing for the decoupling of resources (preservation), optimising the use of resources (optimisation) and eliminating rebound effects, such as an increase in resource consumption (negative externality minimisation) (Webster, 2020). In addition, effective knowledge management (KM) has been recognised as an important element for businesses seeking to establish a sustainable competitive advantage (Agyemang et al., 2019). KM would promote CEBM consciousness and innovation in circular industries and employment opportunities (Atiku, 2020).

CEBM implementation can be carried out by creating, acquiring, transforming or diversifying the current business model (Geissdoerfer et al., 2017). However, the important parameters extricated through our assessment of the drivers and barriers must serve as a foundation for the successful enactment of the CEBM endeavour. For example, companies must effectively manage their operational strategy, product design strategy and policies to maintain their coherence with the new business model because if they fail in this regard, these factors would act as a barrier (Bonsu, 2020). Firms also encounter challenges involving the massive investment required for enacting technological changes, training employees for new operations and marketing circular products (Pathak and Endayilalu, 2019). The financial challenge of these investments is further augmented by the financial uncertainty associated with reused materials (Upadhyay et al., 2021). However, such financial burdens can be offset with reduced raw material costs and remanufactured product revenues (Jensen et al., 2019). Similarly, firms lacking technological capability and time can take cues and support from other actors in the network. Open communication and collaboration among partners can increase the availability of resources, such as technology capability for CEBM implementation (Rauer and Kaufmann, 2015; Urbinati et al., 2021). Thus, to offer innovative value propositions based on CE, firms should strive to overcome barriers in a competitive manner by utilising the set of drivers outlined in the present study.

Further, as an output of CEBM-related activities, the value proposition dimension of the CEBM concept is highlighted. This dimension implies that the CEBM goods or services a firm offers also encompass the information related to them (creation). Developing marketable CE products and services can be helpful for realising the transition to CEBM. However, firms must address the barriers before being able to achieve their value creation goals. Product design tends to be among the key barriers because a substitute material is used and products are specifically designed for circularity (Bressanelli et al., 2018). To stimulate the value creation of products and services in circular systems of production, offerings must be marketed successfully (delivering), and economic value can be captured in return (capturing) (Al-Debei & Avison, 2010). The ability to capture value is one of the most important factors motivating firms to transition to the CE (Lin, 2018). Such value derives from drivers such as resource optimisation (Genovese et al., 2017) and design improvements that motivate consumers to purchase the firms' products (Cui et al., 2017). Because the CEBM requires a change in consumers' behaviour, consumers are expected to be dynamic participants. However, consumers undermine the durable products and their tendency towards a throwaway culture impede the successful CEBM transition (Kirchherr et al., 2018). Thus, the drivers and barriers outlined in the present study affect firms' business models, and firms must manage them for the successful implementation of CEBM.

The framework developed here is a simple and systematised visualisation for understanding CEBM implementation. The application of actor-network theory extends the theoretical understanding of important elements, their interactions and considerations within the CEBM. Actor-network theory analyses the impacts of human and non-human factors on a specific system (Luscuere, 2017). The actors within the CE system engage in socio-techno-economic interactions (Vallecha & Bhola, 2019) and create networks in a CEBM (Babri et al., 2018). These interactions act as an enabling factor for collaboration and the subsequent CEBM implementation. The framework developed here not only emphasises the role of certain factors (drivers and barriers) impelling or impeding CEBM implementation but also paves the way for some important questions. It is crucial to understand the actors' interactions with each of the factors and the alignment (or misalignment) of their interests in resolving the barriers. The response to the important factors

Table 3
Identification of the research gaps and future research avenues.

Themes	Subthemes		Research gaps	Future research avenues
Barriers	**Internal barriers**	Internal barriers	1. The prior literature has not yet categorised the different internal barriers towards CEBM implementation at different levels (e.g. micro, meso and macro). 2. There is a need to identify the potential risks related to business priorities when implementing CEBMs.	**RQ1.** What are the different internal organisation barriers towards CEBM implementation at the micro, meso and macro levels? **RQ2.** What are the potential risks associated with a company's business priorities when implementing CEBM?
		Company policies and strategies	1. Scholars have discussed several barriers to CEBM implementation, but they have not yet studied in detail the policy limitations of those barriers at an organisational level.	**RQ1.** What policy and strategy limitations hinder an organisation's efforts to implement CEBM?
		Financial barriers	1. Few studies have discussed the various financial barriers associated with CEBM implementation. Effectively addressing financial barriers requires, first, an in-depth investigation of such barriers at the company level.	**RQ1.** What risk do price variations of materials pose for remanufacturing processes, and how do these risks affect product quality? **RQ2.** How do recycled product price variations affect the decision to invest in CEBM? **RQ3.** What financial barriers are associated with CEBM implementation? **RQ4.** What are the policy-level implications of the financial barriers associated with CEBM implementation?
		Technological expertise	1. Prior literature highlighting the extent of technological expertise and skills required to implement CEBM is nascent.	**RQ1.** What technical skill- and expertise-related barriers do firms face when implementing CEBM?
		Lack of other resources	1. Time, manager's interest, information and employees' awareness have been recognised as resources for CEBM implementation; however, limited prior literature has sought to identify the contribution of these resources to successfully implement CEBM.	**RQ1.** How do organisational resources contribute to the successful implementation of CEBM? **RQ2.** How can organisations strengthen their resources (for example, by enhancing the manager's interest or employees' awareness) to effectively implement a CEBM?
		Collaborations	1. Firms are hesitant to share information, and this hesitancy also hinders business collaboration. However, the literature has not yet identified the strategies and initiatives required to overcome this inherent resistance among organisations to sharing information and ultimately collaborating with other firms.	**RQ1.** What strategies and initiatives can organisations adopt to promote information sharing and collaboration with other firms?
		Product design	1. The quality of the products produced through CEBM is perceived to be of low quality compared to the products developed by LBM. However, the literature has not yet determined why CEBM-based products are considered to be of low quality.	**RQ1.** What factors contribute to the lower quality of CEBM-based product designs? **RQ2.** What reasons or factors explain the divergent perceptions of CEBM-based and LBM-based product designs?
	External barriers	Consumer-related barriers	1. Scholars have traced consumer resistance to a lack of awareness of circular products, and product quality. However, scholars have not yet proposed the strategies and mechanisms by which firms can overcome these barriers.	**RQ1.** What kind of strategies and mechanisms can firms employ to reduce consumer resistance towards adopting circular products?
		Legislative and economic barriers	1. Prior literature has suggested that government support in the form of legislative and economic policies is instrumental in implementing CEBM. However, it is not clear whether governments undertake monitoring mechanisms to ensure that firms are following the set legislations. Furthermore, the literature has not yet determined the extent to which legislative and economic policies act as barriers towards CEBM implementation.	**RQ1.** What monitoring mechanisms can governments undertake to ensure firm compliance with CEBM-related legislation? **RQ2.** To what extent do legislative and economic policies act as barriers to CEBM implementation?
		Supply chain barriers	1. The literature has yet to determine how and to what extent a lack of trust, transparency and geographical spread in the supply chain act as barriers towards CEBM implementation.	**RQ1.** How do firms build trust and transparency with other partners in the supply chain to effectively implement CEBM? **RQ2.** How can firms address the fragmentation problem while collaborating across geographically dispersed supply chains?
		Social, cultural and environmental barriers	1. The literature has yet to identify ways to address the various social, cultural and environmental issues involved in CEBM implementation.	**RQ1.** What strategies and initiatives can firms undertake to address the social, cultural and environmental issues involved in CEBM implementation?
		External stakeholder-related barriers	1. Government has been recognised as an important stakeholder in promoting CEBM. However, the literature has not clearly identified the government policies and regulations that act as barriers to successful CEBM implementation.	**RQ1.** What government policies and regulations, when applied to different industries, hinder the successful implementation of CEBM?
Drivers	**Internal drivers**	Organisational drivers	1. Business collaborations and partnerships are key enablers of CEBM. However, it is not clear what factors drive these enablers.	**RQ1.** How do various regional factors, such as geography and demography, impact successful inter-organisational collaborations and partnerships? **RQ2.** What factors drive successful business collaborations and partnerships in the context of CEBM?
		Resource availability and optimisation	1. Information, knowledge and technology are significant resources for CEBM implementation. However, the current literature lacks an in-depth understanding of each of these three resources.	**RQ1.** What is the relative contribution of information, knowledge and technology as key enablers of CEBM implementation? **RQ2.** What are the various correlates of the three key sources (e.g. information sharing, knowledge management, knowledge sharing, knowledge hiding, disruptive technologies, AI, big data, IoT, blockchain, etc.), and how they are associated with CEBM implementation?

(*continued on next page*)

Table 3 (*continued*)

Themes	Subthemes		Research gaps	Future research avenues
		Financial drivers	1. Lower cost of resources (e.g. raw material) has been recognised as a significant driver of CEBM implementation. However, it is unclear whether lower cost is obtained at the expense of product quality, and scholars have yet to determine the impact of lower cost on CEBM implementation.	**RQ1.** In what ways can organisations exploit cost-effective materials and processes to successfully implement CEBM without compromising product quality? **RQ2.** How is lower cost associated with the perception of product quality in the case of CEBM?
		Product and process development	1. Prior literature has examined only limited facets of product and process development. Scholars must examine the other possible facets of this important enabler of CEBM.	**RQ1.** What facets of product and process development act as enablers of CEBM?
	External drivers	Policies and regulations	1. Scholars must conduct an in-depth investigation to examine the influential role of government policies in boosting CE practices. 2. The extant literature is characterised by a limited understanding of the key trade-offs between policy goals and organisational goals in CEBM implementation. 3. Scholars have yet to determine if and how government taxes and incentive policies influence the viability of recycled products, such as compost production in CEBM.	**RQ1.** What role do government policies play in boosting CE practices and CEBM in general? **RQ2.** What are the key trade-offs between policy goals (e.g. raw materials sourcing) and organisational goals (e.g. cost-effective processes) in CEBM implementation? **RQ3.** How do government policies, such as taxation and subsidy (incentive policies), facilitate the waste management implementation activities and economic viability of recycled products, such as compost production, in CEBM?
		Supply chain-related drivers	1. The literature lacks clarity on the relationship between the level of collaboration among supply chain actors, geographical proximity and CEBM.	**RQ1.** Does a higher level of collaboration among supply chain actors have a positive effect on CEBM? **RQ2.** How does geographical proximity among supply chain actors affect CEBM implementation in the focal firm?
		Society and environment as drivers	1. Prior literature has not discussed consumer behaviour from different perspectives, such as structural, cognitive and behavioural. 2. The literature is characterised by a limited understanding of the role of awareness campaigns.	**RQ1.** How can the consumer participatory approach facilitate the CEBM transition? **RQ2.** How can awareness campaigns motivate enterprises to implement CEBM?
		Stakeholder pressure	1. The prior findings on drivers and enablers cannot be generalised because they have discussed enablers and drivers for specific cases only. Thus, country-level factors such as stakeholders' pressure require further investigation.	**RQ1.** How can a firm ensure win-win outcomes on the diffusion of CEBM and consumer satisfaction at the same time? **RQ2.** Which stakeholder's pressure affect perceptions of the drivers and enablers of CEBM? **RQ3.** What national and regional market mechanisms that reduces stakeholder's pressure and enable successful CEBM implementation?
		Infrastructure	1. Empirical evidence regarding the role of infrastructure projects in implementing the principles of CEBM is limited. 2. There is a general lack of research on the role of the institutions governing infrastructure in the context of CEBM.	**RQ1.** What is the impact of national and regional infrastructure on CEBM implementation? **RQ2**. What strategic fields of action should the institutions governing infrastructure address to drive CEBM?
Methodological design			1. Scholars have primarily utilised case studies combined with literature reviews to investigate CEBM.	**RQ1.** How can scholars empirically examine the relationship between the barriers, drivers and implementation of CEBM?
			2. Most of the business cases examine a single company or multiple cases within a single country; this approach limits the generalisability of the study findings.	**RQ2.** How can data from different companies in different countries enhance the generalisability of existing findings? **RQ3.** Can a comparative analysis approach enhance the generalisability of existing findings by considering developed and developing economies?
			3. The extant literature includes only a limited number of longitudinal studies.	**RQ4.** How can scholars analyse the long-term impact of CEBM using longitudinal studies?
			4. Scholars have not yet conducted investigations to quantify the myriad barriers to CE.	**RQ5.** How can scholars quantify the effects of several barriers to CE?

(drivers and barriers) are generated, enacted and addressed has the potential to provide important insights for CEBM implementation. Ultimately, the effects of CEBM for different actors also need to be assessed. Such an analysis would promote the development of an action plan by utilising the factors delineated in the present study.

6. Discussion and conclusion

The current SLR is an attempt to identify the various drivers and barriers associated with successful CEBM implementation. We employed well-established research protocols to identify related studies from eminent databases, i.e. *Scopus* and *Web of Science*. In doing so, we answered four key **RQs**. We addressed **RQ1** by presenting a research profile of the prior literature through a bibliometric analysis. The research profile incorporates the publications' annual trends, publication sources, methodological designs, geographical coverage and theories applied. We addressed **RQ2** using the content analysis technique; we also recognised research themes with a focus on the drivers and barriers involved in CEBM implementation. The synthesis of prior literature further enabled us to highlight the research gaps in the extant literature and propose avenues for future research in **RQ3**. Finally, we answered **RQ4** by developing a research framework that explores the prerequisites of the CEBM and their association with various factors (i.e. drivers and barriers) in relation to CEBM implementation. The outcomes of this study present substantial implications for practitioners as well as scholars who are interested in CEBM and its implementation in organisations.

By highlighting the key thematic areas that encompass the multiple drivers of and barriers to CEBM, this study provides direction to prospective scholars interested in exploring the relationships among such drivers and barriers. We have clustered these drivers and barriers into internal drivers and barriers and external drivers and barriers to clearly differentiate the internal from the external factors inhibiting or impelling organisations to implement CEBM. Furthermore, this study advances the current understanding of the themes by identifying the research gaps and future research avenues under each theme. On the

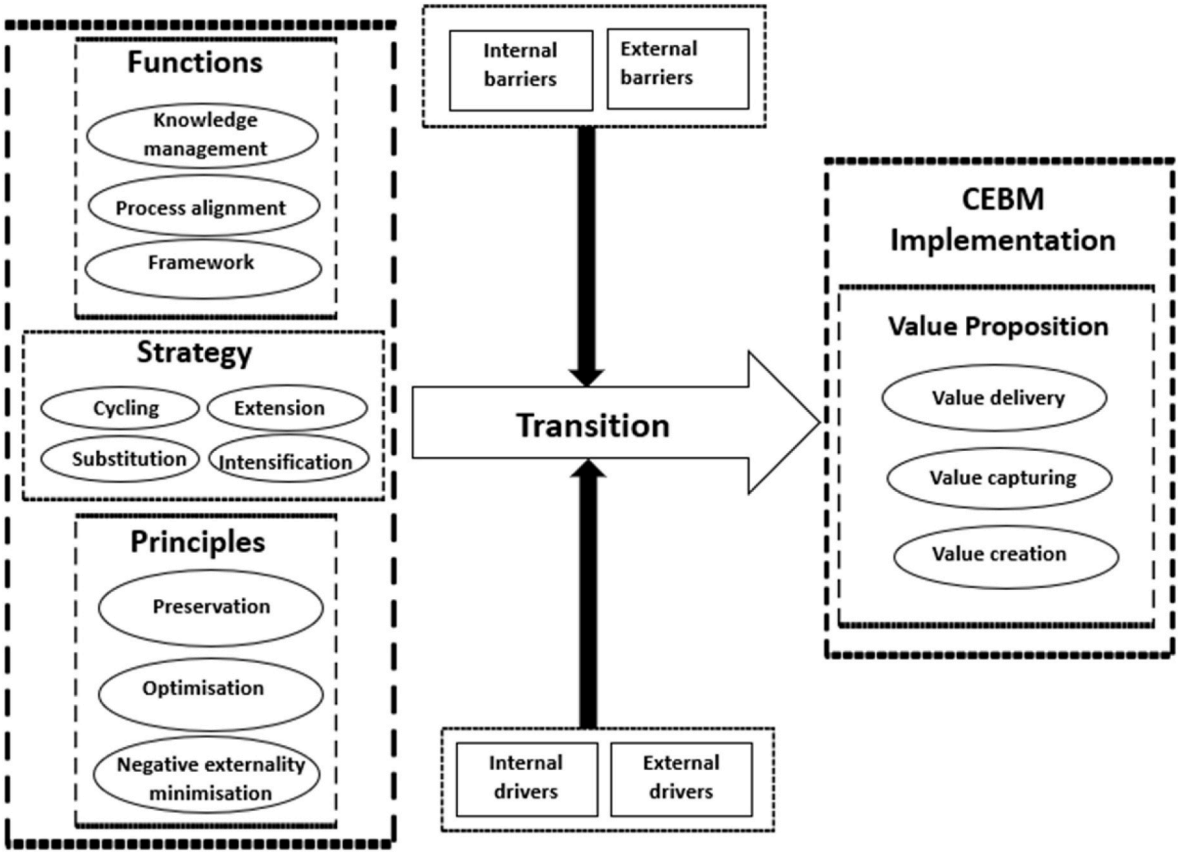

Fig. 7. Actor-network theory-based framework for CEBM implementation.

whole, we developed our conceptual framework based upon the current findings of this study. This framework provides future scholars with a concrete research agenda to further explore this area. We conclude this study by identifying its key practical and theoretical implications.

6.1. Practical implications

This SLR entails multiple practical implications for managers. First, it identifies the key barriers that prevent the implementation of CEBM. By distinguishing between internal and external obstacles, our holistic framework paves the way for management to anticipate numerous obstacles when implementing CEBM. For example, internal barriers, such as financial barriers, are the key inhibiting factors in CEBM implementation. Prior research has mainly focused on the execution of generic CEBM in a narrow context, for example, barriers in the waste management sector (Aid et al., 2017), barriers to a bio-economy (Reim et al., 2019) and drivers of and barriers to the solar energy system (Salim et al., 2019). Managers can deliberate our findings while implementing the CEBM model, and they should consider financial constraints as a key factor. We suggest that when implementing the CEBM model, organisations should consider collaboration with stakeholders to overcome financial constraints and more effectively implement the CEBM model. Moreover, governments should consider the importance of CEBM and promote fundraising in the implementation of the CEBM model. Increasing the availability of financing will help companies to implement ecological innovation and energy-saving technologies, which may, in turn, facilitate the effective implementation of CEBM. Therefore, managers should utilise sustainable and environmentally friendly innovations. Likewise, fiscal austerity is among the key obstacles. Organisations should prepare their financial plans together with market analyses, considering all elements to resolve any potential financial constraints, such as the estimated cost of business model design, financial arrangements, product pricing and expected revenue, in a timely manner. By capitalising on the results of our research, managers can easily identify other obstacles currently facing their CEBM and proactively introduce interventions and corrective measures to address these obstacles.

Second, we offer a deep understanding of the external barriers, that the organisations are currently facing. For example, the lack of social inclusion and participation is another external obstacle for organisations attempting to effectively implement the CEBM model. We recommend that policymakers consider cultural aspects when designing the CEBM model and invest in CSR to raise awareness of their environmental plans. These awareness-raising campaigns should not only inform people of firms' efforts but also shift people's thinking towards environmental safety policies. We further recommend that organisations prepare strategic outlines and periodically evaluate CEBM implementation. Contemporary CEBM issues should be discussed with stakeholders to obtain effective results. Without considering the interests of stakeholders, firms will struggle to implement the CEBM model effectively in the long run.

Third, this SLR reveals that even if an organisation has an effective and efficient CEBM model, the implementation of CEBM is likely to fail if the firm lacks the required sustainable operations and manufacturing expertise to reduce waste. It is thus necessary to develop sustainable operations and theories to provide a holistic approach to organisations' green supply chain, sustainable supply chain, green marketing and CE practices. We provide a framework to improve the existing understanding of building sustainable operations, such as CE and environmental, social and technological issues that require initiative, including higher education to develop comprehensive capacity buildings (such as CEBM), and skills and knowledge. For example, colleges and universities should design courses at the undergraduate level with a clear focus on CE and CEBM models, including social, technical and economic/

business aspects. Schools of management may help organisations to formulate CEBM implementation strategies and practices and develop effective CEBM operations and more traditional model supply chains. Moreover, to build the capacity of employees, organisation should provide the training required to effectively implement CEBM.

Fourth, prior literature has explored several driving forces that encourage organisations to implement CEBM. For example, we recognise social and environmental factors as drivers of CEBM implementation. Resource shortages and the adverse environmental impact of business operations encourage organisations to design and implement CEBM and ensure environmental safety (Linder and Williander, 2017; Murray et al., 2017). In the present era, consumers are also concerned with the responsible consumption of products that are produced through responsible processes. Healthy lifestyle and environmental concerns are considered key drivers for CEBM implementation (D'Agostin et al., 2020). Therefore, we suggest the managers consider the needs and participation of customers who appreciate the efforts of CEBM to address societal concerns at large. Importantly, different organisations may encounter different drivers of and obstacles to the CEBM. The factors that limit one organisation's successful implementation of CEBM may be the driving factors for another organisation's implementation of CEBM. In addition, the intensity of these obstacles and drivers can vary from organisation to organisation. Therefore, organisations must conduct an in-depth analysis of their own internal and external environments based on the nature of their CEBM. This review can serve as a starting point for organisations to conduct such analyses, which will allow them to customise their capacity-building plans according to their unique needs and CEBM design.

Finally, the paper has several policy implications. For example, the CEBM and supply chain resilience are mutually reinforcing and inextricably linked (FAO, 2021). Firms should consider dynamic and innovative ways to manage disruptions, such as those that occurred during the COVID-19 pandemic (McClements et al., 2021). However, our review of the extant literature reveals that CEBM failure remains likely among organisations that have internally prepared themselves for CEBM implementation while ignoring barriers from the external environment (Cantú et al., 2021). For example, because customers play an integral role in CEBM, social awareness is a significant factor in the CEBM transition (Lieder and Rashid, 2016). Therefore, governments must undertake collaborative efforts with companies to increase awareness of and incentivise CEBM implementation. Policy interventions might ensure that the feasibility report of any business model includes consideration of external factors. External barriers, such as customer resistance, legislative and economic barriers, barriers from society, culture and the environment, and resistance from external stakeholders, are as important for organisations to consider as internal barriers, which can be effectively addressed once the external barriers have been managed. For example, the government should analyse the ways in which legislation imposes barriers to CEBM implementation and then develop its policies and strategies to deal effectively with those barriers.

6.2. Theoretical implications

The CEBM concept is critical not only for organisations but also for society and the environment at large. Thus, extensive investigation is required to guide policymakers and organisations to overcome the risks involved in CEBM implementation. This SLR's findings present several theoretical implications for scholars to further enhance knowledge in this subject area. First, we offer the research profile of prior studies in terms of the studies' geographical scope, annual publication trends, research designs, publication sources and theories utilised to identify gaps and uncover themes that can be further explored by future scholars for theoretical advancement in the area. These efforts can guide future scholars to comprehend state of the art and devise their RQs more effectively.

Second, this study is one of the very few prior review studies to focus exclusively on the explicit categorisation of the drivers of and barriers to CEBM implementation. Prior scholars have examined such drivers and barriers in specific contexts of the sustainability transition and the solar energy system (Salim et al., 2019; Hofmann, 2019); however, these narrow efforts simply underscore the need for a more general and broader review of the prior literature. We addressed this gap by systematically reviewing the prior literature to summarise the key drivers of and barriers to the CEBM. Moving from the general classification to the specific takeaways, this SLR highlights the restricted nature of research on the CEBM. Furthermore, by solidifying the vital drivers and barriers into several subgroups, we present directions for scholars to devise scales to measure such drivers and barriers.

Third, this SLR highlights several common themes from the prior literature. In doing so, it simplifies the visualisation of the diverse facets of CEBM implementation for prospective scholars. This study can also function as a starting point from which scholars can recognise additional aspects requiring attention and thus offer practitioners more robust results. Broadly, we have classified these themes as drivers of and barriers to CEBM. It is desirable to investigate the specific potential barriers involved in specific CEBM with the respective drivers. Very few studies provide a comparative analysis of the CEBMs adopted by different organisations. Scholars should take guidance from the present study and jointly delve into a comparative investigation of the successful implementation of CEBM by various organisations to enhance the generalisability of existing findings. Moreover, scholars should explicitly identify possible propositions to overcome the recognised barriers by utilising the mapping tools.

Fourth, our SLR findings can promote further investigation of the variations and facilitating factors to CEBM in both developed and developing regions. These factors are likely to differ across developing and developed regions because of varying employment levels, resource availability, profitability potential and incentive plans and subsidies. Comparative efforts will thus improve the current understanding and facilitate policymakers' efforts to devise strategies and policies for CEBM accordingly.

Finally, our conceptual framework for CEBM implementation provides a bird's-eye view of CEBM processes based on the prior literature. This framework presents the functions, strategies and principles for the CEBM transition. The study findings thus add new variables that future scholars can investigate in the CEBM transition to concretise the relationship between CEBM and other factors.

6.3. Limitations and future research

This study recognises the critical drivers of and barriers to CEBM implementation without tying them to any specific CEBM. Our findings offer a clear understanding of the barriers to overcome and the drivers to exploit, which practitioners require before implementing the CEBM. Despite its contributions, this SLR entails a few limitations.

First, we considered only two databases, i.e. *Scopus* and *Web of Science*, because of their prominence and inclusion of many indexed studies. However, we may have omitted relevant articles from other databases.

Second, by following predefined inclusion and exclusion criteria and thus ignoring research other than empirical quantitative and qualitative studies, we confined our discussion on the implementation of CEBM. Third, although we considered the latest research trends to propose future research avenues, those propositions have not been empirically examined.

Beyond any specific limitations of our study, however, much work remains to be done. The field of CEBM research has surged rapidly in recent years, leaving significant area to be covered. Scholars can further advance understanding of this area by drawing upon the propositions given in this study. For example, future scholars can expand the inclusion and exclusion criteria to consider conference papers and project reports, which might go beyond the current themes discussed in this

study. Future scholars can also expand their keyword selection to enlarge the CEBM arena under investigation. Finally, the current SLR's findings lack empirical evidence, which future scholars can provide.

CRediT authorship contribution statement

Maryam Hina: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Validation, Roles, Writing – original draft, Writing – review & editing. **Chetna Chauhan:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Validation, Roles, Writing – original draft, Writing – review & editing. **Puneet Kaur:** Investigation, Project administration, Supervision, Writing – review & editing. **Sascha Kraus:** Investigation, Project administration, Supervision, Writing – review & editing. **Amandeep Dhir:** Investigation, Project administration, Supervision, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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