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Review

Disentangling circular economy practices and firm's sustainability performance: A systematic literature review of past achievements and future promises

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ABSTRACT

This paper systematically and critically reviews the literature on the intersection of circular economy practices (CEPs) and sustainability performance (SP). We synthesize and analyze the extant literature to uncover the knowledge gaps, highlight the contradictory views, and provide a comprehensive overview of the field. Following a detailed database search, we selected 104 empirical studies published in peer-reviewed journals for analysis. Our review reports the publication trends, top publishing journal outlets, research methodologies, and empirical contexts. We outline the theoretical underpinnings, identify the diverse circular economy practices and the key factors that impact circular economy practices and sustainable performance. The review shows a propensity for most authors to reuse established theories or not use theory at all, revealing the need for theory development. Furthermore, our analysis revealed that R&D and innovation, digital technologies, organizational capabilities/resources, and stakeholder and institutional pressure substantially influence the CEPs - SP relationship. Through our detailed assessment of the existing literature, we identified and proposed several themes and avenues for future research.

1. Introduction

The adverse impacts of climate change, widespread land degradation, and rapid loss of biodiversity are readily observable and destabilize ecosystems crucial for the sustenance and development of humanity (Hazen et al., 2021). Additionally, Heikkurinen (2018) argued that the actions of humans are pushing the planet towards multiple critical thresholds, known as "tipping points," which could cause significant alterations to the environment that our modern society relies upon. Thus, transitioning from the traditional linear production and consumption-based "take, make, dispose" model to a more environmentally sustainable one is imperative. Geissdoerfer et al. (2018) state that stakeholders are increasingly interested in transitioning towards a more environmentally and socially sustainable economy. In this context, circular economy (CE) stands out as an appropriate and distinctive solution due to its ability to holistically address the triple bottom line of economic, environmental, and social aspects (Cullen and De Angelis, 2021). In other words, CE seeks to move away from a linear model of production and consumption and instead promote resource efficiency, minimize environmental impact, and encourage sustainable economic growth (Prieto-Sandoval et al., 2018). Furthermore, a CE is not solely focused on environmental benefits, but also addresses social and economic aspects. CE creates new job opportunities by promoting innovative business models and technologies, fostering local economic development, and enhancing social inclusivity (Lim et al., 2022).

Various conceptual interpretations of CE and sustainability exist within CE-related literature (Connelly, 2007; Friant et al., 2020). In fact, positioning CE in relation to the more established concept of sustainability has become a dominant topic of discussion (Geissdoerfer et al., 2017; Kirchherr et al., 2017). While sustainability can enable a transition towards a CE, and a CE can serve as a means to achieve sustainability-oriented goals, adopting circularity does not necessarily guarantee positive environmental, social, and economic outcomes across the entire product life cycle (Walker et al., 2022). This denotes that the concept of a CE must not be viewed as an end but rather as a crucial instrument for realizing global sustainability objectives. Sauvé et al. (2016) compare CE with environmental sciences and sustainability, highlighting the effectiveness of CE in solving environmental problems. Geissdoerfer et al. (2017) also addressed the issue of the multitude of relations between CE and sustainability by identifying

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three broad categories of relationships: conditional; CE as a condition for sustainability, beneficial; CE and sustainability are mutually beneficial or a trade-off; CE having both positive as well as negative sustainability impacts. In their literature review, Schöggl et al. (2020) point out that CE solutions may have adverse sustainability effects, such as rebound effects. They also argue that social issues are underrepresented in CE and that CE literature does not sufficiently address the higher-ranking value retention options that could have more significant sustainability impacts. The connection between CE and sustainability can be described on a scale ranging from a more integrated and positive association to a disaggregated and potentially negative interaction (Geissdoerfer et al., 2017; Schroeder et al., 2019; Suárez-Eiroa et al., 2019). Therefore, it is uncertain whether adopting a CE will inevitably lead to sustainability outcomes (Velenturf and Purnell, 2021).

The transformation towards a CE has increasingly become the strategic priority for scholars, policymakers, practitioners, organizations, and customers across the globe (Bag et al., 2021). Specifically, there is an apparent need for academic research to investigate whether implementing circular economy practices (CEPs) results in the desired firm performance (Pinheiro et al., 2022). However, the lack of a clear relationship between CEPs and improved performance, be it environmental, economic, or societal, has become a barrier for companies seeking to justify implementing CEPs (Bag et al., 2021; Zhu et al., 2012). The empirical evidence on this relationship reports mixed and contradictory results; some studies document a significant and positive relationship (e.g., Khan et al., 2021a; Khan et al., 2022), whereas others document insignificant relationships (Edwin Cheng et al., 2022). For instance, Zhang et al. (2022) found that implementing CEPs reduces productivity and financial stress. However, the latest research has reported a positive and significant influence of CEPs on cost reduction in energy consumption and production in manufacturing firms. Moreover, a significant part of the research has focused on analyzing the effect of the CEPs only on firms' economic and environmental performance, missing the social aspect (Geissdoerfer et al., 2017; Merli et al., 2018; Sudusinghe and Seuring, 2022). This demonstrates that the literature on the relationship between CEPs and firms' sustainability performance (SP) (i.e., economic, social, and environmental) is still fragmented and limited (Khan et al., 2021b; Kristoffersen et al., 2021; Mora-Contreras et al., 2022), presenting a research gap that needs further investigation.

Although existing reviews on CEPs have provided some insights, they have a narrow selection, e.g., the number of papers reviewed, compromising the depth of the findings. Often, the focus is not on the link between CEPs and firms' SP, or the study is industry-specific. For example, Jia et al. (2020) focused on the interaction of CEPs and firms' SP in the textile and apparel industry. Yin et al. (2023) focus on the relationship between the CEPs and firms' economic and environmental performance, leaving the social dimension out. In their literature review, de Lima et al. (2022) focus mainly on the challenges firms face concerning the circular supply chains (CSCs) required to achieve SP. Mora-Contreras et al. (2022) had a restrictive search string, which left out some key literature from the scope of their review.

Reviewing 44 papers on CEPs and SP, Mora-Contreras et al. (2022) have pointed out a significant gap in the use of theories and further theory development. This prompted us to investigate further what theories are used and, more importantly, how they are used in the explanation. The variation in the CEPs could be the reason for the varied findings in the existing literature. Certain practices can have adverse effects, whereas others can have positive impacts. Also, there can be variations when we consider the three pillars of sustainability and focus on all three types of performance: economic, social, and environmental. In this regard, we need to have a better and broader overview of the different CEPs and make it accessible to researchers in the field. Also, the variation in findings might arise due to the different factors affecting the CEP's implementation and SP. Therefore, we must also identify and explain these factors to understand the relationship better.

In light of these limitations, the present review needs to delve deeply into the literature at the intersection of CEPs and SP. The current review presents several avenues for expanding future research through theoretical and empirical development. Thus, this research seeks to answer the following research questions:

i. Which theories are used in research on CEPs and firms' SP, and how do they explain the phenomena?
ii. What are the different types of CEPs being implemented, and what factors influence the CEPs and SP?
iii. What is a promising agenda for future research?

To answer the research questions identified above, we conducted a systematic literature review (SLR) following the three-stage guideline (Denyer and Tranfield, 2009; Tranfield et al., 2003) and an application similar to that of other authors (Elkhwesky et al., 2022a; Geissdoerfer et al., 2018; Shui et al., 2022). This study makes the following contributions. First, this review provides a more comprehensive understanding of the current knowledge by identifying the factors influencing CEPs and SP. Second, this study contributes by reviewing the theories utilized in existing research, thus providing scope for further theory development and conceptualization. Thirdly, since the research field is fragmented and spread across multiple disciplines, we contribute by consolidating the CEPs, which will work as a primer for the researchers interested in CE and sustainability. Finally, this study provides future avenues for researchers by identifying research gaps and suggesting research questions.

This study is structured in the following manner: First, the study presents the scope and methodology for conducting the review. Second, it outlines the profile of the sample of studies in this domain. Third, to unbundle the relationship between CEPs and SP, the paper identifies the antecedents and outcomes in the literature. Fourth, the paper develops a comprehensive framework to provide a holistic view of the relationship between CEPs and firms' SP. Fifth, the study presents future research directions. Finally, we discuss the conclusions and outline the limitations of this study.

2. Methodology

This study is a systematic review of empirical work focusing on the intersection of CEPs and SP, which follows a systematic review approach recommended in the literature (Hiebl, 2023; Denyer and Tranfield, 2009). This approach allows for a transparent and reproducible process of previously conducted research on a specific subject to identify gaps in the literature and provide avenues for future research (Denyer and Tranfield, 2009). To conduct a reliable and transparent systematic review, this study follows a three-stage approach: 1) planning and outlining the review, 2) executing the review, and 3) reporting the findings (Denyer and Tranfield, 2009; Tranfield et al., 2003). In addition, we followed the recommendation of Hiebl (2023) and conducted three sample selection steps, which included a) identifying relevant research items, b) screening potentially relevant research items, and c) disclosing the review sample. Further, to enhance reliability and validity, this review is also influenced by the step-by-step methodological approach of other systematic reviews published by different authors (Elkhwesky et al., 2022a, 2022b; Geissdoerfer et al., 2018; Shui et al., 2022). The initial step of the SLR involves planning a comprehensive and structured search for relevant publications. This is followed by selecting the target journals, finalizing inclusion and exclusion criteria, and reviewing the selected articles. Finally, we documented the outcome of the SLR.

2.1. Planning the review

2.1.1. Scope of the review

A crucial first step in conducting an SLR is understanding the study's scope and boundaries. These efforts assist in developing a search protocol for publications and building a thorough database of studies at the

intersection of CEPs and SP. Defining the inclusion and exclusion criteria is essential to outline the scope and boundary of the review clearly.

Several authors recognize Boulding's (1966) work as among the first studies to introduce the concept of CE (Geissdoerfer et al., 2017; Ghisellini et al., 2016). Boulding (1966) conceptualized the CE as a prerequisite for preserving and sustaining life on our planet. Another earlier work in the CE field by Pearce et al. (1990) proposed that the economy depends on natural resources due to their function as manufacturing inputs and consumption goods. Therefore, the circular system must replace linear and open-ended systems. Scholars have recently argued that integrating CE and sustainability will drive environmental gains (Yang et al., 2018). The concept of the CEPs and the green economy are understood to be interconnected as a result of economic, environmental, and social goals. This study considers SP as "the pursuit of economic, social, and environmental factors, often referred to as the 'triple bottom line' of a firm's performance" (Reuter et al., 2010, p. 49).

2.1.2. Selection of keywords

After establishing conceptual boundary conditions (i.e., the concept of CEPs and firms' SP), the authors developed the search strings of keywords by referring to previous studies. In particular, the search terms for the CEPs were drawn from literature reviews that provide sustainability-oriented definitions (Batista et al., 2018; Gusmerotti et al., 2019; Yin et al., 2023). Subsequently, we obtained search terms related to firm SP from existing articles (Yin et al., 2023; Younis and Sundarakani, 2020). The keywords used as search strings can be seen in Table 1.

2.1.3. Database selection

This study aimed to analyze and understand the existing scholarly work at the intersection of CEPs and SP. A database-based approach was employed to achieve this goal, which involved identifying keywords from past research and then utilizing these keywords to perform a search in electronic databases (Hiebl, 2023). Following the recommendations from Chauhan et al. (2022), this study used two primary databases, Scopus and Web of Science (WOS), and supplemented the findings from these sources with a Google Scholar search. Initially, a few keywords were selected to conduct a preliminary database search and identify the publications relevant to the present SLR. We also searched the selected keywords on Google Scholar and assessed the first ten pages of results from these searches to update the keyword list. Subsequently, we searched leading management journals separately to ensure the list contained all relevant keywords.

In addition, a panel of experts was established to ensure the thoroughness of the SLR procedure and eliminate biases in the review process. This panel included four experts (two professors and two researchers). We consulted the panel of experts to reach a final consensus regarding the search string.

Table 1
Keywords in the SLR.

Field	Keywords
Circular economy practices	"circular economy" OR "green economy" OR "sustainable economy" OR "cyclic economy" OR "circular business" OR "green business" OR "sustainable business" OR "cyclic business" OR "green production" OR "green consumption" OR "green operations" OR "green management" OR "circular production" OR "sustainable production" OR "cyclic production" OR "environmental management practices" OR "green practices" OR "environmental management practices" OR "resource conservation" OR "recycle" OR "reuse" OR "reduce"
Performance	"sustainable performance" OR "firm performance" OR "social performance" OR "environmental performance" OR "ecological performance" OR "economic performance" OR "corporate sustainable efficiency"

2.2. Execution of the review

In the next step, the keywords ultimately chosen were converted into search strings with the help of Boolean logic, the application of *along with 'OR' and 'AND' connectors. We then searched the electronic databases' titles, abstracts, and keywords. We limited our search to articles published from 2010 to December 20, 2023, to capture the relevant literature. A total of 1290 studies were obtained from the Scopus database, while the WoS document search retrieved 1480 publications. The duplicate articles across the databases were then removed, leaving 1382 articles. We then screened the pool by applying the inclusion and exclusion criteria. This reduced the pool of articles to 255.

We then invited the review panel to filter the remaining articles further. The experts individually reviewed and analyzed the titles, abstracts, and keywords based on predetermined conceptual boundaries and screening criteria. We followed some inclusion and exclusion criteria (see Table 2) to select the final sample of our review.

Each panel member conducted these tasks independently to ensure a rigorous screening protocol. During this stage, we eliminated studies that did not correspond with the scope and conceptual boundaries of the SLR. We assessed the full texts of the remaining 255 articles to ensure their compatibility with the present SLR. Following this full-text analysis, 95 studies remained. Most studies removed in this phase pertained to engineering, chemical, biological, and biochemical processes. To ensure no relevant study was excluded, forward and backward citation chaining was carried out for each selected study. The panel reviewed 14 articles found through citation chaining, and based on their advice, nine articles were added to the pool.

In the final stage, the panel reviewed and recommended all 104 studies. Subsequently, we created a research profile for the selected studies. Fig. 1 depicts the SLR process in detail.

2.3. Review reporting and dissemination

The analysis was made qualitatively in line with the established procedure in literature review reporting (Tranfield et al., 2003) and a data presentation structure consistent with recent SLR (Elkhwesky et al., 2022a; Jiang et al., 2020; Shui et al., 2022). This stage of the review process involved extracting data, including each article's publication details, methodology (quantitative, qualitative, or mixed methods), geographical scope, and theoretical lens, while also reporting the CEPs, factors of CEPs and firms' SP, identifying research gaps and mapping the theoretical framework. We have developed and grouped the factors of CEPs and firms' SP into these categories: R&D and innovation, digital technologies, organizational capabilities and resources and stakeholder and institutional pressure. R&D and innovation refer to organizations' processes and activities to develop new products, services, or processes and improve existing ones (Kahn, 2018). This category centres on exploring and generating novel knowledge, technologies, and concepts to drive organizational growth. For the coding of R&D and innovation, we also consider keywords such as scientific research, technological improvements, product enhancement, invention, and innovative

Table 2
Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
Articles with a specific focus on the causal relationship between CEPs and SP	Articles that mention the CEPs and firms' SP but do not focus specifically on these concepts
English language articles published up to October 8, 2023	Book chapters, conference articles, editorials, and reports
Peer-reviewed journals	Articles with highly technical or engineering rather than management perspectives
Articles that focus on one or more CEPs	Articles that do not investigate the antecedents of firms' SP

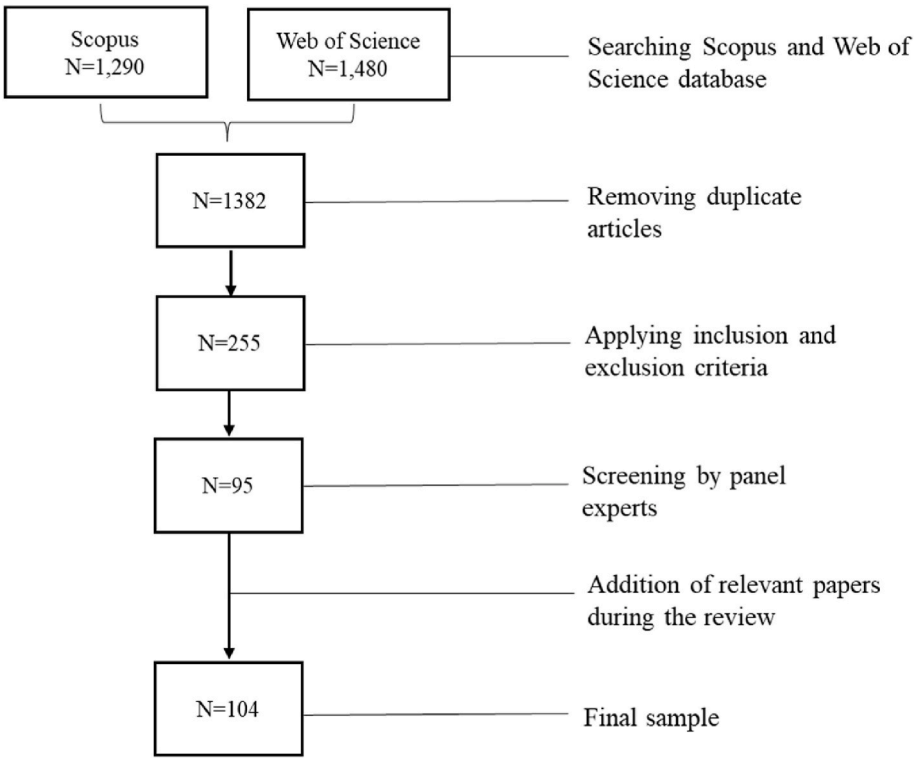

Fig. 1. SLR process and protocols.

problem-solving (Zhang et al., 2022). The reviewed studies focused on sustainable oriented R&D and innovation that promote competitiveness, human and social well-being, and attaining environmentally friendly practices (Zhang et al., 2022; Rodríguez-Espíndola et al., 2022; Antonioli et al., 2022; Triguero et al., 2023). Digital technologies encompass a wide range of technologies that facilitate the development of digital and automated production systems and digitizing the value chain (Ghaithan et al., 2023). These technologies can take various forms, including the Internet of Things (IoT), artificial intelligence (AI), big data analytics, cloud computing, additive manufacturing, robotic systems, and augmented reality (Pinheiro et al., 2022). The reviewed literature has investigated the link between digital technologies, CEPs, and SP (Edwin Cheng et al., 2022; Ghaithan et al., 2023; Pinheiro et al., 2022; Riggs et al., 2023).

Organizational capabilities and resources refer to an organization's unique strengths, competencies, and assets that contribute to its ability to achieve strategic goals (Chowdhury et al., 2022). This category involves assessing an organization's internal capacity, including its human resources, skills, knowledge, infrastructure, technologies, financial resources, and organizational culture. According to Kimata and Itakura (2021), the six elements of organizational capabilities are rapid change and action, shared mindset, collaboration, learning, customer connectivity, handling skills and knowledge, and efficiency and environmental protection culture. The reviewed literature has attempted to understand the role of organizational factors in adopting CEPs within firms, which will enhance sustainable firm performance (Chowdhury et al., 2022; Kimata and Itakura, 2021).

Stakeholder and institutional pressure refers to external influences and demands faced by organizations from various stakeholders (i.e., customers, employees, investors, suppliers, regulators, community members, and advocacy groups) and institutional actors (Freeman, 1984). We directly considered stakeholder and institutional pressure for coding this category. (Baah et al., 2021; Jabbour et al., 2020; Marrucci et al., 2023; Pinheiro et al., 2022; Rehman Khan et al., 2022).

3. Review findings

We structured the analysis part into a bibliographic overview and content analysis. These subsections answer our research questions in a meaningful way and help us to suggest future research avenues. In the bibliographic overview, we first present the publication trend of the papers in our sample (n = 104), followed by the count of publications in various journal outlets. Here, we only report journals which have published two or more papers relating to CEPs and the firm's SP. Next, we provide an overview of the different methodologies employed in the selected studies and the geographical coverage of these studies. In the content analysis part, we provide an overview of (1) how different theories have been utilized so far, (2) different CEPs that have been documented by the researchers, and (3) different factors that are influencing the CEPs and SP relationship. Finally, drawing on the review findings, the current study proposes the framework and future research agenda.

3.1. Journals

Regarding the evolution of research on circular economy practices and sustainability performance, scholars did not seem to be very focused on this topic at the beginning of the twenty-first century. Our analysis shows that the research evolved gradually between 2010 and 2018. Some authors began writing about the relationship between CEPs and SP, and there was a surge of interest in the subject after 2019 (Fig. 2). However, the field is still young and offers a plethora of opportunities to explore the relationship between CEPs and firms' SP.

Fig. 3 shows that out of the 104 papers in our sample, 60 % are published in 17 journals (See Appendix A for more information). The journal with the highest number of articles was the Journal of Cleaner Production, with thirteen articles covering almost 13 % of the overall sample, followed by Business Strategy and the Environment and Environmental Science and Pollution Research, with nine articles each (9 %). The journal outlets prove the interdisciplinary nature of the research on

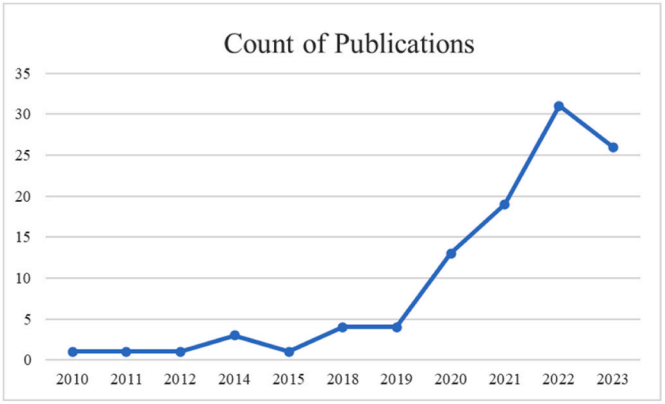

Fig. 2. Publications per year (n = 104).

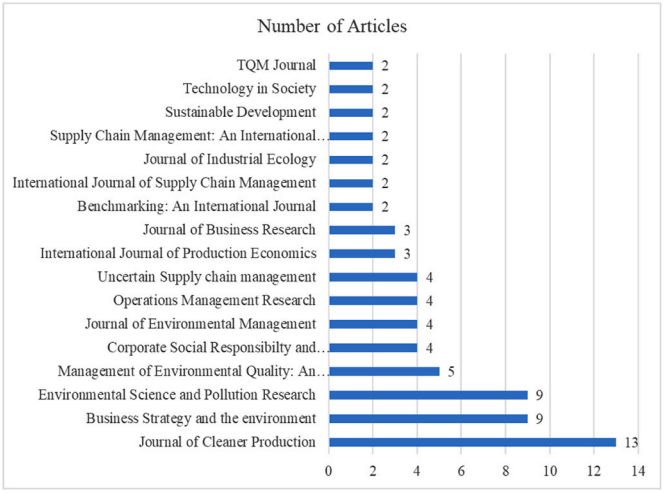

Fig. 3. List of studies across journals.

CEPs and the firms' SP.

3.2. Research context and design

Most of the research in the publications was conducted on firms in China, accounting for 18 % of the total publications, followed by Pakistan with 8 % and Vietnam, Italy, Malaysia, India with 5 % (see Fig. 4). A few studies have collected data covering all member states of the European Union (Marrucci et al., 2021, 2022, 2023; Riggs et al., 2023; Salandri et al., 2022; D'Angelo et al., 2023), and others have included two or more countries (Dey et al., 2022; Khan et al., 2022; Rehman Khan et al., 2022). Only Li et al. (2018) have included worldwide data in their analysis, and the rest of the studies in our sample focus on a single country. Here, we observe a pattern in geographic coverage for the data collection. From our analysis, data collection and research on CEPs seem to be limited to a few geographical locations/settings. To make research on CEPs more generalizable, researchers need to expand their scope to include understudied and difficult-to-collect data locations. Thus, collecting data from locations not included in the samples of the earlier research is crucial and additional studies are needed to determine whether the results hold for the broader sample.

Regarding the use of research methodologies (see Table 3), we identified that 94 % of the studies have used quantitative research methods and highlighted the use of surveys in terms of data collection, and 56 % have employed structural equation modelling (Dey et al., 2022; Fernando et al., 2022; Hu and Chen, 2023; Khan et al., 2022; Marrucci et al., 2023; Naseer et al., 2023) and multiple regression analysis (Del Giudice et al., 2021; Hassan and Jaaron, 2021; Kimata and Itakura, 2021; Lin et al., 2021). Three studies (4 %) have used mixed methods (e.g., a combination of surveys, case studies, and interviews), and two studies (2 %) have used qualitative research (Jabbour et al., 2015; Pinto, 2023). This denotes opportunities for an in-depth investigation using qualitative research methodology. Most studies obtained firm-level data from the firms' CEOs, directors, managers, and employees. This indicates that more studies involving different stakeholders in the CE ecosystem are required.

3.3. Theories utilized in the studies

In this section, we discuss the widely used theories in CEPs and firms' SP in the articles in the final sample. Based on the 104 articles, we identified 20 different theories, including resource-based theory 20 % (27 times), stakeholder theory 11 % (15 times), natural resource-based view 11 % (15 times), institutional theory 9 % (12 times), dynamic capabilities theory (DCT) 4 % (6 times), practice-based view (PBV) 4 % (6 times), and other theories (16 %) (see Fig. 5). Interestingly, 24 % (n = 32) of the papers did not provide explicit theories to support or ground their arguments. Fig. 5 provides an overview of the theories, total appearances, and percentages. In the following sections, we will discuss the theories and their application in the reviewed studies.

3.3.1. Resource-based theory

Resource-based theory (RBT) was employed twenty-seven times in the studies reviewed. RBT is a widely applied theoretical perspective that explains how a company's competitive advantage and positive SP are influenced by acquiring tangible and intangible firm-specific resources, competencies and capabilities that are rare, inimitable, valuable, and non-substitutable within the framework of CE (Barney, 1991; Dey et al., 2022; Khan et al., 2023a,b; Rodríguez-Espíndola et al., 2022). Research applying to the RBT seems to focus on linking CEPs and sustainable innovation in implementing firms' SP. This theory is an excellent theoretical lens as it offers opportunities to investigate the role of digital technologies and CEPs as internal resources that enhance firms' SP (Rodríguez-Espíndola et al., 2022; Zhang et al., 2022). RBT suggests that organizations should focus on their internal strengths and the firm's innovation to pursue positive SP (Barney, 1991). The emergence of IT, the first path to digital transformation, presents a competitive advantage for many firms. For example, Zhang et al. (2022) extended RBT by empirically examining the value of innovation in SMEs' SP (considering social, environmental, and economic performance) from input, output, and efficiency perspectives. Furthermore, by combining RBT and CEPs, Le et al. (2022) empirically proved that CEPs are seen as critical resources in facilitating sustainable supply chain management (SSCM) to achieve SP because its practices maximize the value creation of resources by keeping them in the economy for as long as possible. In this way, they reduce energy consumption and operational and environmental costs, increase productivity, improve entrepreneurial performance, and improve market efficiency through innovative entrepreneurial opportunities. Likewise, Del Giudice et al. (2021) showed how the three categories of CEPs, supply chain management design, supply chain relationship management and human resource management, play a crucial role in enhancing firm performance from a CE perspective. Moreover, concerning resource-based theory and digital platforms, Zhang et al. (2022) asserted that two types of intangible assets, R&D and patents, are positively related to SP and the firm's level of competitiveness.

3.3.2. Stakeholder theory

According to the stakeholder theory (ST), organizations should consider more than just their shareholders' interests (Freeman, 1984). Freeman (1984) defines stakeholders as individuals, groups, or organizations who are interested in or affected by an organization's activities. These may include suppliers, employees, investors, customers,

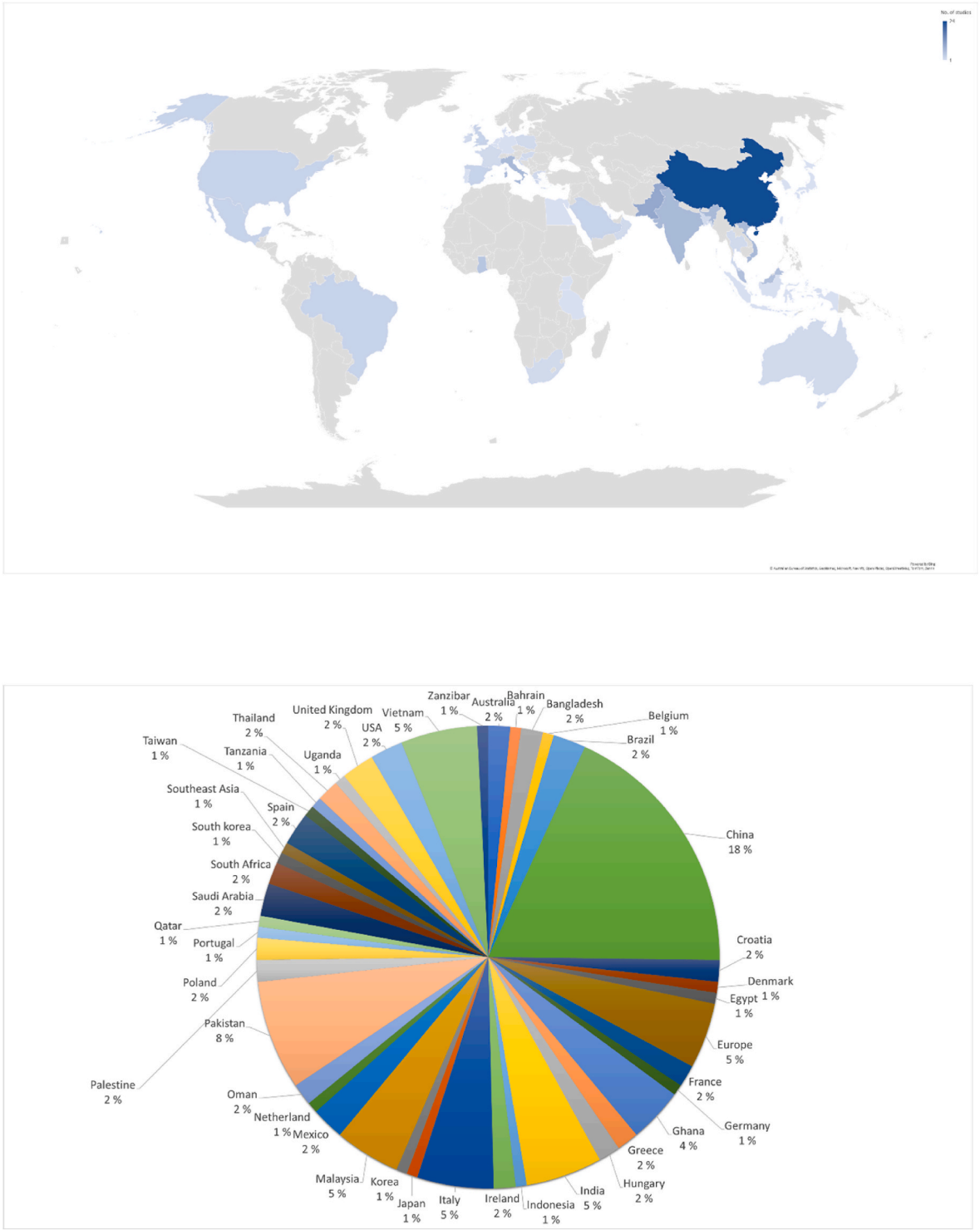

Fig. 4. Research setting.

Table 3
Research methods.

Research Method	No. of Studies	Percentage (%)
Quantitative	98	94 %
Mixed	4	4 %
Qualitative	2	2 %
Grand Total	104	100 %

regulators, community members, and advocacy groups. Stakeholder participation and engagement effectively accommodate stakeholder preferences (Jakhar et al., 2019; Sarkis et al., 2011). The ST focuses on pressure from employees, shareholders, financiers, customers, governments, and communities and how they work together to create and trade value (Sarkis et al., 2011).

Studies applying this theory discussed the influence of stakeholder pressure on the adoption of CEPs and firms' SP (Baah et al., 2021; Jabbour et al., 2020; Marrucci et al., 2023; Pinheiro et al., 2022;

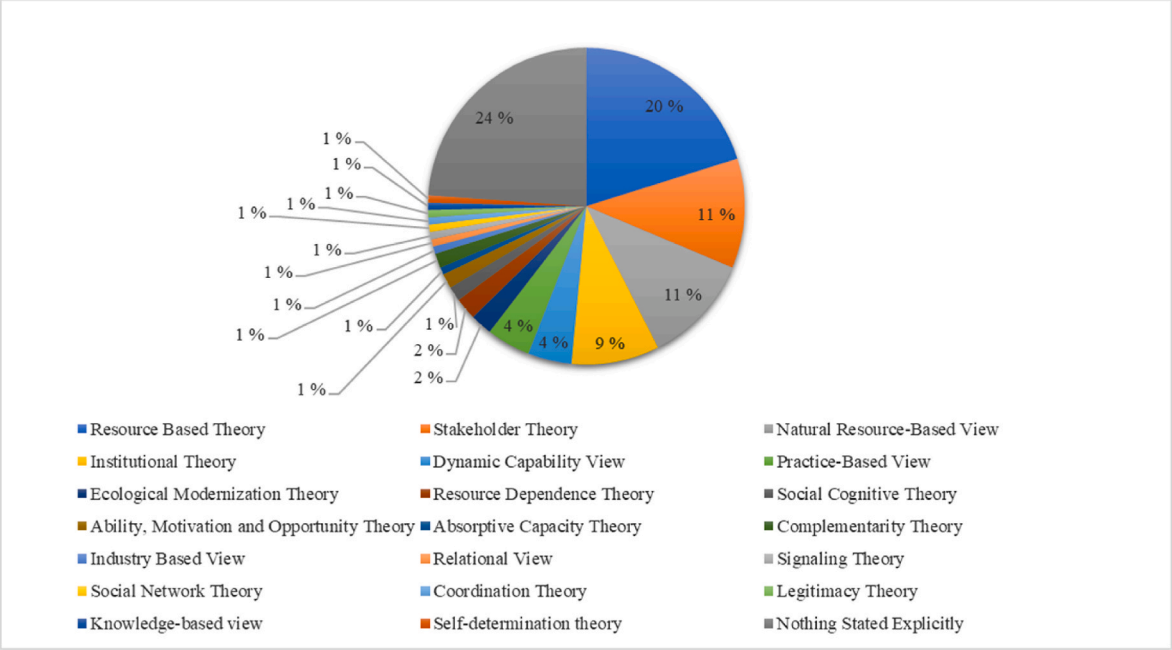

Fig. 5. Overview of the utilized theories.

Rehman Khan et al., 2022). For example, Pinheiro et al. (2022) empirically evaluated the positive relationship between community stakeholder pressure and circular product design, environmental performance and, in turn, their impact on market and environmental performance. Marrucci et al. (2023) also noted that stakeholder pressure influences green human resource management adoption and organizational performance. Likewise, Rehman Khan et al. (2022) found that customer pressure pushed firms' innovativeness, significantly increasing firms' SP. Furthermore, Baah et al. (2021) asserted that stakeholder pressures motivate the adoption of CEPs and the performance of SMEs in the context of developing countries.

3.3.3. *Natural resource-based view*

The natural resource-based view (NRBV), an extension of the resource-based view theory, was propounded by Hart (1995). The theory has been used to establish how firms can achieve SP by accessing rare resources and implementing CEPs (Agyabeng-Mensah et al., 2021). The NRBV was utilized fifteen times in the articles reviewed. For example, Rodríguez-González et al. (2022) draw from the theoretical arguments of NBRV to explain the positive relationship between adopting environmentally sustainable practices in the supply chain and a firm's financial performance. Again, Asamoah et al. (2023) discovered that green supply chain practices such as green purchasing, investment recovery and customer cooperation lead to improved organizational performance and competitive advantage. Likewise, Hsu et al. (2023) argue that sustainable practices such as green purchasing, eco-design, and regulatory practices enhance environmental and economic performance. Overall, it was found that, through CEPs, firms can develop green products and improve environmental, operational, and economic performances (Samad et al., 2021). Implementing CEPs allows companies to improve competitiveness while addressing environmental concerns (Choi and Hwang, 2015).

3.3.4. *Institutional theory*

DiMaggio and Powell (1983) noted that institutional theory seeks to explain why organizations behave similarly. According to the authors, institutional pressures result in more homogeneous organizational structures within institutional environments. In Scott's (2001, p.48) definition, institutions are "regulations, norms, and cognitive activities that provide stability and meaning for social behavior". These can include legislation, regulations, cultural norms, and professional standards. As Deegan (2009) pointed out, institutional theory plays a vital role in explaining why firms seek to balance sustainability engagements, such as CEPs, and business performance by developing a multifaceted organizational structure that enhances stakeholder demands as part of building a system that promotes corporate efficiency.

The institutional theory was employed twelve times in the articles reviewed. The institutional theory sheds light on how firms face pressure from the external environment in the form of coercive (e.g., enforcement of regulation by authorities), normative (e.g., value, beliefs, or norms), and mimetic pressure (e.g., imitation of practices by firms to respond to competitors) and furthermore how these pressures facilitate CEPs and promote SP. For example, Bag et al. (2022) stated that coercive, normative, and mimetic pressures positively correlate with eco-innovation and SP. Boffa et al. (2023) used the institutional theory to explain the role of informal institutions in the development of circularity and SP. Furthermore, Marrucci et al. (2023) combined the stakeholder and institutional theory to investigate how external and internal pressure affects the performance of an organization and the adoption of green human resource management practices.

3.3.5. *Dynamic capability theory*

Dynamic capability theory (DCT) refers to the organization's capacity to address and adapt to changing environments by effectively integrating and re-configuring available internal and external resources (Teece et al., 1997). Organizations can maximize their profits by adapting to a dynamic and uncertain environment through dynamic capabilities (Lawson and Samson, 2001). Dynamic capabilities are intrinsically strategic to address competitive market dynamics (Vogel and Güttel, 2013). DCT is regarded as acquiring and learning new skills and capabilities that enhance organizational performance (Gupta et al., 2019).

In the reviewed studies, DCT was used as a lens six times, and researchers viewed it from different but related viewpoints. First, Edwin Cheng et al. (2022) used the DCT as a theoretical underpinning to conceptualize digital technologies (i.e., big data analytics), CEPs, and sustainable supply chain flexibility as an organizational dynamic capability that led to the development of competitive strategy and enhance

sustainable supply chain performance. Likewise, Nayal et al. (2022) asserted the positive relationship between AI–IoT adoption and supply chain firm performance under the CE environment. Liu et al. (2022) also proved a positive relationship between intelligent technologies, CEPs, green supply chain management, and organizational performance in the contemporary era of COVID-19. Bag et al. (2022) also asserted the positive association between green supply chain management and CE. Furthermore, Chowdhury et al. (2022) used the DCT to conceptualize and examine the interplay between internal organizational factors and resources such as leadership, culture, innovative mindset, skills, competencies, and CEPs and how these impact SMEs SP. Siddik et al. (2023) developed and tested a theoretical framework for explaining how SMEs can exploit absorptive capacities in their CEPs to attain superior SP.

3.3.6. Practice-based view theory

The Practice-based view theory (PBV) is an extended version of the mainstream RBT, explaining that adopting various practices or business procedures may significantly affect organizational procedures (Bromiley and Rau, 2014). Business procedures refer to different organizations' integrated activities (Bromiley and Rau, 2014). PBV suggests organizational performance as an outcome variable and integrated and transferable activities as explanatory variables (Silva et al., 2018). The PBV was employed in six studies that linked the influence of various organizational practices (i.e., digital technologies and CEPs) to performance. For example, Khan et al. (2021b) and Tang et al. (2022) extended the PBV by empirically examining the role of digital technologies (i.e., blockchain technology) and CEPs (i.e., circular procurement, circular design, recycling, and remanufacturing) as integrated sets of activities that enhance organizational performance in the entire supply chain process. Furthermore, by combining ecological modernization theory (EMT) and PBV, Sun and Wang (2022) empirically proved that eco-environmental practices (i.e., circular purchasing, recycling, circular design, and remanufacturing) which are driven by the Internet of Things have positive and significant effects on firms' economic and environmental performance, which translates to improved operational performance. Lastly, in terms of SMEs, Siddik et al. (2023) argued that the PBV partially explains the adoption of technology and CEPs in enhancing SP.

3.3.7. Other theories

Based on the findings, we see that ecological modernization theory (EMT) and resource dependency theory (RDT) were each used three times and social cognitive theory was applied in two articles. Other theories, such as absorptive capacity theory, complementarity theory, ability, motivation and opportunity theory, industry-based view, relational view, signaling theory, social network theory, coordination theory, legitimacy theory, knowledge-based view, and self-determination theory, were each used by only one study. This shows that applying these theories is scarce in studies investigating the relationship between CEPs and firms' SP.

EMT, a leading theory in environmental sociology, posits that ecological concerns can be alleviated by adopting eco-friendly practices accompanied by technological and innovative approaches which can improve firms' SP (the theory emphasizes economic and environmental performance) (Sun and Wang, 2022; Tang et al., 2022; Zhang et al., 2022). RDT provides a theoretical basis that postulates that firms achieve higher performance by relying on external resources and forming strategic alliances with other companies (Amjad et al., 2022; de Sousa Jabbour et al., 2015; Namagembe et al., 2019). For example, implementing green supply chain practices such as environmentally friendly procurement, eco-design practices, internal environmental management practices, and investment recovery practices, necessitate depending on suppliers and customers for resources that may not be readily available within a single organization (Namagembe et al., 2019). Social cognitive theory, underpinned by Bandura's (1986) work, suggests that green human resource practices can enhance employees' skills, attitudes, and proficiencies, leading to more pro-environmental behaviors and improved environmental performance (Mahmood and Nasir, 2023; Nisar et al., 2023). The absorptive capacity theory provides a theoretical basis that explains the causal relationship between absorptive capacity and implementing CE (Marrucci et al., 2022). Complementarity theory suggests that implementing CEPs in a specific order creates synergy between strategies to improve financial performance (Agyabeng-Mensah et al., 2020). Ability, motivation, and opportunity (AMO) theory indicates that employee motivation and promotion based on CEPs induce employees to work assiduously with suppliers and customers to enhance financial performance (Agyabeng-Mensah et al., 2020). Signaling theory (SIGT) indicates that communication focuses on promoting CEPs through signals employed by companies that can convey their attractiveness to the market (Blasi et al., 2021). Social network theory focuses on the behavioral and social components of various emerging or existing interactions, including customer-oriented business networks and supplier-oriented businesses that affect green practices-eco-design, green purchasing, and regulatory practices (Hsu et al., 2023). Legitimacy theory states that firms must align with societal norms to maintain legitimacy. Companies must demonstrate commitment to social responsibility and sustainability by implementing corporate social responsibility initiatives (Hu and Chen, 2023). The relational view suggests that inter-firm collaborations with various actors, including suppliers, customers, governments, and non-governmental organizations, can benefit a firm's environmental performance (Choi and Hwang, 2015). Self-determination theory (SDT; Deci and Ryan, 2000; Ryan and Deci, 2000) provided a theoretical basis for understanding consumer satisfaction and motivation driven by purchasing products with green production technology (D'Angelo et al., 2023). Coordination theory postulates that the coordination of internal and external dimensions of green practices will result in better performance in the overall supply chain (Ahmed et al., 2020). Knowledge-based view theory (KBV) (Grant, 1996) indicates that organizations can utilize shared knowledge creation, transfer, coordination, and integration among their employees in the development of CEPs and SP outcomes (Awan et al., 2023). The industry-based view postulates that an organization's strategy, practices, and initiatives are affected by the external environment (e.g., market dynamics) (Porter, 1980). Using the lenses of institutional, resource, and industry-based theories, Rodríguez-Espíndola et al. (2022) examined how external pressures impact the implementation of CEPs and the use of sustainable-oriented innovation and how sustainable-oriented innovation impacts SP. Next, Table 4 displays the theories utilized in the reviewed studies along with their respective applications.

3.4. Circular economy practices

Based on the reviewed studies, scholars have divided CEPs into different dimensions in several ways (see Table 5 for details of each category). For example, Zhu et al. (2010) classified CEPs into three: eco-design, investment recovery, and internal environment management; this categorization has also been applied by a recent study by Edwin Cheng et al. (2022). Ecological design considers environmental protection in selecting raw materials and deploying production processes to mitigate ecological risks (Susanty et al., 2020). Investment recovery refers primarily to handling idle assets and products at the end of their cycle. It maximizes product and material value while minimizing the environmental impact of waste through recycling, reusing, and reselling (Zhu and Sarkis, 2004; Zhu et al., 2008). Moreover, internal environment management refers to sustainable practices within a company and does not involve the other supply chain members (Carter and Dresner, 2001; Chatzoudes and Chatzoglou, 2022). CEPs are also classified as recycling and remanufacturing, green/eco-design, and green manufacturing (Tang et al., 2022; Triguero et al., 2023). Green manufacturing involves producing environmentally friendly products that do not harm the environment throughout their lifecycle (Afum

Table 4
Overview of the usage of different theories in the reviewed studies.

Theories	How are the theories used in the reviewed articles?	Source
Resource-based theory	The RBV is used to understand how Industry 4.0 technologies and CEPs, such as green purchasing, green supplier selection, and collaboration, can help companies achieve sustainable economic, environmental, and social performance. These technologies and practices are crucial capabilities that enable firms to gain competitive advantages that are valuable, difficult to imitate and serve as essential resource bases for sustainable performance.	Jiao et al. (2022); Afum et al. (2021); Shahzad et al. (2023); Hu and Chen (2023); Han and Huo (2020); Zhang et al. (2022); Yu et al. (2022a,b); Lin et al. (2021); Dey et al. (2022); Afum et al. (2020); Chatzoudes and Chatzoglou (2022); Del Giudice et al. (2021), Rodríguez-Espíndola et al. (2022), Rodríguez-González et al. (2022); Alraja et al. (2022); Mahmood and Nasir (2023); Naseer et al. (2023); Khan et al. (2022); Zaid et al. (2018); Obeidat et al. (2023); Awwad Al-Shammari et al. (2022) ; Le et al. (2022); Tran et al. (2022); Wen et al. (2023); Chen (2023); Karmaker et al. (2023)
Stakeholder theory	The ST is employed in the reviewed studies to comprehend the effects of pressures from customers, governments, shareholders, financiers, communities, and employees on CEPs and consequently to achieve sustainable performance (i.e., economic, environmental, and social). Thus, the adoption of CEP in companies that are enabled by stakeholder pressures can be explained by ST.	Ahmed et al. (2020); Pinheiro et al. (2022); Jabbour et al. (2020); Shahzad et al. (2023); Hu and Chen (2023); Zhang et al. (2022); Yu et al. (2022a,b); Marrucci et al. (2022); Baah et al. (2021); Del Giudice et al. (2021); Khan et al. (2022); Ahmed et al. (2020); Obeidat et al. (2023), Fatoki (2019); Le et al. (2022); Chen (2023)
Natural resource-based view	The N-RBV is used in the reviewed studies to analyze the impact of access to rare resources and the CEPs that prevent contamination on companies' economic, social, and environmental performance.	Jabbour et al. (2015); Han and Huo (2020); Asamoah et al. (2023); Baah et al. (2021); Roy and Mohanty (2023); Fernando et al. (2022); Hsu et al. (2023); Samad et al. (2021); Rodríguez-González et al. (2022); Huma et al. (2023); Fatoki (2019); Choi and Hwang (2015); Li et al. (2018); Suleiman (2023); Maldonado-Guzmán et al. (2023)
Institutional theory	The IT is utilized to explore the correlation between companies' pressures from the external environment, CEPs, and SP (i.e., economic, environmental, and social). These external pressures can be coercive, such as enforcing regulations by authorities; normative, such as the values and beliefs accepted by society; or mimetic, such as imitating practices by leading firms in response to competition.	Zhao et al. (2021); Rehman et al. (2023); Boffa et al. (2023); Lin et al. (2021); Marrucci et al. (2022); Chatzoudes and Chatzoglou (2022); Rahman et al. (2014); Ahmed et al.(2020a, b); Bag et al. (2022); Wen et al. (2023)
Dynamic capability theory	The DCT is applied to examine how industry 4.0 technologies (i.e., big data analytics, blockchain, internet of things and so on) impact environmental outcomes, improve working environments and worker training and cost reduction by improving flexibility and agility through online management systems, intelligent data collection systems, and connecting and sharing all information internally and across multiple organizations.	Siddik et al. (2023); Nayal et al. (2022); Edwin Cheng et al. (2022); Bag et al. (2022); Sahoo et al. (2023)
Practice-based view	PBV is utilized in reviewed studies to explain the causal relationship between CEPs, such as recycling and remanufacturing, and SP (economic, environmental, and social) and the deviations and differences in performance among companies.	Khan et al. (2021a,b); Siddik et al. (2023); Liu et al. (2023); Khan et al. (2023)
Ecological modernization theory	Based on EMT, the reviewed studies sought to identify which environmentally accepted CEPs should be encouraged for firms to sustain their performance economically, socially, and environmentally. The studies confirm that firms' use of CEPs (reverse logistics, internal environmental management, and eco-innovative practices) will influence SP (i.e., economically, socially, and environmentally) firms.	Antwi et al. (2022); Zhu et al. (2010); Tang et al. (2022)
Resource dependency theory	RDT is utilized by the studies reviewed to examine the influence of inter-organizational actions (eco-design, internal environmental management, green distribution, green purchasing, cooperation with customers) on environmental performance and economic performance.	Amjad et al. (2022); Namagembe et al. (2019)
Social cognitive theory	Social cognitive theory is utilized in the reviewed studies to examine the positive influence of green recruitment and training on environment-oriented approaches that enhance economic, environmental, and social performance.	Nisar et al. (2023); Mahmood and Nasir (2023)
Absorptive capacity theory	The absorptive aapacity (ACAP) theory is utilized to investigate how ACAP	Marrucci et al. (2022)

(*continued on next page*)

Table 4 (*continued*)

Theories	How are the theories used in the reviewed articles?	Source
	facilitates the implementation of CEPs, contributes to achieving economic and environmental performance, and affects the environmental reputation of organizations.	
Complementarity theory	The complementarity theory forms the theoretical foundation to investigate the influence of integrated and collective adoption of CEPs (eco-design, external environmental management, environmental management systems and source reduction) competency on environmental performance.	Agyabeng-Mensah et al. (2020); Al-Sheyadi et al. (2019)
Ability, motivation, and opportunity theory (AMO)	Ability, motivation, and opportunity theory are applied to examine the direct impact of internal green supply chain practices on green human resource management, supply chain environmental cooperation and economic performance.	Agyabeng-Mensah et al. (2020)
Industry based view	The industry-based view has been used to underpin the uncertainty and variation in the market relationship and examine the influence of customer pressure, government pressure, CEPs, and sustainable-oriented innovation on economic, environmental, and social performance.	Rodríguez-Espíndola et al. (2022)
Relational view	The relational view investigates the influence of a firm's collaborative capacity, collaboration, and partnerships with actors such as suppliers, customers, governments, non-governmental organizations, and CEPs on economic and environmental performance.	Choi and Hwang (2015)
Signaling theory	The signaling theory is applied to investigate how SMEs use CE-focused web communications as signals to indicate their attractiveness to the market. This investigation focuses on the impact of these signals on SMEs' economic performance.	Blasi et al. (2021)
Social network theory	The social network theory investigates internal green operations practices (eco-design, green purchasing, and regulatory practices) as a channel through which external business network orientation induces firms' economic, environmental, and social performance.	Hsu et al. (2023)
Coordination theory	The coordination theory-based approach investigates the relationship between the internal and external green supply chain management practices, customer collaboration, supplier collaboration, and customer and supplier monitoring of economic and environmental performance.	Ahmed et al. (2020)
Legitimacy theory	Legitimacy theory examines how a company's commitment to social responsibility and sustainability through implementing corporate social responsibility (CSR) initiatives that meet societal expectations and needs impact the development of socially and environmentally responsible business practices. This, in turn, contributes to a healthier planet and generates financial returns.	Hu and Chen (2023)
Knowledge-based view	The knowledge base view (KBV) is utilized to investigate the influence of green human resource management practices on environmental performance.	Awan et al. (2023)
Self-determination theory	The self-determination theory is adopted to investigate the extent to which the number of CEPs, green investments, and type of product made affects a firm's economic performance.	D'Angelo et al. (2023)

et al., 2020). Remanufacturing is the process of preserving the original form of a product, whereas recycling involves transforming waste into reusable material by reprocessing it into new forms (Triguero et al., 2023). CEPs are also classified into green customer and supplier integration (Han and Huo, 2020; Hassan and Jaaron, 2021). Green customer integration involves working jointly with customers to encourage their participation in ecological supply chain operations (Eltayeb et al., 2011), while green supplier integration focuses on collaborating with suppliers to ensure that products and services are produced in an environmentally and socially responsible way (Hu and Chen, 2023). Dey et al. (2020) identified the CE field of action as take, make, distribution, use and recover to comprehensively represent the entire supply chain. Moreover, Dey et al. (2022) identified CE activities as design, production, procurement, usage, distribution, and recovery. Some scholars, on the other hand, focused only on specific CEPs, for example, reverse logistics (Fernando et al., 2022), green purchasing (Huma et al., 2023), green human resource management (Del Giudice et al., 2021; Marrucci et al., 2021, 2022; Obeidat et al., 2023), green innovative practices (Alraja et al., 2022; Lin et al., 2021), zero-waste/green waste

Table 5
Categories of CEPs.

Category	Definition	Source
Eco-design	Eco-design involves incorporating environmental considerations into the process of designing and developing products. It is a holistic approach that aims to minimize the negative impact on the environment throughout the product's life cycle.	Ahmed et al. (2020b); Bag et al. (2022); Chatzoudes and Chatzoglou (2022); Choi and Hwang (2015); Dey et al. (2020); Edwin Cheng et al. (2022); Hsu et al. (2023); Jabbour et al. (2015); Khan et al. (2022); Namagembe et al. (2019); Pinheiro et al. (2022); Rahman et al. (2014); Tang et al. (2022); Tran et al. (2022); Triguero et al. (2023); Yu et al. (2022b); Zhu et al. (2010); Zhu et al. (2011); Amjad et al. (2022); Al-Sheyadi et al. (2019); Khan et al. (2023)
Investment recovery	Investment recovery involves maximizing the value of idle assets and products while minimizing environmental impact through recycling, reusing, and reselling.	Bag et al. (2022); Choi and Hwang (2015); Edwin Cheng et al. (2022); Jabbour et al. (2015); Namagembe et al. (2019); Tran et al. (2022); Zhu et al. (2010); Asamoah et al. (2023)
Internal environment management	Internal environmental management pertains to sustainable practices within a company and excludes other supply chain members.	Amjad et al. (2022); Bag et al. (2022); Chatzoudes and Chatzoglou (2022); Edwin Cheng et al. (2022); Jabbour et al. (2015); Namagembe et al. (2019); Rahman et al. (2014); Tran et al. (2022); Zhu et al. (2010); Ahmed et al. (2020b); Jabbour et al. (2015)
External environment management	External environmental management extends the scope of environmental management beyond the boundaries of an organization, aiming to identify and minimize environmental impacts throughout the supply chain.	Al-Sheyadi et al. (2019)
Recycling & remanufacturing	Remanufacturing is a process where returned products are disassembled, inspected, and repaired or replaced with new parts to restore them to like-new condition. On the other hand, recycling converts used materials (i.e., waste) into resources with economic value.	Chowdhury et al. (2022); Dey et al. (2020); Mazzucchelli et al. (2022); Rodríguez-Espíndola et al. (2022); Salandri et al. (2022); Sun and Wang (2022); Tang et al. (2022); Triguero et al. (2023)
Green manufacturing	Green manufacturing is a method of environmentally friendly products that reduce waste and pollution throughout their lifecycle.	Afum et al. (2020); Hassan and Jaaron (2021); Le et al. (2022); Nguyen and Le (2020); Rehman Khan et al. (2022); Sun and Wang (2022); Tang et al. (2022); Triguero et al. (2023); Wungkana et al. (2023); Le et al. (2022); Gotschol et al. (2014); Liu et al. (2023); Harikannan et al. (2023); D'Angelo et al. (2023)
Reverse logistics	Reverse logistics is an approach where the manufacturer is responsible for the reverse flow and collection of end-of-life products to reduce negative environmental impacts.	Fernando et al. (2022); Rahman et al. (2014); Rehman Khan et al. (2022); Sittisom and Mekhum (2020); Suleiman (2023)
Green human resource management	Green human resource management is a set of human resource management practices that aim to achieve organizational goals in the environmental domain.	Alraja et al. (2022); AlZgool et al. (2021); Awwad Al-Shammari et al. (2022); Del Giudice et al. (2021); Mahmood and Nasir (2023); Marrucci et al. (2021, 2022); Mousa and Othman (2020); Naseer et al. (2023); Nisar et al. (2023); Obeidat et al. (2023); Shahzad et al. (2023); Zaid et al. (2018); Agyabeng-Mensah et al. (2020); Ba and Cao (2023); Awan et al. (2023); Sun et al. (2023)
Green purchasing	Green purchasing refers to integrating environmental considerations into a company's procurement process, from product design to the disposal of products.	Ahmed et al. (2020b); Amjad et al. (2022); Asamoah et al. (2023); Bag et al. (2022); Chatzoudes and Chatzoglou (2022); Dey et al. (2020); Hsu et al. (2023); Huma et al. (2023); Jabbour et al. (2015); Khan et al. (2022); Namagembe et al. (2019); Pinto (2023); Rahman et al. (2014); Suleiman (2023); Wungkana et al. (2023); Yu et al. (2022a); Zhu et al. (2010, 2011)
Green customer integration	Green customer integration refers to collaboration with customers to promote their engagement in environmental supply chain activities.	Amjad et al. (2022); Asamoah et al. (2023); Chatzoudes and Chatzoglou (2022); Han and Huo (2020); Hassan and Jaaron (2021); Jabbour et al. (2015); Namagembe et al. (2019); Zhu et al. (2010, 2011)
Green logistics	Green logistics is the process of integrating sustainable practices in the flow of resources, goods, and services from their origin to their destination or point of consumption.	Hu and Chen (2023); Jermsittiparsert et al. (2019); Lai and Wong (2012); Nguyen and Le (2020); Roy and Mohanty (2023)
Green supplier integration	Green supplier integration refers to collaboration with suppliers for environmental objectives.	Han and Huo (2020); Hassan and Jaaron (2021); Hu and Chen (2023); Rahman et al. (2014); Siddik et al. (2023)
Green innovation	Green innovation refers to creating new technologies and processes to reduce environmental risks such as pollution and resource exploitation.	Alraja et al. (2022); Chatzoudes and Chatzoglou (2022); Afum et al. (2021); Hu and Chen (2023); Wang et al. (2021); Maldonado-Guzmán et al. (2023); Wen et al. (2023)
Green waste management	Green waste management refers to implementing eco-friendly strategies that focus on properly disposing of litter.	Hassan and Jaaron (2021); Mazzucchelli et al. (2022)
Green marketing	Green marketing refers to marketing activities that reduce products' negative social and environmental impact and promote environmentally friendly products and services.	Alraja et al. (2022); Fatoki (2019); Khan et al. (2023)

management (Mazzucchelli et al., 2022), and green marketing orientation (Fatoki, 2019). Reverse logistics refers to a company retrieving a product from the point of consumption to dispose of, or recover it for economic use (Rogers et al., 2012). Green purchasing involves integrating environmental concerns into a firm's purchasing process, from

product and process design to product disposal (Yang et al., 2022). Green human resource management is a set of goal-oriented human resource management practices that aim to achieve organizational objectives in the environmental domain (Renwick et al., 2016). Green innovative practices refer to creating environmentally beneficial technologies, goods, and services (Hu and Chen, 2023). Green waste management involves adopting treatment solutions to reduce waste and correctly manage litter (Agan et al., 2013). Green marketing is promoting and marketing a product based on its environmental performance (Charter and Polonsky, 1999). In summary, in line with Reike et al. (2018), the studies reviewed highlighted the relevance of eco-design and investment recovery options. Ecological design and investment recovery correspond directly to the early design phase and the later recycling phase in the implementation of CE (Yang et al., 2019).

3.5. Circular economy practices and sustainable performance relationship in the literature

Recent literature reports that mixed findings are found when studying the relationship between CEPs and SP (see Table 6). On the one hand, some studies find a positive relationship between the different CEPs and SP (Afum et al., 2020; Alraja et al., 2022; Obeidat et al., 2023; Tang et al., 2022). For instance, Khan et al. (2022) found that CEPs can aid firms in improving financial performance, developing competitive advantages, and establishing good reputations. Furthermore, CEPs such as eco-design, recycling and remanufacturing, and green manufacturing, help firms improve their environmental performance while also boosting their financial performance; and improved environmental performance is believed to have a positive influence on firm performance (Sun and Wang, 2022; Tang et al., 2022). This is in line with previous studies that show the positive association between the implementation of the CEPs, such as internal management, eco-design, and investment recovery towards achieving the CE-targeted goals of improving both environmental and economic performance (Zhu et al., 2010, 2011). Moreover, most previous works on green human resource management and firm performance have supported this link (Marrucci et al., 2021; Obeidat et al., 2023). Notably, the study by Marrucci et al. (2021) reported that all green human resource management practices positively affect circular, environmental, and economic performance. It is also evidenced that green human resource management integration can promote organizational sustainability (Naseer et al., 2023; Nisar et al., 2023). Empirical studies have also reported a correlation between green human resource practices and environmental, financial, and social performance (Obeidat et al., 2023; Zaid et al., 2018). Zaid et al. (2018) also asserted that green human resource management sustains not only business, but also society, the natural environment, and the economy. In summary, it can be concluded that incorporating green human resource management policies and practices can improve corporate SP.

On the other hand, some studies find either a negative or a non-significant relationship between CEPs and environmental performance (Ahmed et al., 2020a; Han and Huo, 2020; Hsu et al., 2023). Triguero et al. (2023) shows a positive relationship between the joint implementation of CEPs closely related to product design and economic performance, whereas there is no significant impact on environmental performance. The explanation for this result can be that most consequences of eco-design occur at the end of the product's life cycle, and the long-term consequences should be assessed. Similarly, Han and Huo (2020) found that green supplier and customer integration have a non-significant relationship with environmental performance. They also found that green customer and internal integration negatively affect economic performance. Furthermore, some studies have found that green purchasing has a statistically insignificant relationship with environmental and economic performance (Hsu et al., 2023; Huma et al., 2023).

In this context, we argue that the mixed findings could be because there are other relevant factors that we need to consider, which are influencing the implementation of the CEPs and the subsequent SP.

Table 6
Review of the relationship between CEPs and SP.

Article	CEPs	Effect on Performance (±)
Khan et al. (2022)	Eco-design	Economic performance (+)
Sun and Wang (2022); Tang et al. (2022); Zhu et al. (2010); Zhu et al. (2011)	Eco-design	Environmental and economic performance (+)
Triguero et al. (2023)	Eco-design	Economic performance (+) Environmental performance (n.s.)
Marrucci et al. (2021)	Green human resource management	Environmental and economic performance (+)
Obeidat et al. (2023); Zaid et al. (2018)	Green human resource management	Environmental, economic, and social performance (+)
Fernando et al. (2022)	Reverse logistics	Economic performance (+)
Rahman et al. (2014); Khan et al. (2022); Sittisom and Mekhum (2020); Suleiman (2023)	Reverse logistics	Environmental performance (n.s.) Economic performance (+)
Hu and Chen (2023); Alraja et al. (2022);	Green innovation	Environmental, economic, and social performance (+)
Chatzoudes and Chatzoglou (2022)	Green innovation	Environmental and economic performance (n.s.)
Jermsittiparsert et al. (2019)	Green logistics	Environmental, economic, and social performance (+)
Lai and Wong (2012)	Green logistics	Environmental performance (n.s.)
Hassan and Jaaron (2021)	Green waste management	Economic performance (+)
Alraja et al. (2022)	Green marketing	Environmental, economic, and social performance (+)
Fatoki (2019)	Green marketing	Environmental and social performance (+)
Han and Huo (2020)	Green supplier and customer integration	Environmental performance (n.s.) Economic performance (−)
Hsu et al. (2023); Huma et al. (2023)	Green purchasing	Environmental and economic performance (n.s.)
Asamoah et al. (2023); Choi and Hwang (2015); Zhu et al. (2010, 2011)	Investment recovery	Environmental and economic performance (+)
Le et al. (2022)	Green manufacturing	Environmental, economic, and social performance (+)
Sun and Wang (2022); Tang et al. (2022); Zhu et al. (2010, 2011)	Green manufacturing	Environmental and economic performance (+)
Sun and Wang (2022); Tang et al. (2022); Zhu et al. (2010, 2011)	Recycling and remanufacturing	Environmental and economic performance (+)
Zhu et al. (2010, 2011)	Internal environment management	Environmental and economic performance (+)

(+= positive, - = negative, n.s. = non-significant).

3.6. Factors influencing circular economy practices and sustainable performance

This section discusses the factors influencing CEPs and SP (see Fig. 5). The key factors identified here are: (i) R&D and innovation, especially regarding sustainable practices; (ii) digital technologies; (iii) organizational capabilities and resources; and (iv) stakeholder and

institutional pressure. Furthermore, the relationship between CEPs and SP is dependent on these four factors. Therefore, CEPs not only have a direct impact on SP, but some of these factors also moderate the link between CEPs and SP.

3.6.1. R&D and innovation

Recent studies have investigated the role of innovation in promoting CEPs and SP. For example, Zhang et al. (2022) argue that innovation is a crucial element driving the CEPs and, thus, positively impacts financial, environmental, and social performance in SMEs. Similarly, Rodríguez-Espíndola et al. (2022) revealed a significant positive association between sustainable-oriented innovation (SOI) and SP. They argue that SOI can benefit the environment without compromising the company's economic performance. Product, process, and organizational innovation that support the implementation of CEPs lead to improved economic, environmental, and social performance in SMEs. In contrast, Antonioli et al. (2022) revealed that large firms that introduce CE based on process innovations, benefit from increasing revenues, but experience a detrimental cost increase. They also found that SMEs' introduction of CEPs based on innovation, negatively affects economic performance. The disparity of views, in this case, could be due to the lack of expertise, resources, and experience in adopting CE-related innovation in SMEs compared to large firms. For instance, resource constraints in SMEs limit the magnitude of investments that SMEs can sustain and finance (Acs and Audretsch, 1988; Vossen, 1998). While large organizations have the resources and capability to absorb innovative product failures, smaller entities face existential risk (Nohria and Gulati, 1996). Triguero et al. (2023) revealed that not all eco-innovations significantly impact environmental performance. They indicated that eco-process innovation does not significantly impact environmental performance. These findings suggest that the relationship between CEPs based on innovation and environmental performance remains inconclusive.

3.6.2. Digital technologies

The literature has also investigated the link between digital technologies, CEPs, and SP (Edwin Cheng et al., 2022; Ghaithan et al., 2023; Pinheiro et al., 2022; Riggs et al., 2023). Ghaithan et al. (2023) revealed a positive relationship between CEPs and SP. Furthermore, they argued that digital technologies have a positive impact as enablers for the successful implementation of the CEPs toward economic performance through reduced lead times, decreased material and labor costs, increased productivity, and enhanced production flexibility. Moreover, according to Gupta et al. (2019), digital technologies positively affect environmental and social performance. This result is consistent with Riggs et al. (2023), who argued that big data analytics enhance firms' environmental performance through advancements in information flow management and by facilitating green product development and eco-design innovations. Riggs et al. (2023) also indicated that data-driven intelligence provides companies with valuable insight and helps them meet customer needs, boost sales, increase revenue, develop new products, and expand into new markets, resulting in higher productivity and financial performance. Moreover, by studying the relationship between extensive data analytics capabilities and SP, Riggs et al. (2023) found that data-skilled workers can use big data analytics to solve social challenges, such as the welfare and safety of individuals and communities.

3.6.3. Organizational capabilities and resources

The attempt to understand the role of organizational factors in adopting CEPs within firms, which will enhance sustainable firm performance, is discussed, and empirically examined in the current management literature (Chowdhury et al., 2022; Kimata and Itakura, 2021). Kimata and Itakura (2021) identified six elements of organizational capabilities: rapid change and action, shared mindset, collaboration, learning, customer connectivity, handling skills and knowledge and efficiency and environmental protection culture as enablers that link economic and environmental performance. The results show a positive linear relationship between organizational capabilities, environmental protection, and SP. In other words, a high organizational capability and solid environmental protection culture based on values, leads to a sustainable balance between economic and environmental performance, enhancing firms' productivity and profitability. Recent work reported in the literature (Chowdhury et al., 2022) shows that CEPs are significantly influenced by internal organizational capabilities (stemming from leadership, organizational culture, and innovation mindset), which will help firms improve SP. It is, therefore, crucial to identify and examine organizational capabilities and their role in adopting CEPs and firms' SP.

3.6.4. Stakeholder and institutional pressure

Scholars have argued that the pressure from internal and external stakeholders influences firms to adopt CEPs and consequently achieve positive effects on SP (Dey et al., 2022; Marrucci et al., 2023; Zhu et al., 2010). For instance, Zhu et al. (2010) pointed out that supplier and customer environmental cooperation can greatly promote CEPs and SP. Zhu et al. (2010) suggested that firms that aim to improve customer and supplier cooperation through implementing various green practices could promote positive environmental performance and reduce negative environmental impact. Similarly, Dey et al. (2022) indicated that policymakers and customers exert different roles in implementing CEPs, leading to higher stakeholder endorsement, trust, loyalty, and higher sales, among other financial benefits. Marrucci et al. (2023) also found that stakeholder pressure and institutional pressures, such as coercive, mimetic, and normative, are facilitators in adopting CEPs and enhancing environmental and economic performance (see Fig. 6).

4. Discussion and future directions

4.1. Focus on underrepresented geographical contexts, underused research methods and theories

Our findings show some methodological gaps in the studies linking CEPs and SP. For instance, studies have widely used quantitative methods, whereas qualitative methods are less used. One of the main limitations of quantitative studies is their inability to provide a detailed explanation for deviations from theory or findings that require further understanding (Creswell and Creswell, 2017). To address this limitation, it may be helpful to include a second qualitative phase, which can provide a deeper understanding of the results, particularly concerning predicting the effects of CEP on SP. For example, Chowdhury et al. (2022) highlighted the limitation of their study due to only focusing on quantitative results and overlooking qualitative aspects such as the motivations, perceptions, and experiences of individuals and organizations involved in CEP. Additionally, the authors suggest case-based research to examine CE adoption and implementation through ethnographic studies to provide more comprehensive insights. Kimata and Itakura (2021) also highlighted utilizing mixed methods to adequately capture sustainability's dynamic and multidimensional nature, encompassing social, economic, and environmental dimensions. In line with this, future studies can conduct interviews to collect data from different stakeholders to better understand their perceptions of sustainable firm performance. In addition, the fewer empirical studies incorporating mixed methods indicate the potential to merge qualitative and quantitative methodologies for future studies investigating CEPs and SP. To map the current need to investigate the CEPs and SP, combining surveys with in-depth case studies that include various data sources, for example, interviews, focus groups, and observations, could be significant in obtaining more data related to SP. Moreover, a good proportion of the articles on CEPs and SP relied upon cross-sectional data, which does not provide definite information on the actual cause-and-effect relationship and the outcomes over time (Cummings, 2018). These issues call for further examination regarding the different methodological advancements introducing longitudinal studies to achieve more robust

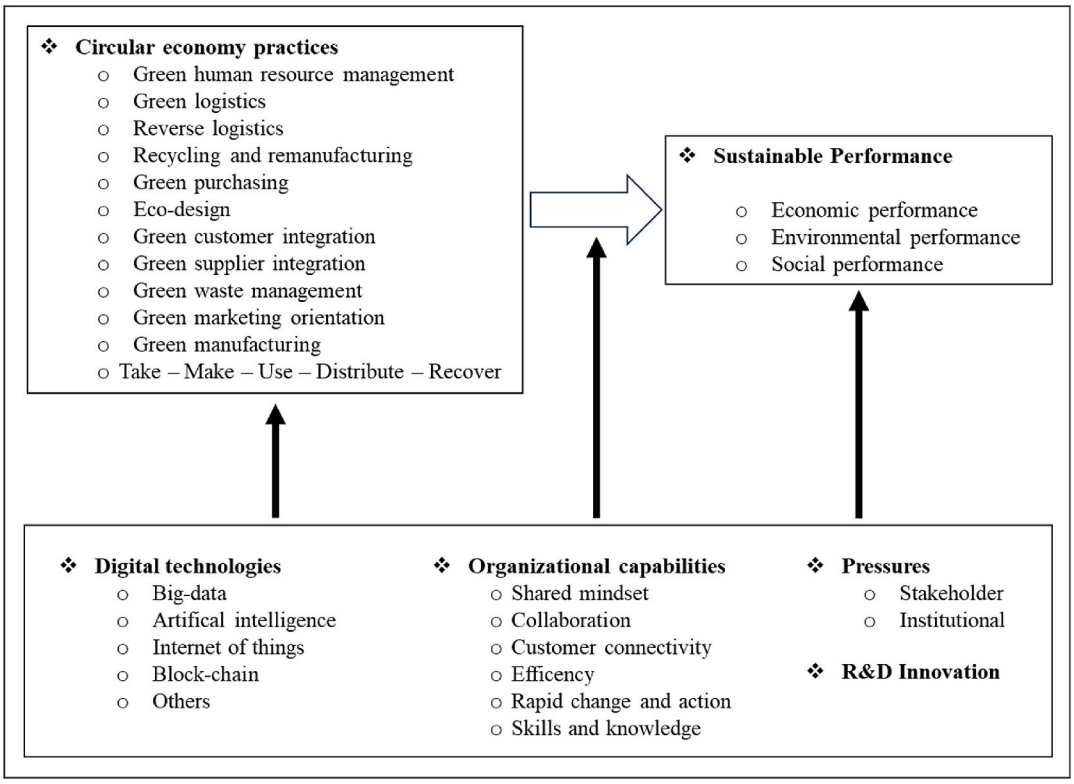

Fig. 6. Integrative framework for understanding the CEPs and SP relationship.

results. For upcoming studies, many topics can be relevant to explore in the future; for example, Edwin Cheng et al. (2022) recommended in-depth longitudinal studies to confirm the interrelationships between BDA capabilities, CEPs, and SP. Also, future studies can explore the interplay between internal organizational factors and CE adoption, thereby enhancing the SP of SMEs through longitudinal studies with samples drawn from a wide range of countries, industries, and informants (Chowdhury et al., 2022). Additionally, it is essential to note that the studies reviewed did not utilize meta-analysis to investigate the relationship between CEPs and SP. According to Yin et al. (2023), meta-analysis is a statistical approach that combines data from various studies to provide a more precise estimate of the underlying effects than a single study. This also helps increase the sample size and the power to study the effects of interest. Therefore, we recommend that future studies use meta-analysis to investigate the relationship between CEPs and SP. Consequently, based on the methodological gaps, sufficient scope exists for methodological diversity to reveal significant issues in research.

The second gap concerns the geographical contexts in the studies reviewed, as it was found that existing research focused on the same or popular locations where it is convenient to collect data. To fill this gap, it would be interesting for future scholars to advance studies on the relationship between CEPs and SP in understudied and difficult-to-collect data locations. Through these investigations, we may gain a deeper understanding of CEPs and SP across multiple international settings in light of the diverse political, financial, educational, cultural, and developmental levels (Genovese et al., 2017). It would also be interesting to compare the different factors that affect SP in developed and developing countries. In addition, gathering data from locations not considered in prior studies may be desirable and carrying out supplementary research to verify whether the findings remain valid for the wider population.

The third gap concerns that most of the studies applying theory have only focused on one theory as the basis for conducting their studies related to SP (Dey et al., 2022; Fernando et al., 2022; Liu et al., 2022; Pinheiro et al., 2022). However, relying entirely on one theory is unlikely to provide solid and applicable results. Instead, future studies can integrate theories to add more theoretical contributions to fill the gap around SP; this follows a similar perspective to Goyal et al. (2021). It is worth noting that most studies have primarily focused on economic and environmental performance, overlooking social performance. Therefore, future studies must consider the relationships between CEPs and their impact on economic, environmental, and social performance. Additionally, this research focused exclusively on exploring the correlation between CEPs and SP, which comprises economic, environmental, and social performance. Further investigations are needed to examine how CEPs relate to other outcomes, including industrial performance and corporate efficiency. Furthermore, future research can focus on developing theories to capture the impact of recent events, such as COVID-19 and the Russia–Ukraine war, on CEPs and SP (Salandri et al., 2022). Table 7 presents the gap in the geographical contexts, underused research methods and theories and potential future research questions.

4.2. Focus on the different factors influencing the circular economy practices implementation and sustainable performance

The current CEPs and SP relationship contradictions provide a greater research scope. However, measuring the exact impact of these practices on SP can be challenging, especially when they are influenced by factors such as R&D and innovation, organizational capabilities and resources, digital technologies, and stakeholder and institutional pressure. Investigating these factors could help explain contradictions in CEPs and SP and improve the efficiency of CEPs implementation, resulting in better outcomes. This section presents the gaps in the factors influencing CEPs and SP and the future research agenda based on the rigorous analysis of the selected articles. Table 8 presents the gap in the literature and potential future research questions.

Table 7
Key avenues for future research on underrepresented geographical contexts, underused research methods and theories.

Direction for future research	Key future research areas	Potential Research Questions
Methodologies and analytical techniques	1. Longitudinal studies to achieve robust results	RQ1. What are the long-term effects of implementing CEPs on the economic, environmental, and social performance of firms?
	2. Few studies utilizing mixed methods in investigating CEPs and SP	RQ2. How does the adoption of CEPs impact the financial, environmental, and social performance of firms? What are the characteristics of the different categories of SP?
	3. Advancing qualitative methodologies in examining CEPs and SP	RQ3. What are the underlying factors and mechanisms through which the implementation of CEPs influences firms' overall performance (economic, environmental, and social)?
	4. Meta-analysis	RQ4.To what extent does CEPs influence firms' economic, environmental, and social performance?
Research context	1. Empirically examine CEPs and SP in understudied or difficult-to-collect data location	RQ1. What are the potential challenges and opportunities for implementing CE strategies in understudied or difficult-to-collect data locations, and how do these strategies impact the sustainability performance of firms operating in these areas?
	2. Compare the different factors affecting SP in developed and developing countries.	RQ2. What are the significant factors influencing CEPs and SP in developed and developing countries, and how do these factors differ in their influence on CEPs and firms' SP in these two contexts?
Theories	1. Integrating theories to investigate the relationship between different factors, CEPs and SP	RQ1. What is the impact of CEPs on SP, and how does this relationship vary based on different theoretical frameworks?
	2. Investigating the impact of recent events such as COVID-19 and the Russia–Ukraine war on green practices and SP	RQ2. What are the effects of the COVID-19 pandemic and the Russia-Ukraine war on CEPs and sustainable performance in various industries, and how can organizations adapt their strategies to maintain or enhance sustainability in these challenges?"

4.3. Managerial and policy implications

This study examines the effect of CEPs and SP in companies. Managers can identify and choose from the 15 categories of CEPs to implement in companies while exploring their effects in improving SP. Thus, managers reviewing evidence from this study can shed light on the outcome of adopting specific categories of CEPs and their interactions in improving SP (see Table 5). Moreover, our proposed theoretical framework holds particular significance in countries with minimal execution of CEPs that aim to support and enhance the practice. Managers can promote the integration of R&D and innovation, digital technologies, organizational capabilities and stakeholder and

Table 8
Key avenues for future research on CEPs and SP.

Factors impacting CEPs implementation and SP	Gaps	Potential research questions
R&D and innovation	1. The heterogeneous impact of the different innovations (i.e., process, product, and organization).	RQ1. How do the different types of innovation (i.e., product, process, and organizational) affect the implementation of CEPs and SP?
	2. SMEs' understanding of the drivers that lead to the implementation of innovation leading to CE and SP.	RQ2.What drivers promote innovation capacities that lead to CEPs and SP in SMEs?
Digital technologies	1. Pace of digitalization.	RQ1.Why is the pace of digitalization slow despite its role as a driver of the relationship between CEPs and SP?
	2. Developing a comprehensive framework for achieving the CEPs and SP using digitization tools.	RQ2.How is the role and effectiveness of each digital technology in achieving CEPs and SP assessed?
	3. Some technologies (e.g., blockchain) receive less attention in the literature and require further exploration.	RQ3.How can digital technologies such as blockchain impact the relationship between CEPs and SP?
	4. Understanding ways to mitigate the challenges to digitalization.	RQ4. How can the challenges in adopting digital technologies contributing to CEPs and SP be mitigated?
	5. Challenges faced by SMEs.	RQ5. What challenges do SMEs face in adopting technologies promoting CEPs and SP?
	6. The geographic scope of policy advocacy on digitalization, CEPs, and SP.	RQ6.What policy challenges do firms in developing countries face as they work to promote digital technologies that contribute toward CEPs and SP?
	7. Assessing existing policies.	RQ7. What policy initiatives will help firms improve digital technology adoption that promotes CEPs and SP?
Organizational capabilities and resources	1. Advancing understanding towards organizational capabilities that lead to CEPs and SP.	RQ1.How do firms develop organizational capabilities that promote CEPs and SP?
	2. Research on the relationship between digital readiness and organizational culture is limited.	RQ2. How does digital readiness influence organizational culture for adopting CEPs, and how do these practices impact SP?
Stakeholder and institutional pressure	1. Empirically examining the impact of regulation and government guidelines on adopting CEPs and social performance.	RQ1.How do regulations and government guidelines influence the adoption of CEPs and SP?
	2. Understanding the role of market pressure.	RQ2. How does market pressure promote the adoption of CEPs that lead to SP?
	3. The role of different stakeholders (i.e., customers, suppliers, employees, policymakers, and industry consortiums).	RQ3.How does pressure from different stakeholders promote CEPs and SP? How should such participation be encouraged?

institutional pressure to favour the implementation of CEPs and SP. For this reason, R&D activities focused on new technology, processes, and products, developing actions to foster collaboration and knowledge sharing, training and development opportunities, and proactive engagement with stakeholders should be leveraged. The above issues can facilitate the transition to CE while understanding and improving companies' SP.

The findings of our review also provide valuable insights for policymakers. By demonstrating the positive impact of CEPs on SP, policymakers and economic development agencies can effectively communicate with companies and encourage them to adopt CE strategies to improve their sustainability performance. Moreover, the findings from this review can aid in formulating policies that encourage the implementation of CEPs that have proven to be most effective in enhancing companies' SP.

Policymakers should also consider collaborating with industry and academia to enhance understanding of the impacts of CEPs and the different factors on SP based on the gaps identified in the findings of this review, such as less studied geographical contexts and limited evidence on the linkages and effects of CEPs and SP, particularly social performance. The outcome of effective policies and regulations should accelerate company R&D and innovation, digital technologies, organizational capabilities, and collaboration with different stakeholders and CE in companies while evidencing positive SP outcomes.

5. Conclusion

Despite the recent developments, research on circular economy practices and their impact on sustainability performance is still yet to be fully understood. Also, existing research is fragmented across multiple disciplines. While it is expected that CEPs will improve in all three dimensions: economic, social, and environmental, this is not the case, and sometimes contradictory results are found. In this study, we reviewed the existing literature to find some answers to the variation in the findings. Our review has contributed by identifying several factors that provide researchers with avenues for future research (see Table 8). We have also found that there is scope in theory development since current research frontiers often undermine the utilization of theories in their reasoning. This study contributes by reviewing the theories used in existing research, thus providing scope for further theory development and conceptualization. Finally, since the research field is fragmented and spread across multiple disciplines, we contribute by consolidating the CEPs, which will work as a primer for the researchers interested in CEPs and sustainability. As a result of thoroughly examining the existing literature, we have identified several potential research avenues.

In terms of limitations, although this study is comprehensive and inclusive, it is not without a few systematic review limitations. Systematic literature reviews are qualitative, which can be impacted by researchers' bias. We have tried our best to avoid this bias by investigating the literature individually and cross-checking our findings before the compilation. The research process was documented to produce a transparent review, but our subjective judgments could still affect the categorization of the information. We have mitigated this issue by briefly describing the structural dimensions and analytical categories throughout the paper and, in most cases, referencing other studies where possible. Additionally, our sample was limited to peer-reviewed journals to maintain a certain quality. However, non-peer-reviewed works such as conference papers, book chapters and working papers may also provide relevant contributions to the predefined questions in this review (Geissdoerfer et al., 2017). Moreover, the factors influencing CEPs and SP are identified based on the existing studies, leaving the possibility of other influencing factors (i.e., consumer behaviour and demand). We believe that our review provides a comprehensive understanding of the issue at hand and that the omission of the other document categories has no bearing on the results of this study.

CRediT authorship contribution statement

Diana Giovanni Magnano: Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis, Data curation, Conceptualization. **Siv Marina Flø Grimstad:** Writing – review & editing, Supervision, Project administration, Funding acquisition. **Richard Glavee-Geo:** Writing – review & editing, Supervision, Funding acquisition. **Fahim Anwar:** Methodology, Conceptualization.

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.

Data availability

No data was used for the research described in the article.

Appendix A

Table
Journals publishing circular economy and companies' performance research.

Journal Title (publications)	Number of Articles	Percentage (%)
Journal Of Cleaner Production (Yu et al., 2022b; Salandri et al., 2022; Marrucci et al., 2021; Blasi et al., 2021; Mousa & Othman, 2020; Rodríguez-González et al., 2022; Hassan and Jaaron, 2021; Zaid et al., 2018; Li et al., 2018; Wen et al., 2023; Chen, 2023; Khan et al., 2023; Karmaker et al., 2023)	13	13 %
Business Strategy and The Environment (Pinheiro et al., 2022; Yu et al., 2022a; Zhao et al., 2021; Roy and Mohanty, 2023; Nayal et al., 2022; Antonioli et al., 2022; Dey et al., 2020; Sahoo et al., 2023; D'Angelo et al., 2023)	9	9 %
Environmental Science and Pollution Research (Siddik et al., 2023; Shahzad et al., 2023; Hu and Chen, 2023; Tang et al., 2022; Mahmood and Nasir, 2023; Amjad et al., 2022; Ba and Cao, 2023; Sun et al., 2023)	9	9 %
Management Of Environmental Quality: An International Journal (Afum et al., 2020; Ahmed et al., 2020b; Namagembe et al., 2019; Suleiman, 2023; Maldonado-Guzmán et al., 2023)	5	5 %
Journal Of Environmental Management (Gotschol et al., 2014; Al-Sheyadi et al., 2019; Jabbour et al., 2020; Wang et al., 2021)	4	4 %
Corporate Social Responsibility and Environmental Management (Jiao et al., 2022; Marrucci et al., 2022; Mazzucchelli et al., 2022; Teixeira et al., 2022)	4	4 %
Operations Management Research (Liu et al., 2022; Khan et al., 2022; Ahmed et al., 2020; Choi and Hwang, 2015)	4	4 %
Uncertain Supply Chain Management (Alzgool et al., 2021; Tran et al., 2022; Le et al., 2022, Nguyen and Le, 2020)	4	4 %
International Journal of Production Economics (Dey et al., 2022; Rodríguez-Espíndola et al., 2022; Liu et al., 2023)	3	3 %
Journal Of Business Research (Zhang et al., 2022; Bag et al., 2022; Chowdhury et al., 2022)	3	3 %
Benchmarking: An International Journal (Asamoah et al., 2023; Chatzoudes and Chatzoglou, 2022)	2	2 %

(continued on next page)

Table (*continued*)

Journal Title (publications)	Number of Articles	Percentage (%)
International Journal of Supply Chain Management (Sittisom and Mekhum, 2020; Jermsittiparsert et al., 2019)	2	2 %
Journal Of Industrial Ecology (Zhu et al.2010, 2011)	2	2 %
Supply Chain Management: An International Journal (Nguyen et al., 2023; Agyabeng-Mensah et al., 2020)	2	2 %
Technology In Society (Kimata and Itakura, 2021; Samad et al., 2021)	2	2 %
Sustainable Development (Triguero et al., 2023; Awan et al., 2023)	2	2 %
TQM Journal (Huma et al., 2023; Harikannan et al., 2023)	2	2 %
Business Strategy and Development (Khan et al., 2021b)	1	1 %
Cleaner Logistics and Supply Chain (Antwi et al., 2022)	1	1 %
Employee Relations: The International Journal (Obeidat et al., 2023)	1	1 %
European Journal of Management and Business Economics (Fernando et al., 2022)	1	1 %
Foundations Of Management (Fatoki, 2019)	1	1 %
Frontiers In Environmental Science (Awwad Al-Shammari et al., 2022)	1	1 %
Industrial Management & Data Systems (Han and Huo, 2020)	1	1 %
Information Systems Frontiers (Alraja et al., 2022)	1	1 %
Int. Journal of Economics and Management (Rahman et al., 2014)	1	1 %
International Entrepreneurship and Management Journal (Boffa et al., 2023)	1	1 %
International Journal of Data and Network Science (Wungkana et al., 2023)	1	1 %
International Journal of Innovation Science (Khan et al., 2023)	1	1 %
International Journal of Lean Six Sigma (Afum et al., 2021)	1	1 %
International Journal of Logistics: Research and Applications (Rehman Khan et al., 2022)	1	1 %
International Journal of Physical Distribution & Logistics Management (Riggs et al., 2023)	1	1 %
International Journal of Production Research (Edwin Cheng et al., 2022)	1	1 %
International Journal of Productivity and Performance (Rehman et al., 2023)	1	1 %
International Journal of Environmental Research and Public Health (Ghaithan et al., 2023)	1	1 %
Journal Of Industrial Engineering and Management (Pinto, 2023)	1	1 %
Journal Of Knowledge Management (Marrucci et al., 2022)	1	1 %
Journal Of Manufacturing (Hsu et al., 2023)	1	1 %
Journal Of Manufacturing Technology Management (Ghosh, 2019)	1	1 %
Management Decision (Le et al., 2022)	1	1 %
Omega (Lai and Wong, 2012)	1	1 %
Production Planning And Control (Yang and Kang, 2020)	1	1 %
Research In Transportation Business & Management (Wang et al., 2020)	1	1 %
Resources, Conservation and Recycling (Jabbour et al., 2015)	1	1 %
Sustainable Production And Consumption (Baah et al., 2021)	1	1 %
Technological Forecasting & Social Change (Lin et al., 2021)	1	1 %
The International Journal of Logistics Management (Del Giudice et al., 2021)	1	1 %
Tourism: An International Interdisciplinary Journal (Nisar et al., 2023)	1	1 %
Tourism And Hospitality (Abbas and Hussien, 2021)	1	1 %
Grand Total	104	100 %

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